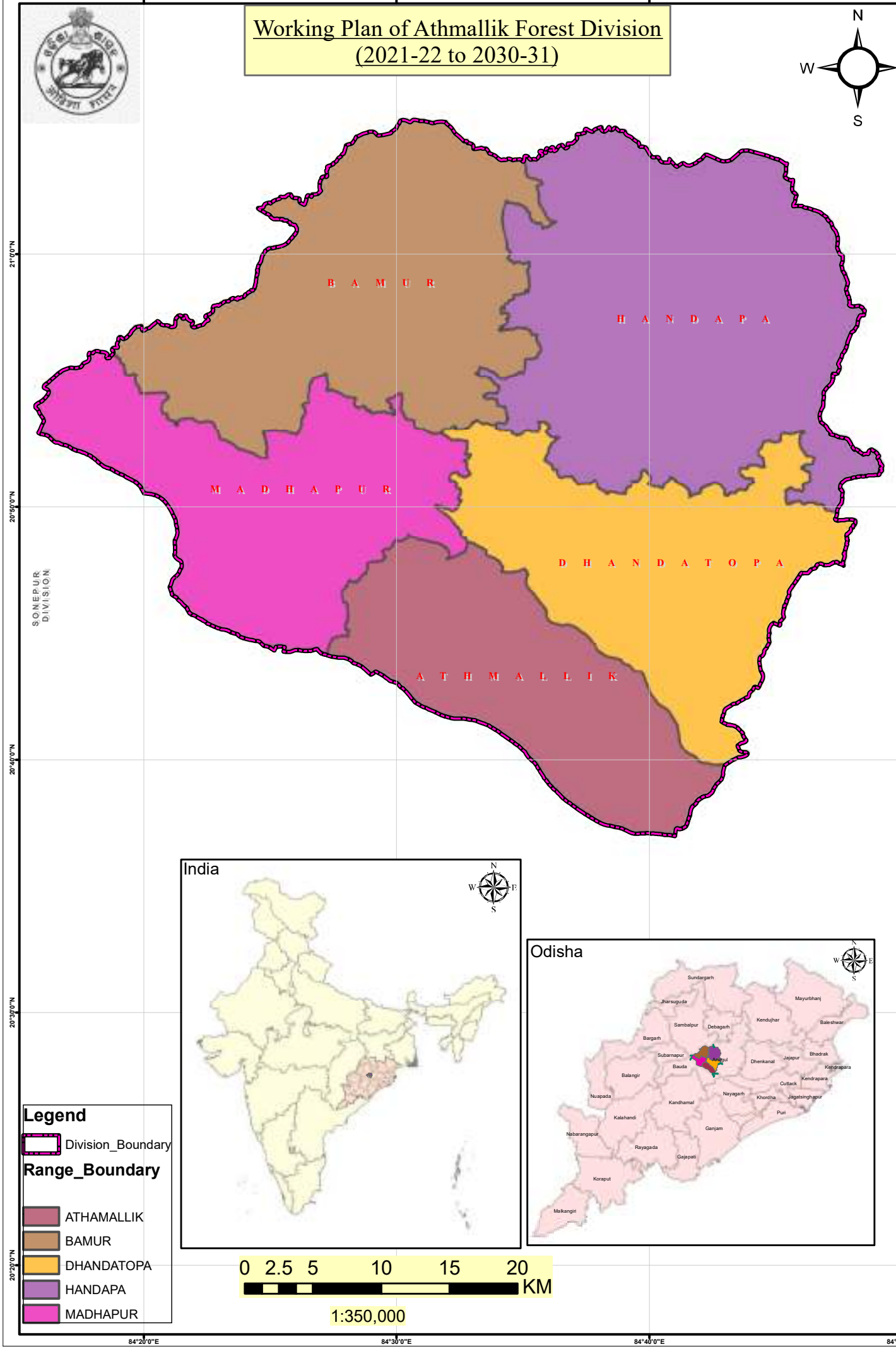
GOVERNMENT OF ODISHA
FOREST, ENVIRONMENT & CLIMATE CHANGE DEPARTMENT

REVISED WORKING PLAN OF ATHAMALLIK FOREST DIVISION FOR THE PERIOD FROM

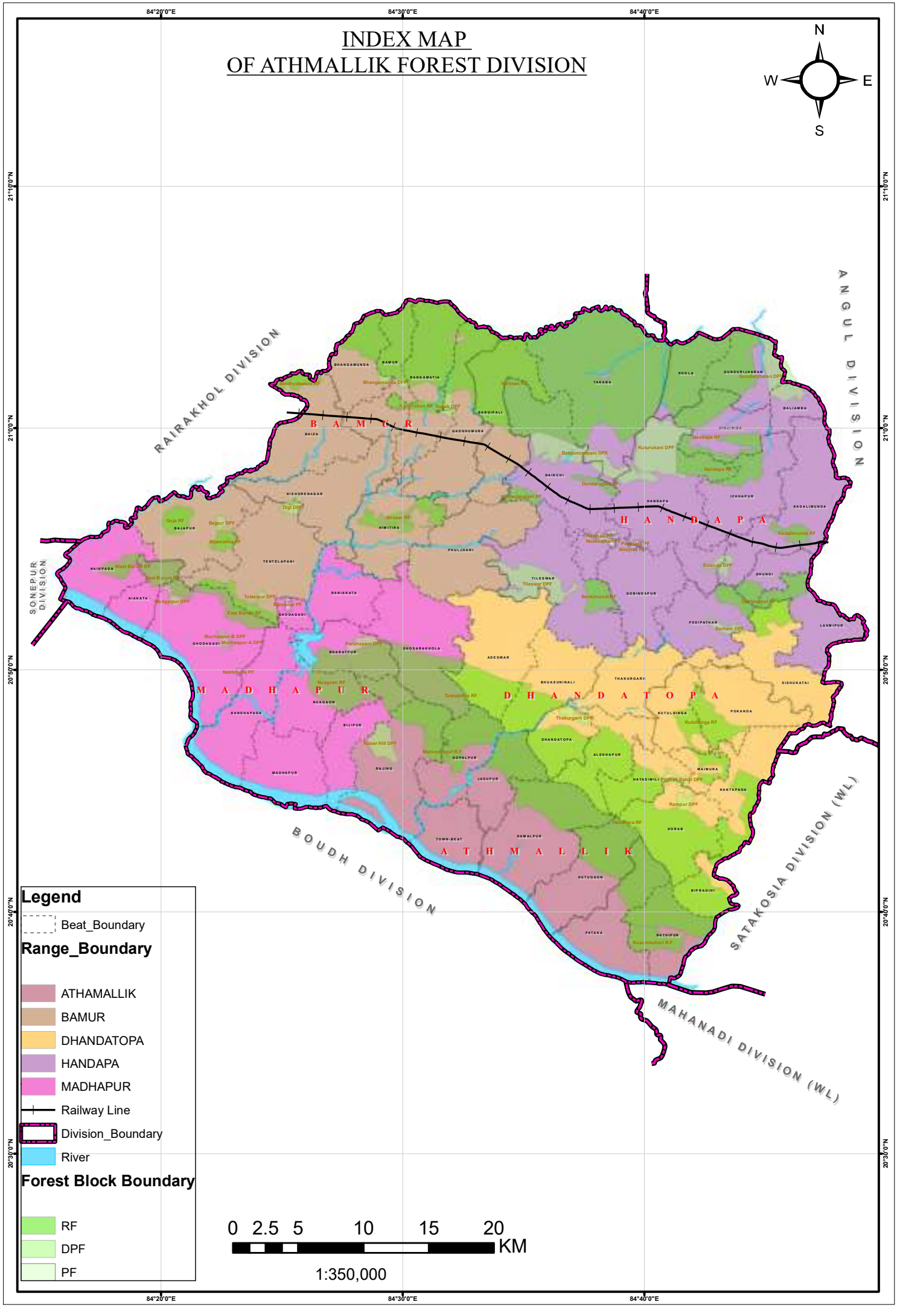
2022-23 to 2030-31

Prepared by :
Sri Pradipta Kumar Mohapatra, IFS
Conservator of Forest &
Working Plan Officer,Angul

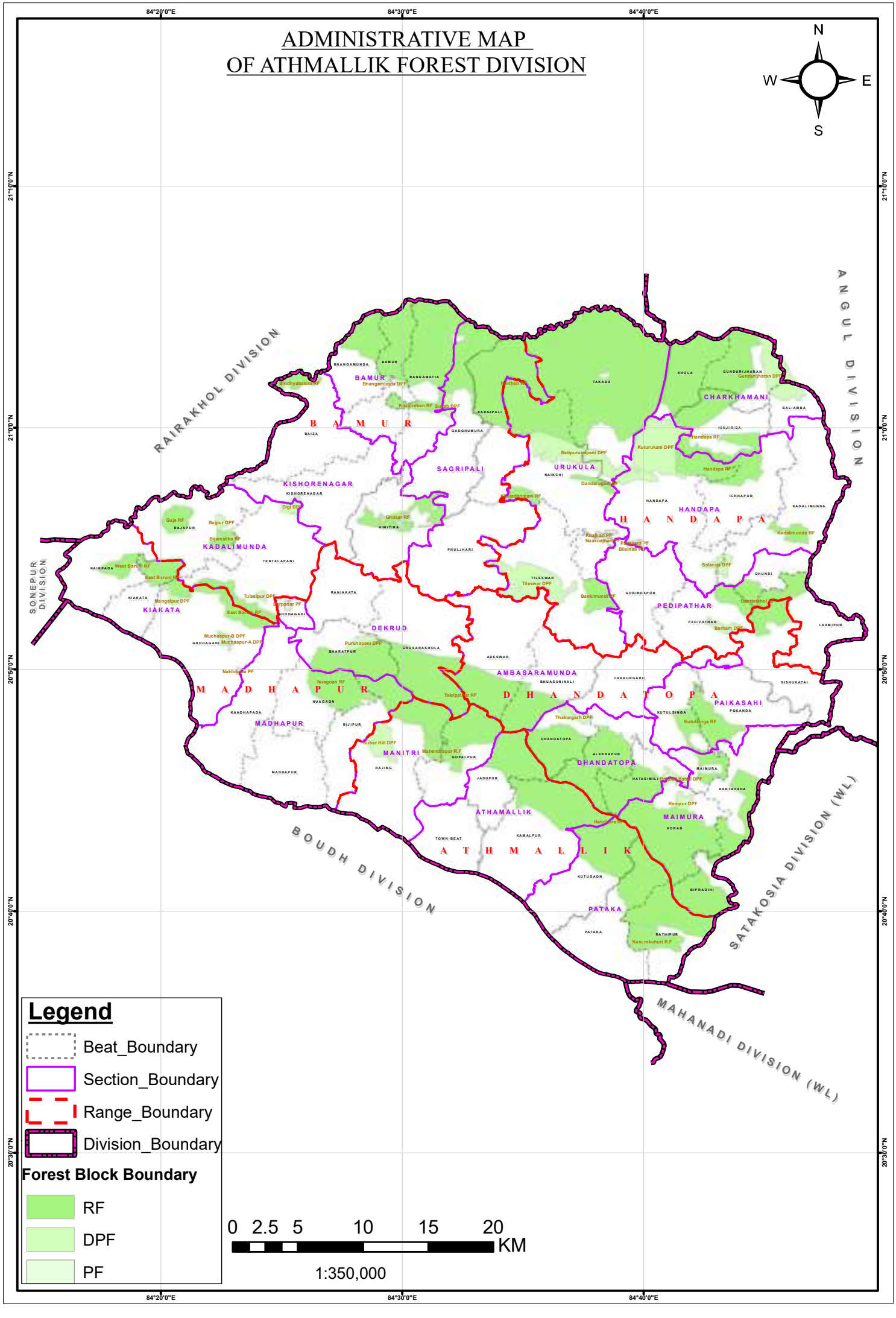
Working Plan of Athmallik Forest Division (2021-22 to 2030-31)



INDEX MAP
OF ATHMALLIK FOREST DIVISION



ADMINISTRATIVE MAP OF ATHMALLIK FOREST DIVISION



भारत सरकार / Government of India
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No. 13-FCWP/OS-ATM

2nd August, 2022

To

The Addl. Chief Secretary,
Forest & Environment Department,
Govt. of Odisha,
Bhubaneswar.

Sub: Approval of draft Revised Working Plan of Athamallik Forest Division for the period from 2021-22 to 2030-31 - reg.

Ref: The PCCF & HoFF, Odisha letter No. 15894/11F (SFM) 03/2019 dated 16.08.2021 and Letter No. 11626/11F (SFM) 03/2019 dated 07.06.2022.

Madam,

I am directed to inform that the revised draft Working Plan of Athamallik Forest Division for the period 2021-22 to 2030-31 submitted by the PCCF, Odisha has been examined and accordingly, the Central Government (MoEF&CC) with the powers vested under Forest (Conservation) Act, 1980, has accorded conditional approval of the working plan of Athamallik Forest Division for the year 2021-22 vide this office letter of even number dated 28.01.2022 and its further extension is subject to receipt of the observations made by this office. The reply to the observations made by IRO, Bhubaneswar has been received from PCCF, Odisha vide letter No.11626/11F (SFM) 03/2019 dated 07.06.2022 and examined by this office. Accordingly, the approval of the Central Govt. is hereby accorded to the Revised Draft Working Plan of Athamallik Forest Division for further period of 2022-23 to 2030-31, subject to the following General & Specific Conditions:

The formal endorsement/ approval from the State Govt. may also be obtained.

General Conditions:

1. The orders of Hon'ble Supreme Court of India in the matter of W.P. No. 202/95 Godaverman Therumulkpad Vs Union of India and related Interlocutory applications shall be strictly complied with. Any prescription or operation at variance with the order of Hon'ble Apex Court shall be kept in abeyance till such order is in force or otherwise not modified.
2. Further, in strict compliance with Hon'ble Supreme Court's order dated 22.09.2000, the State Government of Odisha shall ensure that regeneration of forest is commensurate with fellings, if any, to be carried out under the present working plan.
3. Consequently, no felling should be carried out without making allocation of requisite funds for undertaking regeneration operation_in order to ensure regeneration to be commensurate with fellings. In case of failure of regeneration or any shortfall in achieving the target of regeneration, further harvesting shall remain suspended till backlog/ shortfall in regeneration is made up and subsequent formal approval from the Integrated Regional Office is to be obtained. **No felling shall be carried out without an approved Annual Timber Operation by the competent authority.**
4. This working plan is approved for the year **2022-23 to 2030-31.**
5. Standing snags/dead or dying trees should not be removed and shall be preserved for wildlife habitat/shelter. In site specific coupes / sections having unduly large no. of such trees needing removal, the State Forest Department may take special permission from Integrated Regional Office, MoEF&CC, Bhubaneswar.

6. Deviation statement along with the prescribed documents shall be reported and got endorsed from the competent authority by the end of the year of operation. Accordingly a summary of the report/certificate shall be submitted along with the Annual Action Taken Report to the IRO, MoEF&CC, Bhubaneswar for information and record.

7. No new road shall be constructed and no fresh forest area shall be broken for widening / reconstruction of existing roads without obtaining prior approval under Forest (Conservation) Act, 1980.

8. Approval of the working plan does not permit to carry out any non-forestry work including construction of building, for which necessary permission under F(C) Act shall be obtained, as may be required.

9. CF (T) shall submit to the CCF (WP) / PCCF the yearly action taken report against the physical & financial targets of felling & regeneration against each working circle of this W.P. by the end of the year of operation.

10. Immediate action may be taken for repairing of old pillars, if any. Prescriptions may be provided for revisiting all pillars every five years for purpose of maintenance and appropriate action be taken depending on condition of boundary pillars. Staff in charge of beat will verify physically the boundary pillars and shall give a certificate annually to the DFO with copy to the CCF, Working Plan confirming that no fresh encroachments have taken place. Vulnerable areas will be verified by the Range Officers.

11. The detail copy of the PF/RF Notification, if any, may be compiled and a copy of each shall be kept with the DFO/Working Plan Officer and CCF, Working Plan for reference.

12. State Forest Department shall initiate the process for the preservation of old available maps.

Specific Conditions:

The prescriptions under the proposed working circles are approved with observations stated above and with specific condition that:

1. Sporadic, wind fallen / uprooted trees, if any, shall also be allowed to be harvested in addition to the approved working scheme prescriptions for the year 2021-22 after its special approval of the list of enumerated trees by the CF (T) / RCCF (T) forwarding a copy to Integrated Regional Office, Bhubaneswar. In case of large scale wind fallen, damaged and epidemic outbreak, special permission for tree felling may be obtained from the Regional Office of MoEF&CC, Bhubaneswar. The volume extracted out of wind fallen/ uprooted trees shall be deducted out of the total volume of yield as calculated and permission for felling is allowed for balance volume only.

2. A mid-term evaluation of the implementation of working plan prescriptions and its impact on the forests may be done after the end of initial five years for which reasonable number of benchmark / sample plots may be maintained.

3. After recording the GPS and checking the records of each planting site DFO to certify that plantation is not taken up in the existing old plantation sites, without the prescribed action required prior to replanting.

4. Plantation details along with current status (conditions of plantation and survival) may also be included along with GPS surveyed boundary locations shown on a map, so that chances of mismanagement, confusion, encroachment and problem of identification of the site are reduced.

5. The Department should prepare a programme for DGPS survey of forest boundaries and prepare geo-referenced maps with important administrative and management details, if not done earlier.

6. Prescriptions must be provided for demarcation of un-demarcated balance forest area. The area details of un-demarcated forest area, number of pillars and funds required to demarcate it and year wise plan for demarcation so as to complete it at the earliest should be provided.

7. No forest, bearing naturally grown trees shall be clear felled for any purpose what so ever.

8. The prescriptions are to enable necessary co-existence of development with nature, and to ensure implementation strictly adhering to the provisions of Indian Forest Act, 1927, Wildlife (Protection) Act, 1972, Forest (Conservation) Act, 1980, Panchayats (Extension to the Scheduled Areas) Act, 1996 (PESA), Biological Diversity Act, 2002, and Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.

9. Implementation of People Biodiversity Register (PBR) formulation as well as Access of Benefit sharing Regulation has to be implemented and monitored.

10. Listed wetland, defined under the Wetland (Conservation & Management) Rules, 2017 situated in and outside forest to be restored and sustainable managed. Annual target along with riparian restoration will be done strictly in accordance under the provision of aforesaid Rules.

11. Raising of genetically improved seedlings/clonal propagation needs emphasis for timber productivity enhancement for future. Accordingly, year-wise raising of clonal seedlings will be fixed in proportion in the Division.

12. No permanent structure for Eco-Tourism purpose should be allowed. Ecotourism should be focused with identification of sites, traditions, community practice and future management involving local communities. Benefit accrued from eco-tourism to be plowed back to local communities. Number of visitors shall be fixed as per the carrying capacity study. Safety audit to be carried out in all he eco-tourism sites.

Central Govt. reserves the right to review, modify or withdraw this approval at any time, if any, of the conditions of approval are not implemented or relevant modifications in the Working Plan, if any, is required so as to keep it in conformity with the orders, circulars and guidelines issued by the Central Govt. under Forest (Conservation) Act, 1980 or any other statute and National Forest Policy.

Yours faithfully,

Padma Mahanti

(Padma Mahanti)
Dy. Inspector General of Forests (C)

Copy to:

1. The Addl. Director General of Forests (FC), Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhawan, Agni Wing, Aliganj, Jorbagh Road, New Delhi-110 003 for kind information.
2. The Principal Chief Conservator of Forests, Forest Department, Govt. of Odisha, Aranya Bhawan, Chandrasekharpur, Bhubaneswar for kind information and necessary action.
3. The Addl. PCCF (P&SM), Forest Department, Govt. of Odisha, Aranya Bhawan, Chandrasekharpur, Bhubaneswar for kind information and necessary action.
4. The Managing Director, Odisha Forest Development Corporation Limited, Bhubaneswar for kind information.
5. Guard File.

Padma Mahanti

Dy. Inspector General of Forests (C)

ଦେବୀଦତ୍ତ ବିଶ୍ୱାଳ
DEBIDUTTA BISWAL

ପ୍ରଧାନ ମୁଖ୍ୟ ବନ ସଂରକ୍ଷକ
ଓ ବନବାହିନୀ ମୁଖ୍ୟ, ଓଡ଼ିଶା
PRINCIPAL CHIEF CONSERVATOR OF FORESTS
& HEAD OF FOREST FORCE, ODISHA

FOREWORD

The Revised Working Plan of Athamallik Forest Division for the Period from 2021-2022 to 2030-2031 has been approved vide Letter No 13-FC WP/OS-ATM dt 02.08.2022, of the Government of India, Ministry of Environment Forest and Climate Change, Integrated Regional Office, Bhubaneswar. After the expiry of outing Working Plan.(2006-2007 to 2015-2016) the Forests of the Division were managed through approved Annual Working Schemes from 2016-2017 to 2020-2021. This is the 3rd revision of Working Plan of Athamallik Forest Division for the period 2021-2022 to 2030-2031 after creation of the Division since 1979.

The Plan has been prepared with realistic prescription to achieve expected outcome based on the SWOT analysis. Eight Working Circles both exclusive & overlapping are prescribed in this Working Plan covering a total area 45,521.9078 Ha. In the current plan, it is prescribed for protection of ecologically sensitive areas and perennial stream catchment areas. Emphasis is given to safeguard natural corridor of tigers and other big mammals adjoining Satkosia Tiger Reserve in order to conserve a viable tiger population facilitating their migration and gene permeability.

The Athamallik Forest Division is very sensitive to Wild animal depredation, particularly elephants. The Wild Life Overlapping Working Circle has recommended many mitigative measures and habitat improvement activities. Adequate attention has also been assigned to the Trees outside Forest area since they play an important role in amelioration of climate, and satisfy public demand for small timber etc.

Sri Pradipta Kumar Mohapatra , IFS Conservator of Forest & Working Plan Officer Angul who is also I/c Chief Conservator of Forest Balangir (Kendu Leave) Circle under the guidance of Sri M.Yogajayanand, IFS Regional Chief Conservator of Forest Angul, Circle has carried out a commendable job in revising the Working Plan to meet the challenges of modern forest management. I hope this plan will serve as a technical and scientific document to achieve its stated objectives for the management of forest in Athamallik Forest Division.

(Debidutta Biswal, IFS)

FOREWORD

The Revised Working Plan of Athamallik Forest Division for the Period from 2021-2022 to 2030-2031 covers forest area of 45512.9078 Ha. which includes 19 Reserve Forest, 19 Demarcated Protect Forest, 06 Protect Forest and 24 Village Forest with prescribed management intervention. The chapters are as per the guidelines outlined in the National Working Plan Code 2014.

In collaboration with NRSA and ORSAC, optimal sampling design for ground inventory, preparation of forest type maps, crown density maps, Forest fire maps etc. are made by using remote sensing data and GIS technique. This plan features some interesting and time appropriate studies i.e. Bio-diversity Index, NTFP study, Socio-economic survey, Tree outside Forests and REDD+ with significant importance for all the stake holders in Forest management highlighting the scope and potential of forests for building up livelihood option in a sustainable manner.

This Plan has brought about substantial improvement over the outgoing Plan in view of the following:

(1) The Demarcated Protected Forests and Village Forests have been brought under the management fold of this Plan under Rehabilitation Working Circle.

(2) Regeneration survey, stock mapping and stock enumeration have featured in the Plan and prepared by NRSA and ORSAC taking the data collected.

(3) The diversity of flora has been studied through floristic diversity survey and the index has been calculated for 19 forest blocks so as to study species richness.

(4) Soil profile has been studied in different forest blocks and the nutrient status and other parameters have been assessed and documented in the Plan.

(5) The growing stock has been calculated by the NRSA which facilitate for calculation of Mean Annual Increement (MAI) during future revision.

(6) The Working Plan has also covered with calculation of the cost for implementation of the prescriptions outlined therein and discussed the tangible benefits to be accrued from the forest.

(7) The Plan has given due importance for management of wildlife resources of the division with pragmatic prescriptions to protect the tiger habitat for their conservation and proliferation.

(8) Detailed survey on the livelihood dependence of the people has been conducted on fringe villages of all sections.

The preparation of this plan is possible due to sheer hard work and dedication of limited available staff involved in this exercise. It is my pleasure to have few words of appreciation for the author Sri Pradipta Kumar Mohapatra, IFS who has put in best of his efforts to make it a quality output in spite of his posting at Balangir as Conservator of Forest, I/c Chief Conservator of Forests, Balangir (Kendu Leaves) Circle. All the Range Officers, Foresters, Forests Guards and Office Staff also deserve my appreciation for their contribution in making of this plan.

Date: 19/12/2022

M. Yogajayanand, IFS
Regional Chief Conservator of Forests,
Angul Circle

PREFACE

The Forests of Athamallik Division were managed by ex-State and there is not much information available on the forest management of the Division prior to 1919. The demarcation of the forest was commenced in 1919. The said Forest Division was a part of the Athamallik princely State until 1st January 1948 and then it was merged into State of Odisha. In 1959 the Division was merged in the Rairakhol Forest Division. The Division was reconstituted again in its present form in 1979 vide Government of Odisha, FF & AH Department Notification No.25782-IF(A)-94-FFAH dated 11th/12th October 1979 and started functioning with effect from dated 21.12.1979. The first Working Plan was written by Dr.H.F. Moony in 1928 which was subsequently revised by him in 1946. The third plan for the period of 1965-85 was written by Sri S.B. Das.

Then the plan was revised by Sri Dinesh Singh, IFS in 1985 which was in vogue from 1985 to 2005. Subsequently this working plan was revised by Smt. Uma Nanduri, IFS for the period from 2006-07 to 2015-16. This plan was prepared keeping in view the principles contained in National Forest Policy-1988 & JFM policy of Government of Odisha with due emphasis on Bio-diversity conservation and peoples participation read with the provision of National Working Plan Code -2004.

The Divisional Forest Officer, Athamallik has been assigned the job of preparation of revised Working Plan for next ten year i.e. from 2016-17 to 2025-26 vide Memo No.20666 dated 17.12.2012 of Principal Chief Conservator of Forests, Odisha. But subsequently the said work has been assigned to the Working Plan Officer, Angul vide Memo No.4494 dated 10.03.2016 of Principal Chief Conservator of Forests, Odisha. Since the preparation of revised Working Plan of Athamallik Forest Division for 2016-17 to 2025-26 could not be completed in time, based on the recommendation of Principal Chief Conservator of Forests, Odisha, conditional extension of the plan in different spell by way of approval of working scheme was allowed by the Government of India, Ministry of Environment, Forest & Climate change, Eastern Regional Office, Chandrasekharpur, Bhubaneswar vide their memo No.8(31)30/2016/FCE dated 13.10.2016, Memo No.13 FCWP(OS)-ATM dated 24.05.2017, Memo No.13 FCWP/OS-ATM dated 07.09.2018; Memo No.13-FCWP/05-ATM-FCE dt. 03.10.2019 and Memo No 14803 /11F (SFM) 39/2019 dt 19.08.2020 for the year 2016-17, 2017-18, 2018-19, 2019-20 and 2020-21 respectively.

The Preliminary Working Plan Report (PWPR) was drawn up by Dr. Anup Kumar Nayak, IFS the then Regional Chief Conservator of Forests, Angul in consultation with the Divisional Forest Officer, Athamallik Division. The Preliminary Working Plan Report was approved formally with certain observations in the Working Plan Committee held on 18.04.2016 of which minutes has been

communicated to the Divisional Forest Officer, Athamallik Division/Working Plan Officer, Angul vide Memo No.8437 dated 30.04.2016 of Principal Chief Conservator of Forests, Odisha. The observations in brief include (i) replacement of Plantation Working Circle by old Plantation Working Circle with prescriptions for management of old plantation due to non-availability of area for new plantation (ii) exclusion of Hatidhara Forest Block from Bamboo (OL) Working Circle considering the proposed corridor and tiger landscape area. (iii) to limit maximum exploitation of NTFP for sustainable development and guidelines on collection and management of NTFP should be prepared and intimated to the Panchayat Raj Department, Government of Odisha regulating 68 items of NTFP followed with prescription for non-destructive method of collection." (iv) to make a write up on "Tree outside Forests" in the revised Working Plan with prescriptions for harvesting and replanting etc. (v) to include a separate chapter on "Water Resources Management" along with prescription on year wise assessment of flow level of the perennial water sources, collection of water samples and analysis, recording of ground water level and its impact on forest and wild life. (vi) to include a separate chapter on Climate change i.e. impact of the temperature variation on flowering etc. rainfall pattern and its impact on forest and wildlife. (vii) inclusion of a chapter on REDD + for Carbon stock assessment, conservation and enhancement of forest carbon stock etc. along with other aspect (viii) clear objectives of all Working Circles and activities under each circle.

The draft plan Part-I has been prepared in compliance to the principles contained in the guidelines of National Working Plan Code 2014 and as per the observations of the Working Plan Committee. The management prescriptions of the outgoing plan have been revised and modified keeping in view the changing scenario of forest, wildlife and environment, protection of highly fragile eco-system, resolution of man-elephant conflict, protection of forest and wildlife and environment in general through enforcement and peoples participation, priority on sustainable management of NTFP, separate chapter on TOF, Water Resources Management, Climate change and REDD + etc. As decided in the Working Plan Committee, the growing stock calculation has been done by point sampling method for all the Forest Blocks of Athamallik Forest Division. Management maps of the Division have been supplied to ORSAC by the Divisional Forest Officer, Athamallik. The sample point marked by NRSC, Hyderabad were supplied to Athamallik Division through ORSAC, Bhubaneswar which are collected from the DFO Athamallik by this Division for study of growing stock, regeneration survey, Biodiversity index, soil analysis and carbon sequestration etc. as per the guidelines of National Working Plan Code-2014. The main features of this plan are.

(i) This Working Plan cover 68 Forest Block over an area of 45512.9078 Ha. which included 19 Reserve Forest (38912.6306 Ha. excluding forest area diverted under FCA) 19 Demarcated Protected Forest (6276.94 Ha.), 06 Protected Forest (195.3952 Ha.),24 Village Forest (136.942 Ha). The Hatidhara R.F over as area of 14923.78 Ha is excluded from this plan due to merger of this Forest Block in Satkosia Gorge wildlife Sanctuary vide Notification No 26865 dt.14.12.2018 of F&E Department, Government of Odisha.

(ii) Enumeration was conducted in all Reserve Forest Blocks over 397 UID points provided by NRSC, Hyderabad through ORSAC for calculation of volume of tree, estimated number of stems and yield table.

(iii) Floristic Diversity survey and Regeneration status have been conducted in all the Reserve Forests.

(iv) Soil profile analysis in all the sample points has been done.

(v) Study of extent of degradation of forest due to illicit felling and fire in all Reserve Forests has been done.

(vi) The timber, firewood demand of the people and grazing pressure on the forest has been assured.

(vii) Socio economic survey of the people of the different forest fringe villages for their livelihood dependence on various NTFP items as well as forest has been carried out.

(viii) Financial implication for implementation of the Working Plan preparation has been worked out in the plan.

(ix) Comparative study with the outgoing plan and present point sampling study with its analysis to avoid further reference for all the chapters.

(x) The chapters have been formulated based on the observation/preparation of working plan committee and within the provision of National Working Plan Code 2014.

The Government of India, Ministry of Environment, Forest & Climate Change , Integrated Regional Office, Chandrasekharpur, Bhubaneswar vide their Letter No FCWP/05-ATM dated 28/01/2022 have accorded the conditional approval for the year 2021-2022 with observations of the Revised Working Plan of Athamallik Forest Division for the period from 2021-2022 to 2030-2031 and after examining the compliance to the observations have accorded approval for further period of 2022-2023 to 2030-31 vide their letter of even number dated 02/08/2022

The author expresses his deep sense of gratitude to Sri Debidutt Biswal IFS, Principal Chief Conservator of Forests & Head of Forest Force, Odisha for his support and reposing faith on me to complete the working plan.

The author is extremely grateful to the Ex-Principal Chief Conservator of Forests, Kenduleaves, Odisha Sri Pravakar Beheera, IFS Sri S.K.Popli, IFS and also Smt. P. Mekro, IFS, Principal Chief Conservator of Forests, Kenduleaves, Odisha for their constant support and allowing him to attend the Office of the Conservator of Forests and Working Plan Officer, Angul to complete the plan in spite of his posting and joining as Conservator of Forest I/c Chief Conservator of Forest Balangir (KL) Circle since 19th February 2020.

The author expresses his gratitude to Sri M.Yogajayanda IFS, Regional Chief Conservator of Forests, Angul for his guidance with versatile knowledge to add new things to this plan

The author expresses his heartfelt thanks to Sri S. Anand, IFS, Divisional Forest Officer, Athamallik Division for his positive approach in providing the required information till the last minute of the preparation of the plan. Also extends his thanks to the Asst. Conservator of Forests and all the field staff as well as ministerial staff of Athamallik Forest Division for providing all logistic and infrastructural support to the Working Plan team.

The author is extremely thankful to the Director, Forest Survey of India, Dehradun; Director, Survey of India, Bhubaneswar; Director, Meteorology, Bhubaneswar; Chief Executive, Odisha Remote Sensing Application Centre (ORSAC); Joint Director, Geological Zonal Survey, Dhenkanal; District Administration, Angul Chief District Medical Officer, Angul; Chief District Veterinary Officer, Angul; District Agriculture Officer, Angul; Social Welfare Officer, Angul; Asst. Engineer, RWSS, Angul; Divisional Forest officer, Athamallik (KL) Division, Divisional Manager, OFDC Ltd., Angul; District Statistical Officer, Angul; Asst. Soil Conservation Officer, Angul; Regional Officer, State Pollution Control Board, Angul for providing the required information and substantial contribution for preparation of the plan.

The author is thankful to Sri H.K. Panda, Ex- Forest Ranger for his dedication in executing all field exercises and his keen interest for completion of the Plan in spite of his many adversarial situations. Also thankful to both the Foresters Sri Harmohan Pradhan and Sri Ranjan Pradhan as well as both the Forest Guards Late Nirakar Naik and Sri Ramakant Pradhan for their commitment and dedication to complete all the field works relating to preparation of the plan.

The author is thankful to all the ministerial staff of this Working Plan Division i.e. Sri Biraja Prasad Tripathy, Jr. Accountant, Sri Radhakant Tripathy, Jr. Accountant, Sri Biswanath Barik, Jr. Accountant, Sri Nanda Kishore Sahu, Driver (now Retd.) and Tent Khalasi Late Ramesh Chandra Mantri for their sincere efforts and unconditional co-operation to complete the plan.

(Pradipta Kumar Mohapatra, IFS)
Conservator of Forest &
Working Plan Officer, Angul

Angul

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GLOSSARY OF FLORA OF ATHAMALLIK DIVISION			
A. TREES			
S.No.	**LOCAL NAME**	**BOTANICAL NAME**	**FAMILY**
1	Acacia/ Sunajhari	*Acacia auriculiformis*	Mimosaceae
2	Amba/Am	*Mangifera indica*	Anacardiaceae
3	Ambada/Amda	*Spondias pinnata*	Anacardiaceae
4	Amla/Aunla	*Emblica officinalis*	Euphorbiaceae
5	Ambta	*Bauhinia recemosa*	Fabaceae
6	Anchhu	*Morinda tinctoria*	Rubiaceae
7	Ankula	*Alangium lamarckii*	Alangiaceae
8	Arjuna/Kaha/Kau	*Terminalia arjuna*	Combretaceae
9	Asan/Sahaj	*Terminalia tomentosa*	Combretaceae
10	Ashok	*Saraca asoca*	Fabaceae
11	Aswatha/Peepal/Osta	*Ficus religiosa*	Moraceae
12	Amthi	*Lasiobema retysum*	Caesalpiniaceae
13	Babul	*Acacia nilotica*	Mimosaceae
14	Bahada	*Terminalia bellirica*	Combretaceae
15	Bandhan/Tinsa	*Ougeinia oojeinensis*	Fabaceae
16	Barada	*Bauhinia purpurea*	Caesalpinaceae
17	Bara	*Ficus bengalensis*	Moraceae
18	Barabakulia/Dhoben	*Dalbergia paniculata*	Fabaceae
19	Barkoli	*Ziziphus mauritiana*	Rhamnaceae
20	Baruna	*Crateva religiosa*	Capparaceae
21	Batra	*Melia dubia*	Meliaceae
22	Baula	*Mimusops elengi*	Sapotaceae
23	Bel	*Aegle marmelos*	Rutaceae
24	Benta	*Naringi crenulata*	Rutaceae
25	Bhalia	*Semecarpus anacardium*	Anacardiaceae
26	Bheru	*Chloroxylon swietenia*	Rutaceae
27	Cashew	*Anacardimum occidentale*	Anacardiaceae
28	Chadheigudi	*Vitex leucoxylon*	Verbenaceae
29	Chakunda	*Cassia siamea*	Ceasalpinaceae
30	Chara	*Buchanania lanzan*	Anacardiaceae
31	Chauli (Mukha)	*Cassine glauca*	Celastraceae
32	Chhatian	*Alstonia scholaris*	Apocynaceae
33	Chhotarai	*Dillenia aurea*	Dilleniaceae
34	Chikini/Kalchua	*Glochidion zeylanicum*	Euphorbiaceae
35	Dalsinga /Kumarchikini	*Canthium didymum*	Rubiaceae
36	Damgurubu	*Gardenia latifolia*	Rubiaceae
37	Dhalasiris	*Albizia procera*	Mimosaceae
38	Dhaman	*Grewia tiliifolia*	Tiliaceae
39	Dhaura	*Anogeissus latifolia*	Combretaceae
40	Dhauranga	*Holoptelia integrifolia*	Ulmaceae
41	Dimiri	*Ficus lanceolata*	Moraceae
42	Eucalyptus/ Nilagiri	*Eucalyptus spp*	Myrtaceae
43	Gambhari	*Gmelina arborea*	Verbenaceae
44	Gandha palas	*Miliusa velutina*	Annonaceae
45	Ganga siuli	*Nyctanthes arbortristis*	Oleaceae
46	Ganiari/Gelgela	*Cochlospermum religiosum*	Bixaceae

47	Garh khair	*Acacia lenticularis*	Mimosaceae
48	Genduli	*Sterculia urens*	Sterculiaceae
49	Ghontol (Gotha)	*Ziziphus xylocarpus*	Rhamnaceae
50	Ghoralanjia	*Albizia chinensis*	Mimosaceae
51	Giringa	*Pterospermum canescens*	Sterculiaceae
52	Gohira	*Acacia leucophloea*	Mimosaceae
53	Halda	*Diospyros montana*	Ebenaceae
54	Haldu/kurum	*Adina cordifolia*	Rubiaceae
55	Harida	*Terminalia chebula*	Combretaceae
56	Hinjal	*Barringtonia acutangula*	Myrtaceae
57	Jaisanda	*Litsea glutinosa*	Lauraceae
58	Jamu/Jambu	*Syzygium cumini*	Myrtaceae
59	Jari	*Ficus virens*	Moraceae
60	Jhaun	*Casuarina equisetifolia*	Casurinaceae
61	Kadam/Kadamba	*Anthocephalus cadamba*	Rubiaceae
62	Kaitha	*Limonia acidissima*	Rutaceae
63	Kalasiris	*Albizia lebbeck*	Mimosaceae
64	Kalachua	*Diospyros sylvatica*	Ebenaceae
65	Kamlagundi	*Mallotus philippinensis*	Euphorbiaceae
66	Kangda	*Xylia xylocarpa*	Mimosaceae
67	Kansa	*Hymenodictyon excellsum*	Rubiaceae
68	Kapasia	*Kydia calycina*	Malvaceae
69	Karada/Karla	*Cleistanthus collinus*	Euphorbiaceae
70	Karanja	*Pongamia pinnata*	Fabaceae
71	Kasi/Khais	*Bridelia retusa*	Euphorbiaceae
72	Katakala	*Strychnos potatorum*	Longaniaceae
73	Kathjamu	*Eugenia heyneana*	Myrtaceae
74	Katranga/Domkurudu	*Gardenia latifolia*	Rubiaceae
75	Kendu/Tendu	*Diospyros melanoxylon*	Ebenaceae
76	Kerua	*Sonneratia apetala*	Sonneratiaceae
77	Khair	*Acacia catechu*	Mimosaceae
78	Khakada	*Casearia elliptica*	Samydaceae
79	Kochila	*Strychnos nuxvomica*	Longaniaceae
80	Kodala	*Erithropsis colorata*	Sterculiaceae
81	Kanchan	*Bauhinia variegata*	Fabaceae
82	Kumbhi	*Careya arborea*	Lecythidaceae
83	Kusum	*Schleichera oleosa*	Sapindaceae
84	Lodha	*Symplocos racemosa*	Symplocaceae
85	Lemur Mai/ Raj Mai	*Bursera penicellata*	Burseraceae
86	Mahanimba	*Ailanthus excelsa*	Simarubaceae
87	Mai	*Lannea coromandelica*	Anacardiaceae
88	Mankada kendu	*Diospyros embryopteris*	Ebenaceae
89	Murmuri	*Antidesma diandrum*	Euphorbiaceae
90	Manda/Gandhaguria	*Macaranga peltata*	Euphorbiaceae
91	Mohul	*Madhuca indica*	Sapotaceae
92	Mokha/Mukha	*Schrebera swietenioides*	Oleaceae
93	Muchkunda	*Pterospermum acerifolium*	Sterculiaceae
94	Mundi/Mitkania	*Mitragyna parviflora*	Rubiaceae
95	Neem/Limbo	*Azadirachta indica*	Meliaceae

96	Nimburumoi	*Bursera serrata*	Burseraceae
97	Palas/Phalas	*Butea monosperma*	Fabaceae
98	Paldhua	*Erythrina indica*	Fabaceae
99	Panas	*Artocarpus integrifolia*	Moraceae
100	Panigambhari/Tabhar	*Trewia nudiflora*	Euphorbiaceae
101	Panikadala	*Firmiana colarata*	Sterculiaceae
102	Panikusum/Pitakusum	*Aphanamixis polystachya*	Meliaceae
103	Panipatuli	*Lagerstroemia speciosa*	Lythraceae
104	Patoli	*Lagerstroemia speciosa*	Lythraceae
105	Patamasu/Gandhapalas	*Polyalthia cerasoides*	Annonaceae
106	Patragundi/Poinsia	*Elaeocarpus robusta*	Tiliaceae
107	Phanphana/Phanpuni	*Oroxylon indicum*	Bignoniaceae
108	Phasi	*Anogeissus acuminata*	Combretaceae
109	Piasal/Bija	*Pterocarpus marsupium*	Fabaceae
110	Pitamai	*Garuga pinnata*	Burseraceae
111	Poichandia	*Putranjiva roxburghii*	Euphorbiaceae
112	Poijamu/Bhatjamu	*Syzygium caryophyllifolium*	Myrtaceae
113	Punang/Polanga	*Calophyllum inophyllum*	Guttiferaceae
114	Rai/Kerengila/Michumuchu	*Dillenia pentagyna*	Dilleniaceae
115	Raj moi	*Lannea coromandelica*	Anacardiaceae
116	Rith/Muktamaja	*Sapindus emerginatus*	Sapindaceae
117	Rohini	*Soymida febrifuga*	Meliaceae
118	Saguan	*Tectona grandis*	Verbenaceae
119	Sahada	*Streblus asper*	Moraceae
120	Sajana	*Moringa pterigosperma*	Moringaceae
121	Sal/Sargi/Rengal	*Shorea robusta*	Dipterocarpaceae
122	Salap	*Caryota urens*	Palmae/ Arecaceae
123	Salara/Mokam/Potua	*Catunaregam spinosa*	Rubiaceae
124	Salai	*Boswellia serrata*	Burseraceae
125	Sidha/Senha	*Lagerstroemia parviflora*	Lythraceae
126	Simal/Simili	*Bombax ceiba*	Bombacaceae
127	Sissoo	*Dalbergia sissoo*	Fabaceae
128	Sissoo/Rosewood	*Dalbergia latifolia*	Fabaceae
129	Siju	*Euphorbia neriifolia*	Euphorbiaceae
130	Sunari	*Cassia fistula*	Caesalpinaceae
131	Teak/ Saguan	*Tectona grandis*	Verbenaceae
132	Tala	*Borassus flabelliformis*	Palmae/ Arecaceae
133	Tambal	*Ficus hispida*	Moraceae
134	Tangarchampa/Patharchampa	*Ochna obtusata*	Ochnaceae
135	Telei	*Wendlandia tinctoria*	Rubiaceae
136	Tentra	*Albizziz procera*	Mimosaceae
137	Telkuruma/Bhuinkuruma	*Ixora arborea*	Rubiaceae/Fabaceae
138	Tentuli/Kania	*Tamarindus indica*	Caesalpinaceae
139	Thelko	*Randia uliginosa*	Rubiaceae
B. BAMBOO			
1	Balanji bans	*Oxytenanathera nigrociliata*	Poaceae
2	Daba bans/kanta bans	*Bambusa arundinacea*	Poaceae
3	Dungi bans	*Cephalostachyum pergacile*	Poaceae
4	Salia/Hill bambo	*Dendrocalamus strictus*	Poaceae

C. SHRUBS / HERBS			
1	Agabadhu	*Premna obtusifolia*	Verbenaceae
2	Agnijal/Bana jalangi	*Vernonia cinerea*	Asteraceae
3	Agnijhal	*Clausena excavata*	Rutaceae
4	Ankhukoli	*Carrissa opaca*	Apocynaceae
5	Ankula	*Alangium salvifolium*	Alangiaceae
6	Arakha	*Calotropis gigantea*	Asclepiaceae
7	Arkala	*Millettia racemosa*	Fabaceae
8	Badianla	*Phyllanthus fraternus*	Euphorbiaceae
9	Badichand/Cadichang	*Symphorema polyandrum*	Verbenaceae
10	Baigaba	*Jatropha gossypifolia*	Euphorbiaceae
11	Bajramuli	*Sida spinosa*	Malvaceae
12	Barkoli	*Zizyphus Mauritiana*	Rhamnaceae
13	Ban Olua	*Amorphophallus bulbifera*	Arecaceae
14	Ban soris	*Cleome viscosa*	Capparaceae
15	Banachanda, Ranikathi	*Flagellaria indica*	Flagellariaceae
16	Banachireita	*Leea asiatica*	Ampellidaceae
17	Bankolthi	*Atylosia scarabaeoides*	Fabaceae
18	Banakapasi	*Thespesia lampas*	Malvaceae
19	Banbiri	*Vigna radiata*	Fabaceae
20	Banchakunda	*Cassia tora*	Fabaceae
21	Banhaldi	*Curcuma aromatica*	Zingiberaceae
22	Bani	*Avicennia officinalis*	Verbenaceae
23	Bankhajuri/Pinokhajuri	*Phoenix sylvestris*	Palmaceae
24	Bankadali	*Musa sapientum*	Musaceae
25	Banmalli	*Jasminum arborescens*	Oleaceae
26	Banmug	*Phaseolus sublobatus*	Fabaceae
27	Banpiaja	*Urginea indica*	Liliaceae
28	Banrasun	*Scilla indica*	Liliaceae
29	Bansaru	*Colocasia esculenta*	Arecaceae
30	Bantulasi	*Ocimum basilicum*	Lamiaceae/labiatae
31	Basanga	*Justicia adhatoda*	Acanthaceae
32	Babajijata		
33	Begunia	*Vitex negundo*	Verbenaceae
34	Bhains dera	*Strobilanthus auricunatus*	Acanthaceae
35	Bhuinkurwan/telkurwan	*Ixora arborea*	Rubiaceae
36	Bhuin-neem	*Andrographis paniculate*	Acanthaceae
37	Bhuin Anla	*Phyllanthus niruri*	Euphorbiaceae
38	Bisalyakarani	*Tridax procumbens*	Asteraceae
39	Baincha	*Flacourtia indica*	Flacourtiaceae
40	Chauli (Mukha)	*Cassine glauca*	Verbenaceae
41	Dhatiki	*Woodfordia fruticosa*	Lythraceae
42	Dalsinga	*Canthium didymum*	Rubiaceae
43	Gangoi	*Melastoma malabathricum*	Melastomaceae
44	Gayas	*Leucas aspera*	Lumiaceae/Labiatae
45	Gayatulasi	*Orthosiphon pallidus*	Lamiaceae/Labiatae
46	Gila	*Entada scandens*	Mimosaceae
47	Giliri/gilira	*Indigofera cassioides*	Fabaceae
48	Guakuli	*Diospyros ferrea*	Ebenaceae

49	Haldigundi	*Spilanthes calva*	Rubiaceae
50	Indrajal	*Holarrhena malaccensis*	Apocynaceae
51	Iswarjata	*Celosia cristata*	Amaranthaceae
52	Jajang	*Phyllanths raticularis*	Euphorbiaceae
53	Jatijatia saru	*Urena repanda*	Malvaceae
54	Jatjatiamota	*Urena cinnata*	Malvaceae
55	Jhumpuri	*Phyllochlamys spinosa*	Moraceae
56	Jojoka	*Tarenna asiatica*	Rubiaceae
57	Kakusia	*Strobilanthus scaber*	Acanthaceae
58	Kamini	*Murraya exotica*	Rutaceae
59	Kanta beta	*Calamus guruba*	Arecaceae
60	Kantamaul	*Ventilago denticulata*	Rhamnaceae
61	Kantasiju	*Euphorbia nivulia*	Euphorbiaceae
62	Karhjamu	*Eugenia heyneana*	Myrtaceae
63	Kaskasi Jhari	*Ficus parasitica*	Moraeceae
64	Khajuri	*Phoenix dactylifera*	Arecaceae
65	Kharal	*Gardenia turgida*	Rubiaceae
66	Khirkit/Khirkichi	*Mimosa himalayana*	Mimosaceae
67	Khirkoli	*Manilkara hexandra*	Sapotaceae
68	Kukurchhatia	*Pavetta crassicaulis*	Rubiaceae
69	Kumar chikni	*Canthium dicoccum*	Rubiaceae
70	Kharkhari	*Clerodendrum viscosum*	Verbenaceae
71	Kurei/kher	*Holarrhena antidysenterica*	Apocynaceae
72	Krushnaparni	*Desmodium polycarpum*	Fabaceae
73	Kuruda/Ghurudu	*Gardenia gummifera*	Rubiaceae
74	Lajwanti/Lajkulilata	*Mimosa pudica*	Mimosaceae
75	Lankajada	*Ricinus communis*	Euphorbiaceae
76	Lantana/Bholupadi /Nagairi	*Lantana camara*	Verbenaceae
77	Madanga	*Loranthus longiflorus*	Loranthaceae
78	Mamuri	*Antidesma diandrum*	Euphorbiaceae
79	Masundi	*Croton oblongifolius*	Tiliaceae
80	Mayurachulia	*Celosia argenta*	Amaranthaceae
81	Mirgichra/Barenga	*Grewia elastica*	Tiliaceae
82	Mohan/Patua/Salar	*Randia dumetorum*	Rubiaceae
83	Muraphal/ muri muri	*Helicteres isora*	Sterculiaceae
84	Mula	*Raphanus sativas*	Brassicaceae
85	Nahalbell	*Cipadessa baccifera*	Meliaceae
86	Narguni	*Atalantia monophylla*	Rutaceae
87	Patalgaruda	*Rauwolfia serpentina*	Apocynaceae
88	Poksunga	*Pogostemon benghalensis*	Lamiaceae
89	Salra	*Catunaregam nutans*	Rubiaceae
90	Singhapurna	*Flemingia chappar*	Fabaceae
91	Salparni	*Desmodium gangeticum*	Fabaceae
92	Sunaragada	*Grewia helicterifolia*	Tiliaceae
93	Talmuli	*Curculigo orchiodes*	Amaryllidaceae
94	Tinakoli	*Ziziphus rugosa*	Rhamnaceae
95	Tulsi	*Ocimum sanctum*	Lamiaceae
96	Urguna	*Cycas circinalis*	Cycadaceae
D. CLIMBERS & LIANES			

1	Agnisikha	*Gloriosa superba*	Liliaceae
2	Akanbindhi	*Cissampelos pareira*	Menispermaceae
3	Anantamula	*Hemidesmus indicus*	Ascelpidaceae
4	Asadhua	*Capparis zeylanica*	Capparidaceae
5	Atundi	*Combretum decandrum*	Combretaceae
6	Baidank	*Mucuna pruriens*	Fabaceae
7	Baingaloi	*Tragia plukenetii*	Euphorbiaceae
8	Bana alu	*Discorea hispada*	Dioscoraceae
9	Banakolthi	*Atylosia scarabaeoides*	Fabaceae
10	Bankunduru	*Trichosanthes cucumerina*	Cucurbitaceae
11	Bansimba	*Lablab purpurens*	Fabaceae
12	Bhadabhadalia	*Olax scandens*	Olacaceae
13	Bhudel/Latapalas	*Butea superba*	Fabaceae
14	Bichhuati	*Tragia involucrata*	Euphorbiaceae
15	Dantari	*Acacia pennata*	Mimosaceae
16	Dudhilai	*Ichnocarpus frutescens*	Apocynaceae
17	Ganj/Mardaloi	*Milletia auriculata*	Fabaceae
18	Gila	*Entada phoseoloides*	Mimosaceae
19	Gopakanhu/Dhudhiani	*Cryptolepsis buchanani*	Periplocaceae
20	Gudmari	*Gymnema sylvestre*	Asclepidaceae
21	Handiphuta/Kataka	*Pueraria tuberosa*	Fabaceae
22	Kaincha	*Abrus precatorius*	Fabaceae
23	Kankada	Momordica dioica	Cucurbitaceae
24	Kanta Alu	*Dioscorea glabra*	Dioscoraceae
25	Kanteikuli	*Ziziphus oenoplia*	Rhamnaceae
26	Khamba Alu	*Dioscorea alata*	Dioscoraceae
27	Kosa Alu	*Dioscorea puber*	Dioscoraceae
28	Kunjalata	*Ipomoea quamoclit*	Convolvulaceae
29	Madhabilata	*Hiptage madablata*	Malpighiaceae
30	Matka(Bana kunduri)	*Solena amplexicaulis*	Cucurbitaceae
31	Muturilaha/Muter	*Smilax macrophylla*	Liliaceae
32	Nagairi	*Lantana camara*	Verbenaceae
33	Nirmuli	*Cuscuta reflexa*	Convolvulaceae
34	Noipalas/Latapalas	*Butea parviflora*	Fabaceae
35	Panayiri	*Aristolochia indica*	Aristolochiaceae
36	Pani Alu	*Dioscorea oppositifolia*	Dioscoraceae
37	Pani bet	*Calamus viminalis*	Arecaceae/Palmae
38	Pichhuli	*Gouania leptostachya*	Rhamnaceae
39	Pita Alu	*Dioscorea foetida*	Dioscoraceae
40	Pingu	*Colastrustrus pani ghasaculata*	Celastraceae
41	Prasarini	*Paederia foetida*	Rubiaceae
42	Satabari	*Aspargus racemosus*	Liliaceae
43	Siali,Sualoi	*Bauhinia vahlii*	Fabaceae
44	Smilax	*Smilax zeylanica*	Liliaceae
45	Tankualai	*Schefflera venulosa*	Araliaceae
46	Tunga Alu	*Discorea wallichii*	Dioscoraceae
E. GRASSES			
1	Bounsuni	*Saccharum munja*	Poaceae
2	Chepti	*Evolvulus alsinoides*	Convolvulaceae

3	Chhana	*Imperata arundinaceae*	Poaceae
4	Dhanwantary/Khara	*Cymbopogon martinii*	Poaceae
5	Duba	*Cynodom dactylon*	Poaceae
6	Ghonda Bena	*Bothriochloa bladhii*	Poaceae
7	Kodua	*Paspalum scrobiculatum*	Poaceae
8	Mutha	*Lipocarpha sphacelata*	Poaceae
9	Nalisugandhi	*Phragmitis karka*	Poaceae
10	Panighasa	*Eragrostis japonica*	Poaceae
11	Phulchanchani/phuljhadu	*Thysanolaena maxima*	Poaceae
12	Sabai/Panasi	*Eulaliopsis binata*	Poaceae
13	Sinkhola	*Heteropogon contortus*	Poaceae
14	Tenda/Kastandi	*Saccharum spontaneum*	Poaceae
F. FERNS			
1		*Actinipteris radiata*	Actiniopteridaceae
2		*Adiantum caudatum*	Adiantaceae
3		*Adiantum philippense*	Adiantaceae
4		*Alsophila gigantea*	Alistamaceae
5		*Alsophila spinulosa*	Alistamaceae
6		*Angiopteris evecta*	Angiopteridaceae
7		*Asplenium perakense*	Aspleniaceae
8		*Athyrium falcatum*	Athyriaceae
9		*Athyrium hohenackerianum*	Athyriaceae
10		*Athyrium parasnathense*	Athyriaceae
11		*Azolla pinnata*	Azollaceae
12		*Blechnum orientale*	Blechnaceae
13		*Bolbitis contaminans*	Lomariopsidaceae
14		*Bolbitis costata*	Lomariopsidaceae
15		*Ceratopteris thalictroides*	Ceratophyllaceae
16		*Cheilanthes tenuifolia*	Cheilanthaceae
17		*Christella parasitica*	Chenopodiaceae
18		*Diplazium esculentum*	Dioscoreaceae
19		*Drynaria querfolia*	Droseraceae
20		*Dryopteris cochleata*	Dryopteridaceae
21		*Dryopteris sparsa*	Dryopteridaceae
22		*Eqsuisetum rammossissimum*	Equisetaceae
23		*Heminotis arifolia*	Hemion tidaceae
24		*Lygodium flexuosum*	Lygodiaceae
25		*Macrothelyptris torresiana*	Thelypteridaceae
26		*Marsilea quadrifolia*	Marsileaceae
27		*Microlepia speluncea*	Dennstaedtiaceae
28		*Nephrolipis brisesrata*	Nephrolepidaceae
29		*Ophioglossum reticulatum*	Ophioglossaceae
30		*Paraleptochilus decurrens*	Polypodiaceae
31		*Pneumatopteris truncata*	Thelypteridaceae
32		*Pronephrium nudatum*	Thelypteridaceae
33		*Pteridium aquilinum*	Dennstaedtiaceae
34		*Pteris biaurita*	Pteridaceae
35		*Pyrrosia mollis*	Polypodiaceae
36		*Selaginella indica*	Selaginellaceae

37		*Selaginella nairii*	Selaginellaceae
38		*Sphenomeris chinnensis*	Lindsaeaceae
G. ORCHIDS (ORCHIDACEAE)			
1		*Acampe carinata*	Orchidaceae
2		*Aerides maculosum*	Orchidaceae
3		*Bulbophyllum cariniflorum*	Orchidaceae
4		*Cottonia peduncularis*	Orchidaceae
5		*Cymbidium aloifolium*	Orchidaceae
6		*Dendrobium bicameratum*	Orchidaceae
7		*Dendrobium herbaceum*	Orchidaceae
8		*Dendrobium macrostachyum*	Orchidaceae
9		*Dendrobium regium*	Orchidaceae
10		*Eulophia nuda*	Orchidaceae
11		*Gastrochilus inconspicum*	Orchidaceae
12		*Geodorum densiflorum*	Orchidaceae
13		*Goodyera procera*	Orchidaceae
14		*Habenaria commelinfolia*	Orchidaceae
15		*Luisia trichorhiza*	Orchidaceae
16		*Malaxis densiflora*	Orchidaceae
17		*Oberonia ensiformis*	Orchidaceae
18		*Pachystoma senile*	Orchidaceae
19		*Pecteilis gigantea*	Orchidaceae
20		*Pelatantheria insectifera*	Orchidaceae
21		*Peristylus constrictus*	Orchidaceae
22		*Pholidota pallida*	Orchidaceae
23		*Rhynchostylis retusa*	Orchidaceae
24		*Vanda tessellate*	Orchidaceae
25		*Vanda testaceae*	Orchidaceae
26		*Zeuxine strateumatica*	Orchidaceae

PART-I

SUMMARY OF FACTS ON WHICH PROPOSAL ARE BASED

CHAPTER-I

1. The Tract Dealt with

1.1 Name and situation

1.1.1 Situation and Management practices

Athmallik Forest Division is situated on the north bank of the river Mahanadi and is co-terminus with the Athmallik Sub division of Angul District. It lies between 20º 37' and 21º 5' North latitude and 84º 16' and 84º 40' East longitude. The Division was part of Athmallik princely State until 1st January, 1948 and then it was merged into the State of Orissa. In 1959 this Division was abolished and merged in the Rairakhol Forest Division vide Govt. of Orissa Development Department Notification No.IF (M)-110/59-36-434/D Dated 07-10-1959 and the Division was again reconstituted by Government of Orissa Forest, Fisheries and Animal Husbandry Department Notification No.25782-IF (A)-94/79-FFAH Dt.11th/12th October, 1979.

The first Working plan of this Division was prepared in 1929 by Dr. H.F. Mooney, which was in vogue till 1946. It was revised by the same author in 1946 and the second Working Plan was drawn up for the period 1946-61 . In the year 1961, the next plan could not be prepared immediately and hence the old plan continued till 30th June, 1965. The second Working plan was revised by Sr. S. B. Das and the third Working Plan was in operation for a period of 20 years (1965-85). Das's plan was revised by Sri Dinesh Singh and the latter prepared the revised plan of the Division for the period from 1985-86 to 1995-96 and subsequently it was extended for another 10 years up to 2004-05.

The outgoing plan was prepared be Smt. Uma Nanduri, IFS for the period from 2006-07 to 2015-16 during which all the Reserved Forest (R.F) Blocks and Protected Forests (DPFs) were brought under the purview of this Working Plan.

The working plans Committee decided on Dt.14.02.2003 to bring all the Reserved Forest (R.F) Blocks and Protected Forests (PFs) under the purview of this Working Plan. Accordingly, all the 19 R.F Blocks over an area of 38912.6306 Ha. or 389.126 Sq. Km, 19 Demarcated Protected Forest Blocks which are under the process of notification under sec 4 (i) of Orissa Forest Act, 1972 over an area of 6276.94 Ha. or 62.77 Sq Km and 06 Nos of P.F Blocks notified under Section 33 of the OFA,1972 over an area of 195.3952Ha or 19.54 Sq Km and 24 VFs over an area of 136.942Ha or 13.69Sq Km are brought under the management fold in this plan.

1.1.2 Administrative set up of the Division

The headquarters of the Division is located at Athmallik. The Division comprises of 05(Five) Ranges. They are Athmallik Range with headquarters at Athmallik, Madhapur Range with headquarters at Madhapur, Dhandatopa with headquarters at Dhandatopa, Handapa Range with headquarters at Handapa and Bamur Range with headquarters at Bamur. Before reorganization of Athmallik Forest Division, there were only 3 Ranges namely Athmallik,

Handapa & Madhapur and during organization of Orissa Forest Department, two additional Ranges i.e. one at Dhandatopa and another at Bamur were created.

The administrative set up of the division after re-organisation and present status in shape of Ranges, Sections and Beats are furnished in the **Table – 1.1.** The Range,Section and Beat wise statement of Athmallik Forest Division is furnished in **Annexure-I.**

Table No – 1.1 Administrative set up of Athmallik Forest Division.

Table No – 1.1 Administrative set up of Athmallik Forest Division.				
Sl. No.	**Administrative Setup**	**Before reorganization (No)**	**During reorganization (No)**	**Present Status (No)**
1	Range	3	5	5
2	Section	11	18	18
3	Beat	55	56	56
4	Forest Check gates	1	2	2
Sources – Divisional Forest Officer, Athmallik.				

1.1.2 .1 Demographic profile

The total population of Athamallik subdivision as per 2011 census is 2, 30,671 of which male population is 1, 15, 864 (50.4%) and female population is 1, 14, 807 (49.6%). The density of population per sq.km is 110, which is much lower than the average (236) of Orissa State. The population in this division has almost doubled from 1961 to 2001, over a period of 40 years.However the annual growth rate during the period from 2001 to 2011 is 1.33% which is lower than the previous growth rate. This may be due to the increase the rate of literacy to 77.5%. The population growth trends of Athamallik division from 1941 to 2011 are given in **Table No: 1.2.**

Table: 1.2	**POPULATION GROWTH IN ATHAMALLIK DIVISION**				
Year	1941	1961	1981	2001	2011
Population	72,755	1,00,326	1,50,756	2,03,635	2,30,671
Annual growth rate		1.89%	2.51%	1.75%	1.33%

1.1.3 Boundaries

The Division shares its boundaries in the following manner.

North: Rairakhol Forest Division and Sambalpur District.

South: Boudh Forest Division and Boudh District.

East: Angul Forest Division and Angul Sub-division of Angul District.

West: Rairakhol Forest Division and Sambalpur District.

1.1.4 Geographical area

Total geographical area of the Division is 1841 Sq. Km. The total R.F and D.P.F area (451.896 Sq. Km.) covered in this plan accounts for 24.55% of the total geographical area of the Division. There are 2 C.D. Blocks, Kishorenagar and Athmallik and only one N.A.C i.e. Athmallik in this Division. Boinda, Handapa, Kishorenagar, Athmallik and Thakurgarh are the important towns within the jurisdiction of the Division.

1.2 Configuration of the ground:

Physiographically, the tract forms a part of the stable landmass of Indian peninsula that is largely composed of some of the most ancient rocks of earth's crust. The recent topographical features are combined result of long continued erosion at some places and upliftment at other places.

In the south, there are flood plains of Mahanadi which is a flat stretch of alluvial land about 3.8 Km. wide extending from Angul Border to Kiakata on the west. It comprises mostly cultivated lands with a general elevation of 200-300 feet above sea level. On the boundary of this riparian tract raises Panchadhara hill range with a general elevation of 2500 feet and in these hill ranges Talaipathar and Hatidhara blocks are present. These hill Ranges run parallel to Mahanadi with a south east to north west strike they form a barrier for about 40 km. from Angul border to Manjore on the west. These ranges are called Panchadhara because 5 perennial streams start from these hills and they are Badjhor, Mulijhor, Nekudiajhor, Badrijhor and Chanagudijhor and the Ranges are pierced at the places by Chanagorhi nallah at Jamudoli and Dhandatopa nallah near Nugan, north of Kaintragarh. The Dhandatopa nallah divides the hill ranges into two parts; western Talaipathar and Hatidhara. There are several peaks in the Ranges, the highest peak being Talaipathar (905 mts.)

The slopes are generally steep; the southern aspect is much steeper than the northern aspect. There are several small valleys called khols in these hill ranges. The important khols in Talaipathar R.F. is Babajimath khol. A little west in the same line and with the same strikes as Panchadhara hill there are long narrow hill ranges with general elevation below 450 Mt. comprising Baruni Block.

In the central portion of the Division towards north of Panchadhara Range there are many small hills interspersed with cultivated lands. Main hills near Angul Border are Dantarikhol R.F, Kadalimunda R.F, Dandarugudi R.F Bankimundi R.F and Kholadangiani R.F in the middle and Guja and Bindhyabasini Blocks near Rairakhol Border.

In the northern portion extending from Angul border to Rairakhol, extensive landmass of hills comprising of Northern Blocks in north, Handapa Block in southeastern portion are present. The elevations of these hills are low as compared to Panchadhara hill and these ranges attain an

elevation of 450-550 mt., the highest peak is 577 mts. Aunli nadi, a tributary of Brahmani 'is in the extreme northern part of the tract. The details of the different peaks are given in the **Table No. – 1.3**

Table-1.3 PEAKS PRESENT IN VARIOUS BLOCKS

Sl No.	Name of the R.F	Name of the peak	Height of the peak (mt.)	Remarks
1	**2**	**3**	**4**	**5**
1	Northern	Uash Parabat	560	
2	Talaipathar	Talaipathar matha	905	
		Hingmandal	896	
3	Handapa	Tankin Parbat	485	
4	Dantarikhol	Dhundi	688	
5	Kadalimunda		510	Local name Chandili pahad
6	Dandarugudi	Danda Parbat	382	
7	Bankimundi	Bankimundi Parbat	576	Local name Dangiani Parbat
8	Kholadangiani		510	
9	Bindhyabasini	Bindhyabasini parbat	487	
10	Guja		470	Local name Guja parbat
11	Bijamaliha		222	
12	East Baruni		354	Local name Baruni pahad
13	West Baruni	Chandia	459	

1.3 Geology, Rock & Soil:

There are 3 geological formations in the tract, they are:

(a) Archean
(b) Gondwana
(c) Alluvia

1.3.1 Archean Rocks:-

It is the most ancient formations represented in the form of Genisses and Schists belonging to the southern Indian complex, and they are present in south of Mahanadi. The conspicuous petrological types are:

(1) Khondalite
(2) Charnockite
(3) Porphyritic Granite Gneiss
(4) Hornblende-Schist
(5) Leptynites
(6) Dolerites and Gabbroes

1.3.1.1 Khondalite:-

These are the oldest rocks made up of metamorphosed sediments. These rocks are named after khonds in whose region they are commonly found. These rocks are rich in quartz, silimanite, feldspar, garnet and graphite. It has northwest to south-east strike. The presence of garnet indicates high-grade metamorphism. It is associated with Hornblende Gneiss, Hornblende Schist, crystalline limestone, Charnockite. The Khondalites are commonly found in Panchadhara Range comprising Talaipathar Blocks, also found in parts of Baruni, Nuagan, Mahendrapur Blocks.

1.3..1.2 Charnockite:-

This is the name given to a series of granitoid rocks occurring among the older Archaean Gneisses and Schist. They contain high percentage of rhombic pyroxene, hypersthenes or ristatite and dark ferro-magnesium compounds, which impart dark colour to the rocks. There are igneous plutonic rocks intruded into other Archean rock masses like khondalites. They form extensive out crops as in Dantarikhol, Kishoreban, Kutulsingha, Bindhyabasini, Dandarugudi, Kholadangiani Bankimundi and Kadalimunda Blocks.

1.3.1.3 Porphyritic Granite Gneiss:-

These forms the basal rocks underlying the flood plains of Mahanadi and mountain masses of gneisses and schists. These are exposed near Dahimal, Luhasinga and form out crops near north of Baruni Block and at places in the nallah section of Manojhar and Dhandatopa. They are very coarse in structure containing large crystals of soda lime and locally pegmatite veins. They contain garnet, hematite, quartz, feldspar and mica. The garnets are often large but opaque and brown.

1.3.1.4 Hornblende Schist:-

These are basically igneous rocks and found in association with Khondalites. They belong to same phase as the phondalites. They are found exposed in the north of Bamur especially in Kishoreban Block.

1.3..1.5 Leptynites:-

These are granulose gneisses with alternations of bands of different mineral compositions with a parallel band structure due to streaky elongated quartz grains. They have dull white colour and loose texture and are well exposed in Kusumkuhuri Block.

1.3.1.6 Dolerites and Gabbroes:-

These are basically igneous rocks. They are dark, heavy, minutely crystalline containing iron oxides and they are present in Talaipathar Block near Hingmandal and Rajing and in Mahendrapur Block near Mahendrapur.

1.3.2 Gondwana Rocks:-

The upper Gondwana belonging to the Precambrian group of rocks of Archaean age and the lower Gondwana belonging to Permian age are present in the area. The lower Division belonging to Talcher series consists of soft fine-grained yellow green sand stones and green needle shaped shales. The sandstones contain grains of undecomposed feldspar. They are exposed in Handapa and the eastern part of Northern Block. These constitute the basal bed of Gondwana rocks and

are generally overlaid by rocks of Mahadev series consisting coarse, gritty, often purple, mauve, buff and white sand stones. Quartzite pebbles are often locally abundant. This Mahadev series belongs to middle Gondwana rocks. These three rocks are seen in Northern Block.
The rocks of upper Gondwana are represented by conglomerates, variously coloured by ferruginous shales and gritty sandstones well represented in Northern hills. They yield a coarse sandy soil which would have been infertile but for high water retaining capacity of these rocks they helped to provide small irrigation systems in the south.

1.3.3 Alluvia:-

It is confined to a small area of flood plains of Mahanadi and lower valleys of large streams like Karandijhor, Manjhor which contain extensive deposits of alluvium. No such deposits occur in the plains of Chanagorhi nallah and Anuli nadi due to narrow gorge like valleys and swiftness of their current during the monsoon. There is no much forest on alluvial lands except portions of Ghosar, Nuagan and Mahendrapur Blocks. Different types of rocks present in various blocks are given below in **Table No. 1.4**

Table- 1.4 Different types of Rocks

Sl No.	Type of Rocks	Occurrence
I	**Archaean**	
1	Khondalite	Talaipathar, parts of Baruni, Nuagan and Mahendrapur
2	Charnockite	Dantarikhol,Kihoreban,Bindhyabasini, Kadalimunda
3	Porphyritic Granite	Baruni, Manjhor Dhandatopa nala
4	Horn blend-Schist	Kishoreban
5	Leptynites	Kusumkuhuri
II	**Gondwana Rocks**	Handapa, Northern
III	**Alluvium**	Plains of Mahanadi, Karandijhor, Manojhor

The stratiographic sequence of the Angul District is given below **Table No. 1.5**

Table - 1.5 Stratiographic sequence of Angul District

Period	Group	Sub-group	Formation	Range of thickness in (m)	Lithology
Recent			Alluvium laterite	Feb-37	Soil, sub-soil and laterite
Jurassic			Supra Barakar Kamthi	250 (approx)	Fine to medium grained sand stone, Carbonaceous shale,pink clays, pebbly sandstone at the top
Permian	Lower Gondwana	Damuda	Barkar	500 (approx)	Medium to coarse grained sandstone, shale, coal seams with conglomerate/boulder at the base and at times intraformational
			Karharbari	270	Medium to coarse-grained sandstone, often carbonaceous shale and coal seams

Carboniferous			Talchir	170	Diamictite fine to medium grained greenish sand stone khaki green needle shale, rhythmite and turbidities
			Younger intrusive		Granite, dolerite, pegmatite and vein quartz
Archean	Iron ore super group				Banded iron formation, volcanic tuff, quartzmica schist, basic lava and quartzite.
	Eastern ghat super group				Khondalite and Charnockite and their variant, leptynites, augengneiss, granulites etc.
	Older metamorphosis				Granite, gneiss, migmatites, tonalite gneiss

1.3.4 MINERAL RESOURCES

1.3.4.1 The important mineral present in the division is graphite. The occurrence of graphite was reported in early forties by Geological Survey of India (G.S.I). The Directorate of Mines has taken up a systematic investigation during 1978-79, and 1982-83 to 1986-87. The incidence of graphite was first recorded in Panchadhara hill ranges. It occurs in the form of flakes. Nevertheless, the estimation of exact extent of graphite reserves in Athamallik Division could not be made.

1.3.4.2 Apart from graphite, Manganese ore, Iron ores are also present in the division. Traces of gold are available in Aunli Nadi, Khula and Ghosar jhor. They are collected by local people

called Jharias, who have made this as a profession since long time. The availability of different minerals is provided in **Table No: 1.6**

Table: 1.6 MINERAL RESOURCES OF ATHAMALLIK DIVISION				
Sl.No.	Name of the Place	Year of Survey	Type of minerals	Expected %
1	Kamalpur	1978-79 & 1986-87	Graphite	30.42 to 44.40
2	Dhandatopa		Graphite	N.A
3	Bhuasuninali		Do	N.A
4	Adeswar		Do	63.9
5	Girida	1978-79 & 1986-87	Do	7.46
6	Akharkata		Do	N.A
7	Tilkeswar		Do	8.31 to 17.7
8	Sanrohilla		Do	N.A
9	Lanchi		Do	N.A
10	Govindapur		Do	9.82
11	Polamahul		Do	N.A
12	Dhandatopa	----	Manganese	N.A
13	Northern Block	----	Iron ore	-----
14	Aunlinadi	----	Traces of gold	Small quantity
15	Khula (nala)	----	Do	Do
16	Ghosarjhor	----	Do	Do
17	Bhausuninali , Thakurgarh		Lime kankar	

Subsequently, investigation on mineral occurrences of Athmallik Sub-Division was carried out by the department of Geology, Zonal Survey unit, Dhenkanal durixng the year 1993-94,1996-97 and 1999-2000. The information on mineral occurrences is furnished in **Table No. 1.7** as below.

TABLE No. 1.7 Mineral Occurrences in Athmallik Sub-Division		
Year	Type of Minerals	Localities
1993-94	Beryl	Bankul village
	Quartz(Milky white to pink)	Patrapara village
	Pink Granite	North of Nuamanitri village
1996-97	Fire clay	Hingrida village near kakarpani & Ichhapur village.
	Graphite	Ambsarmunda
		Akharkata
		Govindpur
		Bantol
		Adeswar
		Girida
		Bhuasuninali
1999-2000	Semiprecious stone	NW & SE of Salegoth
	(Aquamarine, Beryl,Gosshenite)	

1.3.5 Soil:

Different types of soils present in the Division can be broadly categorized into following types:

1. Sandy soils
2. Sandy Loam soils
3. Loamy sandy soils
4. Calcareous soils

1.3.5.1 Sandy soils:-

These soils are derived from quartzite. The Gondwana rocks, predominant in the Northern Block, yield sandy soils. They have very less water holding capacity and are also poor in nutrients. The soils are acidic in nature and they are coarse with stone pebbles and boulders in some areas like Compt. No.1,32,41 and 42 of Northern R.F. The sandy soils are also present in Ghosar, Dandarugudi Kholadangiani, etc.

1.3.5.2 Sandy loam soils:-

The lower Gondwana sand stones and shales, when exposed produce sandy loam soils. In these soils the percentage of sand is higher than the normal loamy soils. They have adequate water holding capacity. These soils are found in most of the compartments of Northern R.F, Mahendrapur East and West Baruni, Dantarikhol, Bindhyabasini Blocks, etc. The soil contains boulders in Kadalimunda, pebbles in Northern R.F. It is mixed with gravels and morrum in Dantrikhol.

1.3.5.3 Loamy sandy soils:-

These soils contain more proportion of clay, generally 40-45 percent sand, 35-40 percent silt, 10 percent clay, and 5 percent organic matter. There soils are predominantly present in Talaipathar, Handapa, Kusumkuhuri, Kutulsinga and Nuagan Blocks. They are derived from Khondalites. The soil is acidic in nature and supports good crop of sal and miscellaneous species. The soil on the hill slopes especially of Talaipathar and Guja is generally shallow and rocky. On the plain ground, gentle slopes and valleys the soil is well developed, deep and fertile. In few other compartments the clay portion is more like in Guja Blocks.

1.3.5.4 Calcareous Soil:-

These soils are derived from Charnockite, Hornblend Schists being rich in lime feldspar. The soils are sandy with 10 percent lime or Calcium Carbonate and rest is sand and silt in equal proportion. These soils support mixed forest and Bamboo in Talaipathar, Dantarikhol and Baruni Blocks.

1.3.5.5 Soil Analysis: - The Northern RF has gentle slope, contains mostly sandy loam and sandy soils with pebbles. The forest is rich in springs favouring good Sal growth. There are steep slopes Talaipathar, in these areas soil is shallow and rocky.

The details of soil testing results in different blocks as per last working plan are given in **Table No: 1.8.**

Table: 1.8 DISTRIBUTION AND ANALYSIS OF SOIL

Sl No.	R.F. Block/ Comp. No.	P. H.	T.S.S.	Organic carbon %	P (Kg/ha)	K (Kg/ha.)
Athamallik Range						
1	Hatidhara-39	5.22	0.6	1.404	3.33	13.98
2	Hatidhara-40	5.86	0.12	1.56	10	46.6
3	Hatidhara-42	6.21	0.18	1.56	3.33	23.3
4	Hatidhara-43	5.71	0.02	1.404	3.33	55.92
5	Hatidhara-44	6.02	0.18	1.56	3.33	46.6
6	Hatidhara-45	6.09	0.16	1.56	36.67	13.98
7	Hatidhara-48	5.51	0.01	1.56	3.33	32.62
8	Hatidhara-49	5.95	0.04	0.312	3.33	83.88
9	Kusumkuhuri	6.25	0.19	1.092	10	13.98
10	Talaipathar-16	5.99	0.18	1.56	10	46.6
11	Hatidhara-17	6.13	0.17	1.326	3.33	23.3
12	Hatidhara-18	5.94	0.25	1.56	3.33	65.24
13	Hatidhara-19	6.09	0.19	1.56	3.33	37.28
14	Hatidhara-20	6.21	0.21	0.624	3.33	37.28

15	Hatidhara-21	6.3	0.24	1.56	3.33	37.28
16	Mahendrapur	6.27	0.18	1.56	3.33	13.98
Dhandatopa Range						
17	Hatidhara-1	6.02	0.01	0.78	6.67	60.78
18	Hatidhara-2	5.83	0.17	1.56	3.33	158.4
19	Hatidhara-3	5.52	0.2	0.936	10	93.2
20	Hatidhara-4	6.11	0.06	1.56	20	23.3
21	Hatidhara-5	5.92	0.11	0.78	3.33	83.88
22	Hatidhara-6	5.47	0.04	1.404	10	37.26
23	Hatidhara-7	5.84	0.11	1.404	6.67	102.52
24	Hatidhara-8	4.96	0.02	0.78	6.67	83.88
25	Hatidhara-9	5.86	0.03	1.56	10	97.86
26	Hatidhara-10	5.48	0.01	0.78	10	69.9
27	Hatidhara-11	6.24	0.17	1.56	3.33	41.94
28	Hatidhara-12	5.34	0.08	1.56	3.33	65.24
29	Hatidhara-14	5.64	0.16	0.78	3.33	55.92
30	Hatidhara-41	6.33	0.18	1.56	3.33	37.28
31	Hatidhara-46	5.96	0.11	0.624	6.67	158.4
32	Hatidhara-47	5.68	0.11	1.56	3.33	91.94
33	Hatidhara-50	5.75	0.03	1.56	3.33	55.92
34	Talaipathar-1	5.93	0.1	1.17	10	18.64
35	Talaipathar-2	5.84	0.11	1.56	3.33	74.56
36	Talaipathar-3	6.1	0.2	1.56	3.33	13.98
37	Talaipathar-4	5.91	0.13	1.56	3.33	69.9
38	Talaipathar-15	5.56	0.22	1.326	3.33	74.56
39	Talaipathar-22	6.3	0.16	1.56	3.33	37.28
40	Talaipathar-23	6.03	0.16	1.56	3.33	27.96
41	Talaipathar-24	6.24	0.17	1.56	6.67	23.2
42	Kutulsingha	5.2	0.13	0.78	3.33	73.98
43	Dantarikhol (P)	6.37	0.19	1.326	10	46.6
Madhapur Range						
44	Talaipathar-5	5.82	0.18	0.936	3.33	37.28
45	Talaipathar-6	5.77	0.15	1.56	13.33	37.28
46	Talaipathar-7	5.01	0.14	1.56	13.33	18.64
47	Talaipathar-8	5.51	0.08	1.56	10.67	93.2
48	Talaipathar-9	5.74	0.01	1.56	10	55.92
49	Talaipathar-10	5.28	0.22	1.56	3.33	46.6
50	Talaipathar-11	6.4	0.19	1.56	3.33	32.62
51	Talaipathar-12	6.38	0.19	1.56	3.33	32.62
52	Talaipathar-13	6.18	0.19	1.56	3.33	18.64
53	Talaipathar-14	4.91	0.23	1.56	3.33	46.6
54	East Baruni	6.18	0.1	1.56	3.33	18.64
55	West Baruni	5.7	0.18	0.78	3.33	18.64
56	Nuagan	6.54	0.18	0.468	3.33	55.92
Handapa Range						
57	Northern-15	5.78	0.03	0.936	10	93.2
58	Northern-19	6.38	0.2	0.78	3.33	60.78
59	Northern-21	5.68	0.22	1.092	3.33	97.86

60	Northern-22	5.62	0.54	1.56	6.67	79.22
61	Northern-23	7.12	0.15	1.56	3.33	74.56
62	Northern-24	6.16	0.2	1.56	6.67	27.96
63	Northern-25	5.88	0.16	1.17	3.33	93.2
64	Northern-26	5.44	0.07	0.78	3.33	74.56
65	Northern-27	5.33	0.15	1.17	6.67	46.6
66	Northern-28	5.54	0.07	0.78	23.33	27.96
67	Northern-29	5.97	0.37	1.404	3.33	13.98
68	Northern-30	5.93	0.17	0.936	3.33	18.64
69	Dandarugudi	5.41	90.15	1.67	3.33	51.26
70	Kholdangiani	5.7	0.16	1.56	10	65.24
71	Kadalimunda	5.28	0.15	1.56	3.33	91.94
72	(Bal)	6.37	0.19	1.326	10	46.6
Bamur Range						
73	Northern-1	5.82	0.03	1.56	3.33	93.2
74	Northern-2	5.9	0.15	1.56	3.33	37.28
75	Northern-3	6.05	0.26	0.936	3.33	23.3
76	Northern-4	5.86	0.19	0.78	3.33	46.6
77	Northern-5	5.91	0.19	1.404	3.33	27.96
78	Northern-6	6.48	0.15	1.56	16.67	37.28
79	Northern-7	5.91	0.2	1.404	3.33	23.3
80	Northern-8	5.51	0.15	1.17	3.33	13.98
81	Northern-9	6.02	0.2	1.56	6.67	46.6
82	Northern-10	6.3	0.21	1.56	3.33	41.94
83	Northern-11	5.36	0.18	1.56	3.33	27.96
84	Northern-12	5.83	0.01	1.326	10	46.6
85	Northern-13	5.6	0.04	1.56	3.33	46.6
86	Northern-14	5.96	0.24	0.312	3.33	18.64
87	Northern-15	5.78	0.03	0.936	10	93.2
88	Northern-16	5.57	0.23	1.56	3.33	27.96
89	Northern-17	5.78	0.16	1.56	10	195.75
90	Northern-18	6.42	0.09	1.56	10	55.92
91	Northern-20	5.42	0.03	1.092	3.33	116.5
Handapa Range						
92	Northern-31	5.75	0.15	1.56	3.33	18.64
93	Northern-32	6.13	0.16	1.092	3.33	23.3
94	Northern-33	6.45	0.16	1.248	3.33	41.94
95	Northern-34	5.4	0.17	0.78	3.33	37.28
96	Northern-35	5.74	0.1	0.78	6.67	69.9
97	Northern-36	5.33	0.17	0.624	13.33	37.28
98	Northern-37	5.6	0.1	1.56	6.67	27.96
99	Northern-38	5.86	0.21	1.56	10	13.98
100	Northern-39	6.2	0.17	0.546	3.33	65.24
101	Northern-40	5.52	0.12	1.56	16.67	37.28
102	Northern-41	5.93	0.21	0.546	6.67	27.96
103	Northern-42	6.04	0.17	1.326	6.67	46.6
104	Northern-43	5.5	0.18	0.78	13.33	37.28
105	Northern-44	6.23	0.12	0.312	3.33	37.28

106	Northern-45	5.81	0.17	1.56	6.67	27.96
107	Northern-46	5.7	0.21	0.468	10	41.94
108	Northern-47	5.95	0.17	0.624	3.33	32.62
109	Handapa-1	6.51	0.19	0.78	6.67	27.96
110	Handapa-2	6.65	0.18	0.39	3.33	18.64
111	Handapa-3	6.28	0.19	0.78	3.33	102.52
112	Handapa-4	5.81	0.1	0.39	16.67	93.2
113	Handapa-5	5.87	0.14	624	3.33	51.26
114	Handapa-6	5.26	0.17	0.39	3.33	65.24
115	Handapa-7	5.51	0.17	0.624	3.33	23.3
Bamur Range						
116	Bindhyabasini	5.63	0.2	1.56	3.33	88.54
117	Kishoreban	6.24	0.21	1.404	13.33	27.96
118	Bankimundi	5.85	0.18	1.56	3.33	46.6
119	Ghosar	5.95	0.01	0.39	3.33	27.96
120	Bijamalhia	5.94	0.09	0.858	6.67	46.6
121	Guja	5.81	0.2	1.56	3.33	88.54
Source: Soil testing Results						

During the preparation of current working plan; soil samples were collected both from surface as well as from the pits of size 30cm x 30cm x 30cm from each of the sample points and tested to ascertain the status of pH,EC,OC,P & K. The soil testing results are furnished in **Table No. 1.9** as below.

1.9 DISTRIBUTION AND ANALYSIS OF SOIL													
Sl.No.	Compt.No.	UID No.	Surface Soil					Pit Soil					
			PH	EC	OC	P	k	PH	EC	OC	P	k	
Name of the Block -Kusumkuhuri													
1	2	639	6.58	0.08	1.48	60	346	6.02	0.1	1.39	36	362	
2		640	5.91	0.16	1.28	20	424	6.62	0.06	1.25	34	338	
Name of the Block -Mahendrapur													
1	1	479	6.04	0.05	0.34	6	135	5.74	0.03	0.89	6	199	
2		481	5.76	0.09	1.23	4	177	5.78	0.09	1.02	10	142	
3	2	483	6.46	0.04	1.36	4	425	6.64	0.05	1.48	4	358	
Name of the Block -Kutulsinga													
1	1	511	5.41	0.22	1.22	12	145	5.42	0.03	1.11	12	112	
2	2	12	5.54	0.05	0.72	6	151	6.04	0.1	1.08	16	172	
3	3	24	6.25	0.18	1.2	8	320	6.06	0.14	1.42	12	342	
4		451	6.21	0.13	1.07	4	236	6.26	0.07	1.06	12	448	
5		468	6.04	0.05	0.34	6	135	5.74	0.03	0.89	6	199	
6	4	27	6.25	0.18	1.2	8	320	6.06	0.14	1.42	12	342	
7		28	6.04	0.06	1.17	6	373	4.7	0.08	1.08	8	107	
8		452	6.05	0.04	1.07	2	429	5.78	0.06	1.12	4	365	
9		454	6.34	0.1	1.02	30	356	5.78	0.09	1.08	18	325	
10	6	438	6.32	0.15	1.24	6	456	6.56	0.08	1.36	6	188	
11		439	6.01	0.06	0.72	6	165	5.88	0.02	1.36	2	134	
12	7	38	5.57	0.02	0.64	6	182	5.08	0.03	0.69	4	54	
Name of the Block -Dantarikhola													
1	1	348											
2	2	344	6.46	0.04	1.36	4	425	6.64	0.05	1.48	4	358	
3		345	6.53	0.1	1.27	30	245	6.61	0.08	1.21	32	260	
4		346	6.65	0.04	1.25	8	796	6.27	0.56	1.28	2	668	
5		343	5.73	0.1	1.33	32	249	5.8	0.07	1.39	28	131	
6	3	333	6.09	0.09	1.35	28	251	6.56	0.08	1.39	32	132	
7		334	5.92	0.08	1.25	36	253	5.78	0.08	1.28	30	138	
8	4	23	5.31	0.05	1.13	4	55	5.9	0.08	0.97	8	140	
9	6	329	5.76	0.09	1.23	4	177	5.78	0.09	1.02	10	142	
10		330	6.65	0.04	1.25	8	796	6.27	0.56	1.28	2	668	
11	7	323	5.5	0.08	1.36	2	127	6.32	0.07	1.42	32	144	
12		324	6.63	0.1	1.42	44	336	6.07	0.09	1.39	24	120	
13		325	6.42	0.1	1.42	38	219	6.18	0.09	1.46	26	139	
14		329	6.46	0.04	1.36	4	425	6.64	0.05	1.48	4	358	

Name of the Block -East Baruni												
1	1	347	6.1	0.19	1.45	20	484	5.76	0.11	0.97	6	186
2		348	5.88	0.09	1.31	24	261	5.83	0.06	0.59	28	139
3		349	6.3	0.18	1.24	10	276	5.72	0.15	1.46	6	294
4		351	6.26	0.13	1.38	14	316	6.21	0.07	1.41	6	135
5	2	2	5.76	0.09	1.23	4	177	5.78	0.09	1.02	10	142
6		40	6.56	0.26	1.37	8	423	6.38	0.07	1.39	4	318
7		352	6.39	0.12	1.36	20	359	6.24	0.09	1.25	4	273
8	3	335	5.9	0.12	1.39	4	378	5.95	0.18	1.28	12	178
9		336	6.92	0.21	1.39	24	490	6.78	0.1	1.47	12	302
10		337	6.09	0.18	1.38	36	544	6.83	0.13	1.31	42	340
11		339	6.24	0.08	1.29	2	426	5.75	0.05	1.07	2	240
12	4	29	6.26	0.12	1.27	8	625	5.98	0.06	1.18	4	298
13		332	6.2	0.09	1.39	4	358	6.2	0.03	1.29	2	236
14	5	322	6.21	0.16	1.29	10	435	6.15	0.08	1.33	4	268
15	6	21	5.86	0.09	1.08	4	221	6.08	0.07	1.17	36	258
16		326	7.52	0.23	0.69	10	464	6.24	0.06	1.36	6	120
17	7	316	5.97	0.21	1.36	2	493	6.23	0.08	1.47	2	462
18		317	6.18	0.23	1.48	16	801	6.1	0.05	1.16	4	605
Name of the Block -West Baruni												
1	1	311	6.23	0.19	1.45	14	378	5.95	0.1	1.17	6	184
2		313	5.76	0.09	1.23	4	177	5.78	0.09	1.02	10	142
3	2	312	6.56	0.14	1.46	20	636	6.18	0.05	1.45	4	605
4		314	6.62	0.09	1.44	14	446	6.4	0.08	1.29	6	426
5	3	319	6.15	0.05	1.31	4	392	6.4	0.17	1.42	10	484
6		320	6.28	0.14	1.33	10	321	6.35	0.05	1.38	6	371
Name of the Block -Handapa												
1	1	276	7.21	0.08	0.94	30	503	6.24	0.02	1.21	8	232
2		277	6.58	0.36	1.18	8	740	5.78	0.05	1.07	6	216
3		278	6.42	0.1	1.42	38	219	6.18	0.09	1.46	26	139
4		279	5.67	0.14	1.37	12	225	5.06	0.07	0.88	4	160
5	3	30	6.46	0.04	1.36	4	425	6.64	0.05	1.48	4	358
6		35	6.51	0.18	1.34	10	233	5.76	0.07	1.38	4	150
7		36	7.31	0.1	1.38	18	514	5.66	0.09	1.27	4	169
8		278	6.42	0.1	1.42	38	219	6.18	0.09	1.46	26	139
9	4	273	6.46	0.04	1.36	4	425	6.64	0.05	1.48	4	358
10		284	7.38	0.15	1.08	22	431	5.26	0.03	0.74	8	112
11		285	7.11	0.52	1.42	0.22	84	4.94	0.08	0.98	4	108
12		288	6.25	0.24	1.27	0.42	387	4.88	0.07	0.53	12	89

13	5	292	6.89	0.07	1.19	28	332	5.14	0.03	0.68	8	116
14		293	6.42	0.1	1.42	38	219	6.18	0.09	1.46	26	139
15		294	5.76	0.09	1.23	4	177	5.78	0.09	1.02	10	142
16	6	296	5.62	0.13	0.81	4	89	4.62	0.07	0.94	4	86
17		297	5.22	0.19	1.17	8	186	5.48	0.42	1.19	28	202
18		298	5.13	0.15	0.69	4	59	5.64	0.08	0.58	8	46
19	7	288	5.76	0.09	1.23	4	177	5.78	0.09	1.02	10	142
20		279	5.76	0.09	1.23	4	177	5.78	0.09	1.02	10	142
21		290	6.1	0.17	0.96	20	192	5.91	0.07	1.38	10	116
22		291	5.85	0.2	1.29	30	197	5.23	0.08	0.74	8	95
Name of the Block-Khadadangjani												
1	1	299	6.04	0.12	1.29	14	348	6.42	0.15	1.36	46	289
Name of the Block-Kadalimunda												
1	1	11	6.42	0.1	1.42	38	219	6.18	0.09	1.46	26	139
2		306	5.32	0.06	1.16	2	135	6.07	0.13	1.34	14	421
Name of the Block-Bankimundi												
1	1	327	6.42	0.1	1.42	38	219	6.18	0.09	1.46	26	139
2	2	19	6.46	0.04	1.36	4	425	6.64	0.05	1.48	4	358
3	3	342	6.09	0.08	1.38	40	138	5.96	0.13	1.14	26	442
Name of the Block-Bindhyabasini												
1	1	39	6.16	0.06	1.42	10	364	6.29	0.05	1.36	10	274
2		227	5.85	0.2	1.29	30	197	5.23	0.08	0.74	8	95
3		228	6.51	0.07	1.34	42	245	5.67	0.03	1.18	22	139
4		229	6.46	0.04	1.36	4	425	6.64	0.05	1.48	4	358
5		230	6.65	0.04	1.25	8	796	6.27	0.56	1.28	2	668
Name of the Block-Ghosar												
1	1	301	5.85	0.2	1.29	30	197	5.23	0.08	0.74	8	95
2	2	7	6.42	0.1	1.42	38	219	6.18	0.09	1.46	26	139
3	3	3	6.46	0.04	1.36	4	425	6.64	0.05	1.48	4	358
4		300	6.16	0.06	1.42	10	364	6.29	0.05	1.36	10	274
Name of the Block-Guja												
1	1	10	5.93	0.08	0.87	4	246	5.78	0.09	0.99	8	306
2		302	5.87	0.15	1.34	6	301	5.59	0.09	1.29	4	165
3		303	6.43	0.2	1.37	14	418	5.74	0.08	1.47	2	462
4		305	5.47	0.06	1.22	6	114	6.15	0.09	1.17	6	292

Name of the Block -Bijamaliha												
1	1	308	6.16	0.06	1.42	10	364	6.29	0.05	1.36	10	274
2		309	6.46	0.04	1.36	4	425	6.64	0.05	1.48	4	358
3		310	5.22	0.03	0.71	4	270	6.04	0.12	1.18	6	321
Name of the Block -Nuangan												
1	1	32	6.04	0.1	1.16	4	268	5.71	0.05	1.08	2	343
2		392	6.17	0.1	1.14	6	288	5.98	0.07	0.39	2	223
3		393	5.94	0.06	1.22	4	191	5.18	0.03	0.73	2	135
4		394	5.4	0.06	0.87	4	144	5.42	0.09	0.98	6	267
5		395	5.39	0.16	1.41	8	305	5.56	0.07	0.97	6	328
6	2	402	5.57	0.14	1.36	20	225	4.96	0.05	0.73	2	180
7		403	5.8	0.07	1.26	10	215	6.27	0.11	1.37	12	399
8		404	6.16	0.06	1.42	10	364	6.29	0.05	1.36	10	274
9	3	378	6.46	0.04	1.36	4	425	6.64	0.05	1.48	4	358
10		388	6.08	0.04	1.09	2	291	6.1	0.05	1.08	4	291
11		389	5.39	0.16	1.41	8	305	5.56	0.07	0.97	6	328
12	4	366	6.16	0.06	1.42	10	364	6.29	0.05	1.36	10	274
13		370	5.66	0.1	0.74	2	206	5.74	0.5	0.58	2	216
14		371	5.39	0.16	1.41	8	305	5.56	0.07	0.97	6	328
15		372	6.02	0.09	1.29	4	236	5.77	0.09	0.79	2	230

The interpretation of soil analysis is furnished in **Table No. 1.10** as below.

Table 1.10	INTERPRETATION OF SOIL ANALYSIS RESULTS		
Soil parameter	Test Value	Class	Remarks
pH	< 6.5	Acidic	
	6.5 - 7.5	Neutral	
	> 7.5	Alkaline	
Electrical Conducti	< 1mmhos/ cm		Normal
	1 -2 mmhos/ cm		Critical for germination
	2 - 3 mmhos/cm		Critical for growth of salt sensitive crops
	3 - 4 mmhos/ cm		Critical to most crops
Organic Carbon %	< 0.25%	Very low	
	< 0.5%	Low	
	0.51 % to 0.75	Medium	
	> 0.75 %	High	
Available Phosphor	< 6 kg/ ha	Very low	
	6-14 kg/ ha	Low	
	14-40kg/ha	Medium	
	> 40 kg/ ha	High	
Available Potash	< 118 kg/ ha	Low	
	118 - 200 kg/ h	LowMedium Range	
	200-280 kg/ ha	HighMedium Range	
	>280 kg/ha	High	

Basing on the above interpretation of soil analysis results; the overall nutrient status of surface soil & underground soil in various Forest Blocks are furnished in **Table No. 1.11 & 1.12** as follows.

Table No. 1.11 : Overall nutrient status of SurfaceSoil in different forest blocks					
Forest Block	pH	E.C	Organic carbon(%)	Phosphorus	Potash
Northern	Acidic	Normal	High	Verylow	Low medium Range
Taleipathar	Acidic	Normal	High	Verylow	Low medium Range
Kusumkhuri	Acidic	Normal	High	High	High
Mahendrapur	Acidic	Normal	High	VeryLow	Low medium range
Kutulsingha	Acidic	Normal	High	Low	Low medium range
Dantarikhol	Acidic	Normal	High	Low	High
East Baruni	Acidic	Normal	High	Low	High
West Baruni	Acidic	Normal	High	Low	High
Handapa	Acidic-Neutral	Normal	High	Medium	High medium range.
Kholadangiani	Acidic	Normal	High	Low	High.
Kadalimunda	Acidic	Normal	High	Medium.	Low medium range.
Bankimundi	Acidic	Normal	High	Medium.	High medium range.
Bidhyabasini	Acidic	Normal	High	Medium.	High
Ghosar	Acidic	Normal	High	Medium.	High
Guja	Acidic	Normal	High	Very low to low.	High
Bijamaliha	Acidic	Normal	High	Very low to low.	High
Nuagaon	Acidic	Normal	High	Very low to low.	High

Table No. 1.12 : Overall nutrient status of UndergroundSoil in different Forest blocks					
Forest Block	pH	E.C	Organic carbon(%)	Phosphorus	Potash
Northern	Acidic	Normal	High	Low	Low medium Range
Taleipathar	Acidic	Normal	High	Low	High
Kusumkhuri	Acidic	Normal	High	Medium	High
Mahendrapur	Acidic	Normal	High	Low	Low medium range
Kutulsingha	Acidic	Normal	High	Low	Low medium range
Dantarikhol	Acidic	Normal	High	Low	Low medium range
East Baruni	Acidic	Normal	High	Low	Low medium range
West Baruni	Acidic	Normal	High	Low	Low medium Range
Handapa	Acidic-Neutral	Normal	High	Low	Low medium range.
Kholadangiani	Acidic	Normal	High	Medium	Highmedium range.
Kadalimunda	Acidic	Normal	High	Medium.	Low medium range.
Bankimundi	Acidic	Normal	High	Medium.	High medium range.
Bidhyabasini	Acidic	Normal	High	Low.	High medium range.
Ghosar	Acidic	Normal	High	Very low.	Highmedium Range.
Guja	Acidic	Normal	High	Very low to low.	High
Bijamaliha	Acidic	Normal	High	Low.	High
Nuagaon	Acidic	Normal	High	Very low to low.	High

On comparison with the previous soil status report; it is observed that while in case of pH, E.C & Organic carbon, the position remains more or less the same; that in case of Potash & Phosphorus there is remarkable improvement.

1.4 Climatic parameters :

Climate:- There are four seasons distinctly seen in this Division.

1.4.1 Hot and Dry summer:-

It extends from early February to middle or end of June. The temperature shoots up to 46^0C in May. The humidity is very low in April and May. On an average, rainfall received in March and April is less than 50 mm. Light showers occur in the season.

1.4.2 Hot and Humid Wet Season:-

Monsoon breaks in the first fortnight of June and lasts up till September (Occasional showers occur in October and November) Maximum rainfall is received in July & August, on an average 300-400 mm. rain is received in these months. The relative humidity is also high in this season, average relative humidity being 80% in July, 82% in August, and the sky is heavily clouded. The average maximum temperature in July is 34.5^0 C and in August is 33^0 C and thus the season is hot and wet.

1.4.3 Post Monsoon Season:-

In this season there are occasional showers. The humidity is high, average is 82% in October and in November it is 79%. There is moderate cloud in this season and the temperature starts falling down.

1.4.4 Winter season:-

This extends from December to last part of January or first fortnight of February. It is not severe in plains but in forest areas like Pathargarh, Balajimath the winter is severe. The coldest month is January in which the temperature dips down to 4^0-5^0 C in areas like Takaba. There is no temperature recording station in Athmallik Sub-Division, the nearest recording station is located in Angul. Hence it is difficult to know the exact temperature in different localities of the Sub-Division. The humidly also reduces in December and January. There are almost no rains in December, January and February.

1.4.5 Rainfall:-

The distribution of rainfall is largely influenced by the ghat terrain of the Division. The Division receives pre monsoon showers in late June. By July, the monsoon almost gets established. Months of July, August & September are the peak rainy months with maximum rainfall during this period. In fact, about 70% of the annual rainfall is received in these three months only. It is quite common to receive a few showers in October which gradually becomes less in the month of November. Thus, monsoon being quite prolonged is highly conducive for any type of plantation activity. However, gradually, the rainfall has become erratic as can be seen from the rainfall data for last decade. The rainfall data recorded from 1984 to 2003 and from 2006 to 2015 is given in the **Table No.1.13. and Table No. 1.14 respectively.**

TABLE: 1.13													
MONTHLY RAINFALL (mm) IN ATHAVALLI KBLOCK													
Year	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct.	Nov.	Dec.	Total
1984	3	45	8		23	218	294	426	177	112	70	–	1376
1985	–	27	18	72	91	274	505	214	163	54	16	–	1434
1986	–	–	34	37	58	313	650	545	216	135	32	–	2020
1987	–	–	–	76	112	416	522	264	172	96	47	4	1709
1988	–	–	18	34	96	582	568	254	154	39	–	–	1745
1989	–	–	42	54	102	382	294	426	109	58	70	–	1537
1990	–	18		74	81	418	495	602	213	112	94	10	2117
1991	–	–	45	88	92	294	359	473	177	113	42	–	1683
1992	–	–	29	62	48	283	324	306	240	69	42	–	1403
1993	–	6	23	106	93	316	652	426	217	135	44	–	2018
1994	–	–	41	95	102	298	318	298	209	88	27	–	1471
1995	–	–	–	28	408	512	374	266	199	87	120	10	2004
1996	–	–	22	–	56	378	384	306	148	103	71	–	1468
1997	–	–	29	74	126	396	402	377	206	92	49	4	1755

1998	–	34	119.6	28	21	132	230	144	294.6	47.4	40.9	–	1091.5
1999	–	–	--	–	88.8	262	237.6	288.6	275	127.7	1.5	–	1281.2
2000	–	14.2	--	1	77.6	106.8	216	305.4	188.6	63.6		–	973.2
2001	–	–	66	25.2	56.4	418.9	1248	216.6	60.8	17.2	3	–	2112.1
2002	10.4	–	15	69.2	104.8	171.2	270	398.4	229.6	–	–	–	1268.6
2003	–	–	22.6	8.4	4.1	79.5	511.4	514.1	339	185	23	–	1687.1
Avg													1608

MONTHELY RAINFALL OF KISHORENAGAR BLOCK

Year	Jan	Feb	Mar	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1984	18	32	13	6	26	202	274	398	191	112	58	–	1330
1985	--	20	24	62	88	256	498	187	154	56	8	–	1353
1986	--	–	32	39	63	318	642	506	198	132	16	–	1946
1987	--	–	5	86	106	408	496	278	170	98	43	–	1690
1988	--	–	12	37	102	588	560	237	141	32		–	1709
1989	--	–	46	42	91	378	272	408	103	44	68	–	1452
1990	--	–	2	58	90	406	483	600	222	96	101	–	2058
1991	--	–	32	79	95	288	356	442	163	98	34	–	1587
1992	--	–	27	68	41	278	302	296	229	66	52	–	1359
1993	--	–	20	104	86	305	646	402	248	130	46	–	1987
1994	--	–	36	92	106	289	306	278	202	79	16	–	1404
1995	--	–	46	32	404	228	212	259	188	84	106	–	1559
1996	--	–		2	53	346	298	292	146	98	73	–	1308
1997	--	–	18	66	92	282	259	373	208	86	42	–	1426
1998	--	12	51	14.5	14	106.8	373.8	183.2	401.7	97	12.4	–	1266.4
1999	--	–	--	–	177.8	191.6	268.4	375.4	280.4	96	–	–	1389.6
2000	--	50.4	--	–	77.5	137	207.2	307.4	138.2	8.2	–	–	925.9
2001	--	–	29.2	22.2	47.2	501	1154.4	416.5	97	357	–	–	2624.5
2002	13.8	–	--	4	89.8	163	37	459.8	267.5	1.6	–	–	1036.5
2003	--	44.6	--	31	23.2	289.4	531.8	495.4	467.8	101	–	28.6	2012.8
Avg													1571

Table: 1.14 MONTHLY RAINFALL DATA OF ATHAMALLIK BLOCK(mm)													
Year	Jan	Feb	Mar	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
2006	0	0	7.1	10	99	144	425.3	907	255	23.6	0	0	1871
2007	0	16	0	10	22.8	512.3	167.4	128	378.4	17.2	0	0	1252.1
2008	93	0	5.2	68.2	5	412.5	231	273	294.6	34	0	0	1418.3
2009	0	0	0	0	19.4	24.8	746	502.6	121.4	59.8	26.6	0	1500.6
2010	5.2	0	0	0	63.2	129.4	225	192	207.6	84.2	6.4	32.6	945.6
2011	0	39.4	14.6	42.2	140.2	211	173.2	247	345.2	7.4	0	0	1220.2
2012	105.2	0	0	0	0	215.8	397	357	226.6	77	29.2	0	1302.6
2013	0	20	24.8	32.2	0	288.6	265	161	174.4	446.2	0	0	1412.2
2014	0	28.6	36	2	69.8	56.8	657.4	641.6	291.8	79	0	0	1863
2015	3.4	0	4	46	38.6	156	337	216	126.8	11	1.8	29.8	970.4
Avg	20.7	10.4	9.2	21.1	45.8	215.1	362.4	362.5	242.2	83.9	6.4	6.2	1376
Source: Director, Materology, Bhubaneswar													

Table: 1.15 MONTHLY RAINFALL DATA OF KISHORENAGAR BLOCK(mm)													
Year	Jan	Feb	Mar	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
2006	0	0	24	13.6	114.6	134.4	427.6	881.4	151.2	28	4	0	1778.8
2007	0	20.8	0	25.4	68.4	308.6	440.6	220.2	448.6	18.2	12.2	0	1563
2008	25.6	11.4	10.6	7	0.6	358.4	332.8	239.2	406.6	10.2	1.2	0	1403.6
2009	0	0	0	0	4.8	23.8	753.2	318.8	109.2	120.6	18.2	0	1348.6
2010	1.8	0	19.4	0	129.8	81	153.8	227.4	351.2	41.6	1.8	30.8	1038.6
2011	0	0	4.2	16.8	142.8	281.6	195.4	199.8	504.2	21.2	0	0	1366
2012	80.4	0	0	23.4	4.2	216.4	338.4	550.2	173.2	135.6	30	0	1551.8
2013	0	3.8	19	14	7.6	206.6	258.6	111	206.8	229.6	0	0	1057
2014	0	11.6	0	3.8	65	69.4	545.2	557.4	204.6	97.4	0	0	1554.4
2015	0	0	0	57	24.4	288.1	216.4	215.6	94.4	0	0	12	907.9
Avg	10.8	4.8	7.7	16.1	56.2	196.8	366.2	352.1	265	70.2	6.7	4.3	1357

On analysis of the annual rainfall pattern of Athmallik Block for the period from 1984 to 2003 to that of 2006 to 2015 it is observed that the total average rainfall has decreased from 1608 mm to 1376 mm. Similarly, On analysis of the annual rainfall pattern of Kishorenagar Block for the period from 1984 to 2003 to that of 2006 to 2015; it is observed that the total average rainfall has decreased from 1389.6 mm to 1357 mm. However, the percentage of decrease is comparatively much less in Kishorenagar Block than that of Athmallik Block.

1.4.5 Agro climatic zones: Orissa is divided into 10 agro climatic zones based on the climate and cropping patterns.

1. North-Western Plateau

2. North-Central Plateau

3. North-Eastern Coastal Plain

4. Eastern and South Eastern coastal plain

5. North Eastern Ghat

6. Eastern Ghat Highland

7. South-Eastern Ghat

8. Western Undulating

9. Western-Central Table Land

10. Mid-central Table and Zone

Angul district comes under Mid Central Table Land zone. This zone comprises Dhenkanal, Angul, Athagarh and Sukinda block of Jajapur district. This zone is physiographically located in the middle of the central table land, rises from east to west and has an average elevation of 300 mts from mean sea level. The rainfall distribution pattern shows that during the pre-monsoon period (during the month of Feb, March and April) less than 5 cm rainfall is received. In the monsoon period, June receives 20-30cm. July and August receive more than 30 cm rainfall. In the post monsoon period, October receives 5-10 cm. November and December receive 4-5 cm. This zone is considered as medium moisture deficit class, which means that the residual soil moisture is insufficient for the sustenance of the second crop in the Rabi season.

1.4.6 Temperature:-

There is no temperature recording station at Athmallik Subdivision. So the data recorded for Angul District is taken for the reference. The coldest month is January with the minimum temperature falling to even 11ºC. The average maximum temperatures is 33.49º C. and the average minimum temperature is 20.65ºC. The maximum temperature is experienced in the month of May. Average

Table 1.16

AVERAGE ANNUAL TEMPERATURE IN ANGUL DISTRICT

Month	1989		1990		1991		1992		1993		1994		1995	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Jan	28.6	13.2	30.4	11.3	30.9	14.4	32.2	9.2	30.4	11.1	30.8	12.6	25.9	15.8
Feb	29.2	7.6	29.8	17.6	33.1	11.2	30.8	9.4	32.2	16.4	30.5	15.3	31.9	18.6
Mar	39.4	19.2	40.7	17.4	38.6	18.3	40.1	23.4	38.3	16.2	38.9	19.9	35.6	21.7
Apr	38.8	22.3	40.3	19.5	40.7	14.4	39.6	21.2	38.4	17.1	38.5	22.3	39.2	23.4
May	40.3	20.2	41.4	18.9	40.7	23.8	42.2	26.4	40.2	22.1	40.2	24.3	36.4	23.8
June	34.8	15.4	36.3	22.2	33.4	19.2	37.8	21.2	40.4	21.2	33.8	22.8	36.8	24.1
July	31.2	23.2	29.6	20.2	30.4	21.6	32.3	24.4	30.4	21.2	30.8	22.1	32.5	22.3
Aug	33.4	22.3	33.1	19.6	30.2	23.2	34.4	24.6	32.2	20.6	30.8	21.7	32.5	22
Sep	32.2	21.2	30.1	18.4	33.4	24.2	29.6	21.2	30.31	18.4	32.8	21.5	32.5	21.5
Oct	33.4	12.2	33.2	20.1	31.4	18.6	33.1	19.2	30.4	14.2	33.1	19.1	31.7	19.2
Nov	30.3	13.2	31.1	18.6	32.4	22.2	30.6	15.4	29.4	12.2	30.7	16.7	29.6	16.1
Dec	28.4	11	29.2	14.4	30.1	16.2	29.2	12.6	29.3	11.1	28.5	14.3	29.8	14.9
Avg	33.33	16.75	33.77	18.183	33.78	18.94	34.3	19.02	33.49	16.8	33.28	19.38	32.9	20.28

Month	1996		1997		1998		1999		2000		2001		2002		2003	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	M	Max	Min	Max	Min
Jan	29.2	19.5	31.1	18	31.3	11.8	33.1	8.5	34.1	16.6	35.5	9.2	28	12	31.2	13.3
Feb	32.3	20.5	36.5	18.6	36.1	12.8	39.5	14	36.7	20.2	38.1	11.2	32	16	33.2	16.4
Mar	37.8	13.1	40.1	NA	38.7	15	22.5	15.6	38.9	11.2	41.7	16.6	41.4	18.2	41.6	18.2
Apr	39.8	10.6	41.1	NA	41.7	21.2	46.1	21	43.3	23.1	45.1	19.6	39	26	43.7	24.7
May	41.6	12.5	43	NA	46.7	21.8	45.7	20	42.9	21.8	45.5	20.6	42	27	44.6	22.4
June	34.9	12.9	43.1	NA	46.7	22.6	40.7	22.4	38	26	39.2	21.4	39	26	42.8	26.4
July	32.1	13.4	29.5	NA	36.9	23	36.7	20.4	31	25	34.7	20.2	35	26	36.6	25.6
Aug	31.7	12.7	43.7	15.6	35.1	23.6	35.3	21.6	33	24	33.5	22.4	33	25	32.2	21.1
Sep	34.2	13.2	29.1	23.6	35.9	21.8	35.1	21.2	33	24	34	25	34	24	35.2	22.2
Oct	33.2	10.1	34.9	20	35.5	20.6	35.1	20	34	23	35.1	19.8	33.9	22.4	34.6	23.3
Nov	31.9	5.5	35.1	19	34.1	13	33.7	14	32	17	35.1	15.4	33	20.6	34.4	19.6
Dec	28.1	6.7	30.3	14.6	32.1	9.8	30.1	12	28	10	30.9	10	29.8	9.6	30.4	11
Avg	33.9	12.6	36.5	18.5	37.6	18.1	36.1	17.6	35.4	20.2	37.4	17.62	34.925	21.07	36.71	20.35

Month	2006		2007		2008		2009		2010		2011		2012	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Jan	29.4	13.3	29.8	14.6	28.1	13.3	31.3	13.9	27.6	11.4	25.5	11.3	27.6	15.4
Feb	35.7	15	32.2	16.3	29.5	16.5	34.4	17.9	33.1	15.3	30.8	15.4	32.7	16.8
Mar	35.8	22.1	35.6	16.9	35.8	20.2	37.5	19.3	38.4	21.2	37	20.1	37.4	21
Apr	39.2	26.4	39.9	24.2	38.8	23.5	42.1	24.6	42.9	25.5	37.3	21.2	39.9	25.2
May	38.2	27.5	39.2	25.6	40.8	25.7	40.5	25.2	39.4	24.9	39.6	23.5	39.9	27.1
June	36	22.6	36.1	25.9	33.2	24.5	40.4	26.3	38	23.5	34.8	23.5	38	27.4
July	32.7	21	33.6	25.2	31.9	24.7	31.3	24.4	33.5	22	33	23.5	31.5	25.4
Aug	30.9	19.6	32.8	24.9	31.7	24	33.5	25	31.6	21.3	31.8	22	31.7	25.2
Sep	32.1	21	32	24.5	31.5	24	33.6	24.5	32.5	22.4	30.8	22.2	32.3	25
Oct	33.6	19.9	32.2	20.5	32.6	21.7	31.2	19.7	32	21.2	33.5	20.7	32.2	21.6
Nov	28.7	18.3	30	17	29.8	17.1	30.1	17.2	30.5	19.8	32	16.2	28.9	17.6
Dec	29.4	16	29.1	13	29.2	14.2	28.1	12.4	26	13.9	29	13.5	28.9	14
Avg	33.5	20.2	33.5	20.7	32.7	20.8	34.5	20.9	33.8	20.2	32.9	19.4	33.4	21.7

Month	2013		2014		2015	
	Max	Min	Max	Min	Max	Min
Jan	28.3	16.3	28.9	11.9	27.9	13.3
Feb	31.4	15.5	31.7	14.5	33..5	16.5
Mar	36.9	19.2	35.2	18.2	36.8	20.9
Apr	39.2	22.7	40.7	21.5	38.5	24
May	41.1	25.8	38.9	25.8	41.3	26.3
June	34.7	24.6	37.3	27.7	35.5	25.7
July	31.8	23.8	31.6	25.2	32.8	24.6
Aug	32.1	23.7	32.6	25.5	33..0	24.6
Sep	32.8	23.4	32.5	24.9	33.4	24.3
Oct	30.4	21.1	32.2	23.4	33.7	22.2
Nov	33.1	18.6	31	16.9	31.4	17.3
Dec	28.9	12.5	27.7	13.3	28.4	15.6
Avg	33.4	20.6	33.4	20.7	33.8	21.3

Analysis of Temperature	Average Maximum	Average Minimum
Average temperature of the period from 1989 to 2003	34.89	18.36
Average temperature of the period from 2006 to 2015	33.49	20.65

On analysis of average maximum temperature of the period from 1989 to 2003 to that of the period from 2006 to 2015; it is observed that there is decrease by 1.4 ºC. However, the average minimum temperature has increased by 2.29 ºC during the corresponding period. The average mean temperature during the corresponding period has increased from 26.63 ºC to 27.07 ºC.

1.4.7 Relative Humidity:-

It is generally high in the Division. Maximum humidity is seen in the month of August-september and minimum in April and May. It generally crosses 80 percent in August, September and October in other months it varies between 60-70%. But the humidity reduces towards March, April

Table: 1.17 AVERAVGE RELATIVE HUMIDITY OF ANGUL DISTRICT

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
1994	85	82	73	66	73	79	82	82	81	87	78	88
1995	73	80	52	49	70	71	77	81	78	81	73	66
1996	84	66	63	67	68	75	77	78	76	78	70	75
1997	64	82	41	46	58	68	72	82	74	77	62	58
1998	85	56	90	88	72	72	78	77	88	89	85	74
1999	76	81	71	68	68	71	81	84	80	79	73	74
2000	76	72	80	77	71	78	82	82	81	79	88	78
2001	77	86	82	78	69	73	86	83	81	82	78	73
2002	83	85	78	74	69	74	81	83	84	83	86	84
2003	81	85	79	81	78	81	83	84	80	86	84	83
AVG.	78	78	71	69	70	74.2	79.9	82	80	82	78	75

Source: Directorate of Meteorology, Bhubaneswar

AVERAGE RELATIVE HUMIDITY IN ANGUL DISTRICT

Month	2006		2007		2008		2009		2010		2011		2012	
	08.30hrsIST	17.30hrsIST	08.30hrsIST	17.30hrs IST	08.30hrs IST	17.30hrs IST	08.30hrsIST	17.30hrsIST	08.30hrsIST	17.30hrs IST	08.30hrs IST	17.30hr IST	08.30hrs IST	17.30hrs IST
Jan	58	62	64	58	84	78	80	75	72	62	62	63	90	67
Feb	43	40	61	61	81	78	69	54	78	56	69	67	82	54
Mar	51	52	61	50	82	82	68	59	80	55	69	56	77	36
Apr	60	46	57	45	70	58	68	54	76	47	73	56	73	41
May	68	54	50	48	52	67	68	55	75	63	77	52	75	36
June	64	58	71	70	73	69	59	58	78	63	81	70	72	54
July	68	62	88	66	81	75	79	75	74	67	88	79	86	81
Aug	80	65	81	74	82	79	77	70	70	67	91	86	85	83
Sep	69	62	78	77	80	74	75	73	74	70	92	80	88	81
Oct	59	54	73	75	75	66	77	73	72	65	85	67	83	72
Nov	62	47	58	62	77	72	76	70	74	63	83	65	88	80
Dec	51	47	65	62	81	78	79	64	71	74	84	64	84	66

AVERAGE RELATIVE HUMIDITY IN ANGUL DISTRICT						
Year	2013		2014		2015	
Month	08.30hrs IST	17.30hrs IST	08.30hrs IST	17.30hrs IST	08.30hrs IST	17.30hrs IST
Jan	84	63	85	57	84	55
Feb	81	51	76	49	79	46
Mar	41	41	76	57	75	42
Apr	77	98	71	51	75	48
May	75	50	67	52	71	46
June	79	71	74	61	79	72
July	84	81	90	81	87	79
Aug	84	78	87	82	85	82
Sep	83	82	89	82	85	79
Oct	86	81	85	74	83	70
Nov	91	88	79	57	85	67
Dec	79	63	82	55	84	69

ANALYSIS OF AVERAVGE RELATIVE HUMIDITY OF ANGULL DISTRICT												
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
1994-2013	78	78	71	69	70	74.2	79.9	82	80	82	78	75
2006-15	70.1	63.8	62.3	62.2	60	68.8	78.5	79.4	78.6	73.8	72.2	70.1
Source: Directorate of Meteorology, Bhubaneswar												

High relative humidity and other forms of precipitation, e.g.,mist and dew, are helpful in prolonging humid conditions in the locality. These conditions are favourable for development of natural vegetation and other growth like orchids and epiphytes. On analysis of the percentage of average relative humidity of the period from 1994-2003 to that of 2006-15; it is observed that the percentage of relative humidity has decreased throughout the year.

1.4.8 Cloudiness: In the southwest monsoon season, the sky remains heavily clouded and in the summer and post monsoon months there is moderate cloud.

1.4.9 Winds: Winds are light to moderate, with slight increase in summer and in south west monsoon season winds usually blow from south west and North West directions in the monsoon. In the post monsoon and cold seasons wind blows between the west and north. In summer the winds become variable in direction**.**

1.4.10 Special weather phenomenon: In Angul district hailstorms and depressions occur in monsoon season and in October when the wind force is high. Thunderstorms occur mostly in the afternoon in the summer months and in October.

1.4.11 Natural Calamities: The great famine had occurred in the division in1899 – 1900 and after that famine was not seen. Minor floods was a common phenomenon in the riverian tract especially in Mahanadi, the major floods has become rare after the construction of Hirakud Dam. However most of the streams remain in spate throughout the rains. The floods cause severe impact on the forests. Of late, major floods occurred in July 2001 and in these floods many trees were uprooted. In Hatidhara RF nearly 2261 trees were uprooted, timber to the tune of 241.6 cu mt and 485 stacks of firewood were salvaged from this RF. In Talaipathar RF 2630 trees were uprooted and 96.07 cu mt timber and 296 stacks of firewood were salvaged. Apart from uprooting of trees, lot of soil erosion along the slopes occurred leaving the pebbles, boulders and rocks exposed.

1.4.12 CYCLONE:-Athmallik Forest Division was affected by cyclone during 2012 and 2013 (phailin & Hudhud). The exent of damage is reflected in **Table-1.18.**

TABLE- 1.18 EXTENT OF CYCLONE DAMAGE IN 2012 & 2013					
Range	Area affected.	No. of trees affected.	Outturn from the affected trees		
			Timber (in Cum)	Poles (in no)	Firewood (in stack) 12x3x3
1	2	3	4	5	6
Madhpur		57	-----		18
Bamur		1587 trees & 196 poles	474.789		216
Athmallik		2209	143.3208		36
Dhandatopa		341	97.85		46
Handapa		866	353.461		106
Total		5256	1069.4208		422

1.5 WATER RESOURCES AND SUPPLY

1.5.1 Mahanadi is the major river of this division. There are numerous streams like Karandijhor, Manojhor, Dhandatopa nallah, Chanagorhi nallah. These streams flow towards south and join Mahanadi. Some streams raise in Talaipathar and Hatidhara of which some flow towards Mahanadi and others in Aunli nadi**.** Karandijhor, Manojhor, Dhandatopa nallah, Chanagorhi nallah carry considerable volume of water during the rainy season, but the current is much reduced after winter. In summer all nallahs dry up except chanagorhi nallah**.**

1.5.2 Aunli nadi rises in Sureswari parbata in the Northern block drains portions of Rairakhol and Athamallik divisions. It carries greatest flow of water through out the year and caters to the needs of the people in a big way. The details of the important streams in the division are given in the following **Table No: 1.19.**

Table: 1.19 IMPORTANT RIVERS/TRIBUTARIES IN ATHAMALLIK DIVISION				
Sl.No	River/Tributary	Origin	Pass Through	Drains At
1	Mahanadi (Main river)	Chhatishgarh	South eastern boundary of the division	Bay of Bengal
2	Karandijhor	Northern RF compartment No.4	Northern RF-1 common boundary of Rairakhol and Athamallik	Mahanadi near Duleswar
3	Lanchi (Tributary of Karandijhor)	Karandijhor	Bindhyabasini RF	Mahanadi
4	San karandijhor (Tributary of Karandijhor)	do	Guja RF & Baruni blocks	Do
5	Manojhor (Ghosar jhor & Himitira jhor combined together named as manojhor)	Northern RF	Raniakata, Kumurisiaga Barapadar (Irrigation dam has been constructed at Nuagan)	Do
6	Dhandatopa Nala (sindoljhor)	Talaipathar and Hatidhara	Nuagarh, Jirad, malipadar	do
7	Aunli nadi (Tributary of Brahmani)	Rail RF block of Rairakhol Forest Division -becoming the common boundary of Rairakhol and Angul forest Division (Sursum parbat of Northern block)	Northern RF compartment No. 8, 18,26,27,30,31,33,40,46	Brahmani river

CHAPTER-2

2.0 Maintenance / Increase in the extent of forest and tree cover

2.1 Area of forests under different legal classes (RF, PF, UF & others)

2.1.1 There are 20 Reserved Forest Blocks in the Division with a total area of 53,892.05 Ha. The entire Hatidhara R.F over an area of 14923.78 ha. have been excluded due to inclusion of area in Satkosia Gorge (WL) Sanctuary vide Notification No 26865 dt14.12.2018 of F&E Department Govt. of Odisha **(Annexure-IV)**. Out of this 55.6394 ha. have also been deducted under Forest Conservation Act. The present status are 19 RF (38912.6306 Ha.) Blocks, 19 DPFs (6,276.94 Ha.), 6PFs, (195.3952 Ha.) 24VFs. (136.942 Ha.) with total area of 45,521.9078 Ha. The total R.F area constitutes 21.14 % of the geographical area of the Athmallik Sub-division. The Reserved Forest Blocks are spread over in 5 Ranges. All 19 RF blocks were brought under working

Table No.- 2.1 Abstract of Block wise Forest area of Athmallik Division				
Sl No.	Name of the R.F Block	Notification No. and Date	No. of Compartments	Area in Ha.
Athmallik Range				
1	Kusumkuhuri **	No.227/12F/179(M)/57D Dt.03.01.1958.	3	612.04
2	Talaipathar (Part) *	Do	6	1806.04
3	Mahendrapur **	Do	2	434.07
				2852.15
		Sub Total	29	8790.96
Dhandatopa Range				
4	Talaipathar (part) *	Do	8	2054.99
5	Kutulsingha *	Do	7	1646.64
6	Dantarikhol (part) *	Do	2	527.32
		Sub Total	44	4228.95
Madhapur Range				
7	Talaipathar (Bal) *	Do	10	3151.51
8	East Baruni *	Do	7	1606.54
9	West Baruni *	Do	3	400.21
10	Nuagan **	Do	5	1258.93
		Sub Total	25	6417.19
Handapa Range				
11	Northern (part) *	Do	29	12336.29
12	Handapa *	Do	7	1799.21
13	Dandarugudi **	Do	1	162.31
14	Kholadangiani **	Do	1	221.11
15	Kadalimunda **	Do	1	298.23
16	Dantarikhol (Bal) *	Do	6	1097.32
17	Bankimundi *	Do	3	393.07
		Sub Total	48	16307.54
Bamur Range				
18	Northern R.F (Bal) *	Do	18	6838.38
19	Bindhyabasini **	Do	1	275.84
20	Kishoreban **	Do	1	344.56
21	Ghosar **	Do	3	1140.53
22	Guja *	Do	1	346.18
23	Bijamaliha **	Do	1	216.95
		Sub Total	25	9162.44
		Grand Total	171	38968.27

N.B * - 'A' Class Reserved Forests **- 'B' Class Reserved Forests

2.1.2 There are 19 Demarcated Protected Forests (DPF) Blocks in the Division. The demarcation of the blocks has started in 1959 and continued up to 1994. But out of 19 DPF blocks, maps are available only for 14 Blocks. Some of these blocks have dense forest growth. The total area of the DPF blocks is 6276.94 Ha. Nevertheless, none of the 19 blocks are notified under section 4 (1) of Orissa Forest Act, 1972. Most of the proposals are lying pending at Range level. There is no legal control of Forest Department over these lands. However, all DPF blocks were brought under working plan management fold in the outgoing plan. The list and the status of the DPF blocks are furnished in **Table No-2.2.**

2.1.3 There are 06 Protected Forests (PF) Blocks in the Division. The total area of the P.F blocks having total area 195.3952 Ha. These are the areas mutated in favour of Forest Deptt. in liue of forest area diverted for non-forest purposes under Forest Conservation Act, 1980 and declared U/S 33 of Orissa Forest Act, 1972. In the outgoing plan, PFs were not included. As per the recommendations of the Standing Consultative Committeee PFs have been included in the revised plan. The list of the PF blocks are furnished in **Table No-2.3**

Table No-2.2 Status of Demarcated Protected Forests (DPF)

Sl No.	Name of the Range	Name of D.P.F	Area in Ha.	Present position
1	2	3	4	5
1	Athmallik	Kuber Hill	412.54	Proposal submitted to RDC
2	Dhandatopa	Thakurgarh	139.62	Pending at Range level
3	Do	Pitabalibahal	160	Proposal submitted to RDC
4	Do	Rampur	114.33	Proposal submitted to RDC
5	Madhapur	Purunapani	132	Proposal submitted to RDC
6	Do	Muchhapur 'A'	54.58	Proposal submitted to RDC
7	Do	Muchhapur 'B'	28.77	Proposal submitted to RDC
8	Do	Mangalpur	87.79	Pending at Range level
9	Handapa	Gundurijharan	802.91	Pending at Range level
10	Do	Kuturukani	1226.13	Pending at Range level
11	Do	Solanda	189.8	Pending at Range level
12	Do	Berham	185.35	Pending at Range level
13	Do	Batipurunapani	1214.08	Pending at Range level
14	Do	Tileswar	1022.07	Pending at Range level
15	Bamur	Susaba	141.64	Pending at Range level
16	Do	Bhagamunda	111.22	Pending at Range level
17	Do	Digi	141	Pending at Range level
18	Do	Tulasipur	43.99	Pending at Range level
19	Do	Bajpur	69.12	Pending at Range level
		Total	6276.94	

Table No-2.3 List of Protected Forests (PF)				
Sl No.	Name of the Range	Name of P.F	Area in Ha.	Present position
1	2	3	4	5
1	Madhapur	Naktideul	12.869	Declared u/s-33 of O.F.A-1972 as per Notification No. 10F(Div)-20/2009 23541/F & E, dated 03.11.2010 of the Govt of Odisha, F & E Dept.
2	Handapa	Nua Kuajhari	60.8749	Declared u/s-33 of O.F.A-1972 as per Notification No. 10F(Con)-475/2012 23626/F & E, dated 16.11.2013 of the Govt of Odisha, F & E Dept.
3	Do	Papasara	22.9262	Declared u/s-33 of O.F.A-1972 as per Notification No. 10F(Con)-475/2012 23620/ F&E, dated 16.11.2013 of the Govt of Odisha, F & E Dept.
4	Do	Bileinali	9.8139	Declared u/s-33 of O.F.A-1972 as per Notification No. 10F(Con)-475/2012 23638/F & E, dated 16.11.2013 of the Govt of Odisha, F & E Dept.
5	Do	Kuajhari	49.7619	Declared u/s-33 of O.F.A-1972 as per Notification No. 10F(Con)-475/2012 23632/F & E, dated 16.11.2013 of the Govt of Odisha, F & E Dept.
6	Bamur	Barapadar	39.1493	Declared u/s-33 of O.F.A-1972 as per Notification No. 10F(Div)-493/2012 17087/F & E, dated 17.08.2013 of the Govt of Odisha, F & E Dept.
		Total	195.3952	

2.1.4 There are 24 village forests notified by Government of Orissa over an area of 136.942 Ha. These forests have not been included in the outgoing plan. All the VFs have been brought under the purview of this plan as per the recommendations of the Standing Consultative Committeee. The list of the VFs are furnished in **Table No-2.4**

Table No-2.4 List of Village Forests of Athamallik Forest Division

Sl. No.	Range	Name of The G.P	Village Forest	Year of Formation	Area in Ha	Notification No.
1	Athamallik	Athamallik	Malipadar	1993	7	AFFN (SIDA) - 5/93-2861 F&E dt. 3.01.93
2	do	do	Manikpathar	1993	5	do
3	Madhapur	Basudevpur	Gautampur	1991	5	No-AFFN (SIDA)88/91-19412 FFE dt. 4.12.91
4	do	Kandhapada	Singarimunda	do	13	do
5	do	do	Ratanapada	do	5	do
6	do	do	Baradakata	1991	10	do
7	do	Kiakata	Hatuapada	1992	1.6188	FFN (SIDA)88-91-3764/F&E dt. 18.2.92
8	do	do	Mundapada	1992	5	do
9	do	do	Buraghta	1992	5	do
10	do	Kiakata	Kiakata	1992	8.2639	do
11	do	do	Dhuliapada	1993	5	AFFN (SIDA) - 5/93-2861 F&E dt. 3.01.93
12	Handapa	Nakchi	Madhupur	1990	5	GO. No. AFFN (SIDA) 80/90-24465 FFAH dt. 10.10.90
13	do	Pedipathar	Jharboinda	1993	0.6	AFFN (SIDA) - 5/93-286/ F&E dt. 3.01.93
14	Handapa	Pedipathar	Jharboinda	1993	5	AFFN (SIDA) - 5/93-286/ F&E dt. 3.01.93
15	do	Jamunali	Asurabahal	1993	10	do
16	do	Handapa	Gunurimunda	1993	5	do
17	do	do	Baninali	1993	5	do
18	do	do	Do	1993	5	do
19	do	Nakchi	Thelukunali	1990	3.76	GO. No. AFFN (SIDA) 80/90-24465 FFAH dt. 10.10.90
20	Bamur	Ambpal	Gurujanga	1990	10	do
21	do	Nakchi	Sarabhanguni	1990	5	do
22	do	Bamur	Dakuamunda	1990	5	do
23	do	do	Bairagipali	1990	5	do
24	do	Bamur	Naktinali	1992	2.6993	AFFN (SIDA) 88/91-3764/ F&E dt. 18.02.92
					136.942	

Source: DFO, Athamallik

2.1.5 Unclassed Forest:

The breakup of Unclassed Forest Range wise is furnished in **Table No. 2.5** as below

Table No. 2.5 Rangewise breakup of Unclassed Forests		
Sl No.	Name of the Range	Area in Ha
1	Athmallik	1.0158
2	Dhandatopa	12.093
3	Madhapur	1.3826
4	Handapa	0.9307
5	Bamur	1.0279
	TOTAL	**16.45**
Source: Previous working plan		

2.1.6 Revenue forests: There is sizable chunk of forest in this Division under the control of Revenue Department. The area of Revenue Forest in this Division is 32,780.97 Ha. This amounts to 17.8% of geographical area of the Division. There are no scientific management prescriptions for these lands, but some of these forests are under the control of van samrakshana smithies.

The District level committee area of Athmallik Forest Division is103 Ha **Table No: 2.6**

Table No: 2.6 D.L.C area of Athmallik Forest Division Report		
Sl No.	Status of Forest Land	Area in Ha.
1	Area not recorded as forest but has sizable compact area of natural forest growth and plantation of forest species both on Government and private land	103
	Total	103

2.2 Forest area under different working circle/management plan

2.2.1 In the outgoing working plan only the Reserve Forests & Demarcated Forests were brought under the management fold of the plan.The forest area under different legal classes and working circles involved in the outgoing working plan (in Ha.) are furnished in **Table No. 2.8 & 2.9.**

Table No. 2.7 Forest area involved in the outgoing working plan (in Ha.)			
Range	Reserved Forest (20)	D.P.F (19)	Total
Athmallik	8790.96	60	8850.96
Dhandatopa	13213.92	413.95	13627.87
Madhapur	6417.19	304.69	6721.88
Handapa	16307.54	2404.19	18711.73
Bamur	9162.44	2743.12	11905.56
Total	53892.05	5925.95	59818

Table: 2.8 Forest area under different working circles involved in the outgoing working plan (in Ha.)

Range	RF/DPF	Area in Ha	Sel/W.C.	Reh. W.C.	Plantn. W.C.		Protn. W.C.(OL)	Bamboo (OL)W.C.	JFM (OL)W.C.
					Existing	Proposed			
Athamallik	RF	8790.96	7664.85	993	60.11	70	3	7744.85	46.7
	DPF	60					60		
Dhandatopa	RF	13213.92	10216.92	1757.46	1203.04	20	16.5	11039.96	57.1
	DPF	413.95					413.95		
Madhapur	RF	6417.19	3151.51	2981.3	130	50	104.38	3151.51	232
	DPF	304.69					304.69		
Handapa	RF	16307.54	14129.84	1580	552.04	40	5.66	0	1279.01
	DPF	2404.19					2404.19		
Bamur	RF	9162.44	6838.38	1837.5	162.02	10	314.54	0	540
	DPF	2743.12					2743.12		
Total		59818	42001.5	9149.26	2107.21	190	6370.03	21936.32	2154.81

2.2.2 In the revised working plan the Reserve Forests, Demarcated Forests, Protected Forests and notified Village Forests are brought under the management fold of this plan.The forest area under different legal classes and working circles involved in the revised working plan (in Ha.) are furnished in **Table No. 2.10 & 2.11**

Table No. 2.9 Forest area involved in the revised working plan (in Ha.)					
Range	R F (19)	D.P.F (19)	PF (6)	V F (24)	Total
Athmallik	2852.15	412.54	0	12	3276.69
Dhandatopa	4226.4	413.95	0	0	4640.35
Madhapur	6365.19	303.14	12.869	57.8827	6739.082
Handapa	16306.64	4640.34	143.3769	39.36	21129.72
Bamur	9162.251	506.97	39.1493	27.6993	9736.069
Total	38912.63	6276.94	195.3952	136.942	45521.91

CONSTITUTION OF WORKING CIRCLES (ALLOTMENT OF AREA TO DIFFERENT WORKING CIRCLES In Ha.)												
SL No.	Name of the Forest Block	Area of Forest Block (in Ha)	Area Diverted under FC (in Ha)	Area under this Plan (in Ha)	Area allotted to different Working Circles							
					Selection WC	RWC	Plantation WC	Protection WC	Bambo (OL) WC	NTFP(OL) WC	Wild life (OL) WC	JFM (OL) WC
1	2	3	5	6	7	8	10	11	9	12	13	14
	Athamallik Range RF	2852.15	0	2852.15	1806.04	943	100.11	3	1806.04	2849.15	2852.15	159
	Dhandatopa Range RF	4228.95	2.55	4226.4	2014.76	1754.91	440.23	16.5	2054.99	4209.9	4226.4	0
	Madhapur Range RF	6417.19	52	6365.19	3151.51	2969.3	140	104.38	3151.51	6260.81	6365.19	819.68
	Handapa Range RF	16307.54	0.9	16306.64	6239.03	1517.5	552.04	7998.07	0	8308.57	16306.64	1342.23
	Bamur Range RF	9162.44	0.1894	9162.2506	6758.38	1827.3106	262.02	314.54	0	8847.7106	9162.2506	739
	Division RF Total	**38968.27**	**55.45**	**38912.631**	**19969.72**	**9012.0206**	**1494.4**	**8436.49**	**7012.54**	**30476.141**	**38912.63**	**3059.91**
	Athamallik Range DPF	412.54	0	412.54	0	412.54	0	0	0	412.54	412.54	0
	Dhondatopa Range DPF	413.95	0	413.95	0	413.95	0	0	0	413.95	413.95	0
	Madhapur Range DPF	303.14	0	303.14	0	303.14	0	0	0	303.14	303.14	0
	Handapa Range DPF	4640.34	0	4640.34	0	4640.34	0	0	0	4640.34	4640.34	0
	Bamur Range DPF	506.97	0	506.97	0	506.97	0	0	0	506.97	506.97	0
	Division DPF Total	**6276.94**	**0**	**6276.94**	**0**	**6276.94**	**0**	**0**	**0**	**6276.94**	**6276.94**	**0**
	Madhapur Range PF	12.869	0	12.869	0	0	12.869	0	0	12.869	12.869	0
	Handapa Range PF	143.3769	0	143.3769	0	0	143.3769	0	0	143.3769	143.3769	0
	Bamur Range PF	39.1493	0	39.1493	0	0	39.1493	0	0	39.1493	39.1493	0
	Range PF Total	39.1493	0	39.1493	0	0	39.1493	0	0	39.1493	39.1493	0
	Division PF Total	**195.3952**	**0**	**195.3952**	**0**	**0**	**195.3952**	**0**	**0**	**195.3952**	**195.3952**	**0**
	Athamallik Range VF	12	0	12	0	0	12	0	0	12	12	0
	Madhapur Range VF	57.8827	0	57.8827	0	0	57.8827	0	0	57.8827	57.8827	0
	Handapa Range VF	39.36	0	39.36	0	0	39.36	0	0	39.4	39.4	0
	Bamur Range VF	27.6993	0	27.6993	0	0	27.6993	0	0	27.6993	27.6993	0
	Division VF Total	**136.942**	**0**	**136.942**	**0**	**0**	**136.942**	**0**	**0**	**136.982**	**136.982**	**0**
	Grand Total	**45577.547**	**55.45**	**45521.908**	**19969.72**	**15288.961**	**1826.737**	**8436.49**	**7012.54**	**37085.458**	**45521.95**	**3059.91**

N:B: -

* Sel/ W.C. - Selection Working Circle
* Reh. W.C. - Rehabilitation Working Circle
* Protn.W.C. - Protection Working Circle
* Platn.W.C. - Plantation Working Circle
* Bamboo (OL) W.C. - Bamboo Overlapping Working Circle
* W L (OL) W.C. - Wild Life Overlapping Working Circle
* JFM (OL) W.C. - Joint Forest Management Working Circle
* NTFP (OL) W.C. - Non Timber Forest Produce Overlapping Working Circle

2.3 Percentage of forest with secured boundaries

2.3.1 The boundaries of most of the 'A' class forests were demarcated in 1926 and 1927. All the 'B' class reserved forests were demarcated in 1946. The survey of India had done topographical survey of the tract during 1932-33. The topo maps were to the scale of 1"=1 mile scale. In S.B Das Plan 2"=1 mile scale maps were prepared. Again survey of India conducted topographical survey of the tract in 1979-80. The new maps in advance prints were used in Sri Dinesh Singh working plan. In his plan he mentioned that there were some omissions of the blocks in the topo maps in advance prints, like Kutulsinga, Mahendrapur, Kusumkuhuri, Kishoreban & Bindhyabasini blocks were not shown in the map. This matter was brought to the notice of survey of India. Nevertheless, these 5 Blocks are not shown in the maps. Efforts have been made in the present plan to include these blocks on the topo maps.

2.3.2 The boundary position in respect of few blocks is good. The Divisional Forest Officer is taking efforts to construct boundary pillars and clear the boundary lines in some blocks. Mostly the pillars are stone cairns with a wooden or concrete post in the centre. The boundary line clearance is being done every year in majority of the blocks. This is a major step in the right direction.During the field exercise,the status of boundary pillars was verified. The details of the boundary position as per notification,position in the previous plan and position at present in various reserved forest blocks are given below in **Table No. 2.12.**

Table No.2.12. Boundary Pillar Position as per notification, previous plan & present status

SlNo.	Name of the Block	Area in Ha.	Length of Boundary	Boundary Pillar as per	Pillar as per previous plan.	Pillar as per present verification.
Athmallik Range						
1	Kusumkuhuri	612.04	13.2	89	31	94
2	Mahendrapur	434.07	12.8	67	49	56
Dhandatopa Range						
3	Kutulsingha	1644.09	34.32	80	40	209
Madhapur Range						
4	Talaipathar	7012.54	40.4	169	169	171
5	East Baruni	1606.54	28	137	53	217
6	West Baruni	400.21	10.37	76	48	80
7	Nuagan	1206.93	20.29	97	27	88
Handapa Range						
8	Northern R.F	19174.67	87	122	60	285
9	Handapa R.F	1799.21	27.37	99	30	125
10	Dandarugudi	162.31	8.08	86	25	67
11	Kholadangiani	221.11	7.55	83	30	62
12	Kadalimunda	297.33	10.5	124	124	104
13	Dantarikhol	1624.64	23.25	57	37	171
14	Bankimundi	393.07	9.04	67	25	96
15	Bindhyabasini	275.84	9.28	118	25	92
16	Kishoreban	344.56	12.03	105	67	113
17	Ghosar	1140.341	19.6	104	5	85
18	Guja	346.18	11.48	24	24	37
19	Bijamaliha	216.95	6.32	25	13	32
	Total	**38912.6**	**390.88**	**1729**	**882**	**2184**

On analysis, it is observed that in comparison to boundary position in the previous plan, lot of emphasis has been given in construction of new boundary pillars. It is also observed that in most of the valunerable RFs such as Kutulsingha, East Baruni,Northern,Handapa,Dantarikhol, Bankimundi,Guja & Bijamaliha the pillars constructed are much more than the pillars as per notification. This is mainly due to construction of intermediate pillars which is a very good sign of secured boundary. Further in most of the RFs, cement concrete pillars are constructed which are supposed to be more strong and durable.However in case of Mahendrapur, Nuagaon, Dandarugudi, Kholdangiani, Kadalimunda, Bindhyabasini and Ghosar RFs, the boundary pillars are still less than the position as per notification.

During field verification, efforts have been made to astertain the status of boundary pillars which is furnished in **Table No. 2.13** as follows.

Table No. 2.13 Boundary position in Reserved Forest Blocks

Sl No.	Name of the Block	Area in Ha.	Length of Boundary	Total no. of pillars as per notification	As per Verification			
					Pillar as per present verification	Good	Partially Damaged	Damaged
			Athmallik Range					
1	Kusumkuhuri	612.04	13.2	89	94	29	13	52
2	Mahendrapur	434.07	12.8	67	56	46	10	0
			Dhandatopa Range					
3	Kutulsingha	1646.64	34.32	80		48	157	4
			Madhapur Range					
4	Talaipathar	3151.51	40.4	169	171	76	90	5
5	East Baruni	1606.54	28	137	217	17	174	26
6	West Baruni	400.21	10.37	76	80	34	46	0
7	Nuagan	1258.93	20.29	97	88	4	56	28
			Handapa Range					
8	Northern R.F	123363.29	87	122	285	223	51	11
9	Handapa R.F	1799.21	27.37	99	125	62	31	32
10	Dandarugudi	162.31	8.08	86	67	28	17	22
11	Kholadangiani	221.11	7.55	83	62	25	35	2
12	Kadalimunda	298.23	10.5	124	104	75	13	16
13	Dantarikhol	1097.32	23.25	57	171	25	139	7
14	Bankimundi	393.07	9.04	67	96	61	1	34
			Bamur Range					
15	Bindhyabasini	275.84	9.28	118	113			4
16	Kishoreban	344.56	12.03	105	85			0
17	Ghosar	1140.53	19.6	104	37			41
18	Guja	346.18	11.48	24	32			0
19	Bijamalhua	216.95	6.32	25	94			6
	Total	**38912.6306**	**390.88**	**1729**	**2184**		**932**	**290**

Good: Their existence is secured. They are strong & durable. Partially damaged: They need minor repair to secure their existence. Damaged: Their existence is highly insecured. In most of the cases only some stones are stacked which require either major repair or completely new construction.

In some of the cases it is noticed that boundary pillars are less in number than as per notification. A detail list of such cases in case of RFs are furnished as below in **Table No.2.14.**

Table No.2.14 List of Missing Pillars of RFs

Sl.No.	Name of the RF	No of Pillars as per notification.	No of Pillars as per verification	Pillars missing.
1	Mahendrapur	67	56	11
2	Nuagaon	97	88	9
3	Dandarugudi	86	67	19
4	Kholdangiani	83	62	21
5	Kadalimunda	124	104	20
6	Bindhyabasini	118	113	5
7	Ghosar	104	85	19
TOTAL		679	575	104

2.3.4 With reference to DPF's out of 19 blocks; maps are available for 14 blocks, in 2 blocks field note books are available. From this data and from field observation the following has been made regarding the boundary position of demarcated protected forests. The details of the boundary position as per notification,position in the previous plan and position at present in various demarcated protected forest blocks are given below in **Table No. 2.15**

Table No. 2.15 Position of boundary pillars as per previous plan & present status						
Sl No.	Name of the Range	Name of DPF Block.	Area In Ha	Length of Bounary in Kms	No. of pillars as per Map	Pillar as per previous plan.
1	Athmallik	Kuber Hill	412.54	8	75	35
2	Dhandatopa	Thakurgarh	139.62	6.2	56	36
3	-do-	Pitabalibahal	160	Map is not avaible		15
4	-do-	Rampur	114.33	4.12	0	12
5	Madhapur	Purunapani	132	6.6	48	22
6	-do-	Muchhapur 'A'	54.58	4	31	12
7	-do-	Muchhapur 'B'	28.77	4	44	20
8	-do-	Mangalpur	87.79	10.62	53	18
9	Handapa	Gundurijharan	802.91	13.44	49	35
10	-do-	Kuturukani	1226.13	16.88	106	60
11	-do-	Solanda	189.8	6.85	71	15
12	-do-	Berham	185.35	Map is not avaible		4
13	Bamur	Susaba	141.64	3.52	32	32
14	-do-	Bhangaamunda	111.22	7.32	45	32
15	-do-	Digi	141	Map is not avaible		20
16	-do-	Batipurunapani	1214.08	11.11	144	80
17	-do-	Tileswar	1022.07	20.58	154	52
18	-do-	Tulasipur	43.99	3.2	40	10
19	-do-	Bajpur	69.12	5.75	26	12
		TOTAL	**6276.94**	**132.19**	**974**	**512**

On analysis, it is observed that in comparison to boundary position in the previous plan, lot of emphasis has been given in construction of new boundary pillars. It is also observed that in most of the valunerable DPFs such as, Thagurgarh, ,Gundurijharan, the pillars constructed are much more than the pillars as per notification. This is mainly due to construction of intermediate pillars which is a very good sign of secured boundary. However in case of Purunapani, Muchhapur'A', Muchhapur'B',Kuturkani, Solanda,Batipurunapani,Tileswar,& Tulasipur DPFs the boundary pillars are still less than the position as per notification.

During field verification, efforts have been made to astertain the status of boundary pillars which is furnished in **Table No. 2.16** as follows.

Table No. 2.16 Boundary position of demarcated Protected Forest Blocks

Sl No.	Name of the Range	Name of DPF Block.	Area In Ha.	Length of Boundary in Kms.	No. of pillars as per Map	As per verification	
						Partially Damaged	Damaged
1	Athmallik	Kuber Hill	412.54	8	75	27	31
2	Dhandatopa	Thakurgarh	139.62	6.2	56	12	22
3	-do-	Pitabalibahal	160	Map is not availble		17	0
4	-do-	Rampur	114.33	4.12	No record	7	0
5	Madhapur	Purunapani	132	6.6	48	6	29
6	-do-	Muchhapur 'A'	54.58	4	31	26	0
7	-do-	Muchhapur 'B'	28.77	4	44	22	0
8	-do-	Mangalpur	87.79	10.62	53	36	16
9	Handapa	Gundurijharan	802.91	13.44	49	27	25
10	-do-	Kuturukani	1226.13	16.88	106	0	0
11	-do-	Solanda	189.8	6.85	71	35	6
12	-do-	Berham	185.35	Map is not availble		0	42
13	Bamur	Susaba	141.64	3.52	32	23	7
14	-do-	Bhangaamunda	111.22	7.32	45	5	0
15	-do-	Digi	141	Map is not availble		3	0
16	-do-	Batipurunapani	1214.08	11.11	144	64	23
17	-do-	Tileswar	1022.07	20.58	154	25	74
18	-do-	Tulasipur	43.99	3.2	40	0	0
19	-do-	Bajpur	69.12	5.75	26	7	5
		Total	**6276.94**		**364**	**379**	**280**

In some of the cases it is noticed that boundary pillars are less in number than as per notification. A detail list of such cases in case of DPFs are furnished as below in **Table No.2.17.**

Table No.2.17 List of Missing Pillars of DPFs				
Sl.No.	Name of the DPF	No of Pillars as per notification.	No of Pillars as per verification	Pillars missing.
1	Purunapani	48	35	13
2	Muchhapur'A'	31	26	5
3	Muchhapur'B'	44	22	22
4	Solanda	71	41	30
5	Susaba	32	30	2
6	Batipurunapani	144	94	50
7	Tileswar	154	137	17
8	Tulasipur	40	24	16
TOTAL		564	409	155

2.3.5 Along with the RFs and DPFs , the boundary verification of Protected Forests and Village Forests were also carried out. No pillars were found in both PFs & VFs. However, the GPS locations at strategic points were recorded which is furnished as below.

ASHURABAHAL V.F						
Pl.no	dd	mm	ss	latitude	dd	longitude
1	20	57	35.4	20.95983	84	84.78922
2	20	57	37.7	20.96047	84	84.79056
3	20	57	39	20.96083	84	84.79125
4	20	57	39.5	20.96097	84	84.79217
5	20	57	43.9	20.96219	84	84.79219
6	20	57	45	20.9625	84	84.79089
7	20	57	46.1	20.96281	84	84.7895
8	20	57	46.4	20.96289	84	84.78839
9	20	57	43.9	20.96219	84	84.78811
10	20	57	38.4	20.96067	84	84.78869

BAIRAGIPALI V.F						
Pl.no	dd	mm	ss	latitude	dd	longitude
1	21	0	15.9	21.00442	84	84.50311
2	21	0	11.7	21.00325	84	84.50261
3	21	0	7.6	21.00211	84	84.50219
4	21	0	8.6	21.00239	84	84.50056
5	21	0	11.9	21.00331	84	84.50081
6	21	0	16.3	21.00453	84	84.50114
7	21	0	16.6	21.00461	84	84.50211

	BANINALI V.F (Patch- 2)						
dd	mm	ss	latitude	dd	mm	ss	longitude
20	55	53.2	20.93144	84	42	8.7	84.70242
20	55	51.4	20.93094	84	42	6.8	84.70189
20	55	49.1	20.93031	84	42	5.1	84.70142
20	55	47.6	20.92989	84	42	1.9	84.70053
20	55	47.3	20.92981	84	41	59.9	84.69997
20	55	49.1	20.93031	84	41	57.5	84.69931
20	55	53.2	20.93144	84	42	2.2	84.70061
20	55	54.7	20.93186	84	42	3.7	84.70103
20	55	57	20.9325	84	42	7.6	84.70211
20	55	54.7	20.93186	84	42	9.9	84.70275

Pl.no	mm	latitude	dd	mm	ss
1	55	20.93144	84	42	8.7
2	55	20.93094	84	42	6.8
3	55	20.93031	84	42	5.1
4	55	20.92989	84	42	1.9
5	55	20.92981	84	41	59.9
6	55	20.92931	84	42	0.4
7	55	20.92931	84	42	3.2
8	55	20.92931	84	42	5
9	55	20.92939	84	42	7.9
10	55	20.92981	84	42	10.1
11	55	20.93019	84	42	11.5
12	55	20.9305	84	42	12.2
13	55	20.9315	84	42	13

BARADAKATA V.F							
dd	mm	ss	latitude	dd	mm	ss	longitude
20	49	32.7	20.82575	84	22	40.3	84.37786
20	49	27.1	20.82419	84	22	43.3	84.37869
20	49	21.4	20.82261	84	22	40.5	84.37792
20	49	22.2	20.82283	84	22	34.5	84.37625
20	49	23.9	20.82331	84	22	28.7	84.37464
20	49	29.3	20.82481	84	22	30.4	84.37511
20	49	31.8	20.8255	84	22	34.3	84.37619

BURAGHAT V.F							
Pl.no	dd	mm	ss	dd	mm	ss	longitude
1	20	51	14.9	84	21	1.8	84.3505
2	20	51	11.1	84	21	2.1	84.35058
3	20	51	9.7	84	21	5	84.35139
4	20	51	9	84	21	9	84.3525
5	20	51	10.4	84	21	11.5	84.35319
6	20	51	13.3	84	21	14.3	84.35397
7	20	51	14.7	84	21	14.2	84.35394
8	20	51	14.9	84	21	10.2	84.35283
9	20	51	14.7	84	21	4.3	84.35119

DAKUAMUNDA V.F					
dd	mm	ss	latitude	ss	longitude
20	1	30.6	20.02517	50.5	84.46403
20	1	32.9	20.02581	51	84.46417
20	1	39.3	20.02758	54.3	84.46508
20	1	39.1	20.02753	55.3	84.46536
20	1	36.9	20.02692	56.7	84.46575
20	1	35.2	20.02644	57.6	84.466
20	1	34.8	20.02633	59.1	84.46642
20	1	32.6	20.02572	59.8	84.46661
20	1	30.1	20.02503	58.6	84.46628
20	1	29.4	20.02483	58.2	84.46617
20	1	29.4	20.02483	57.3	84.46592

DHULIAPADA V.F					
Pl.no	mm	ss	latitude	mm	longitude
1	53	35.1	20.89308	17	84.2861
2	53	37.6	20.89378	17	84.2877
3	53	40.8	20.89467	17	84.2878
4	53	40.7	20.89464	17	84.2871
5	53	39.7	20.89436	17	84.2858
6	53	38.8	20.89411	17	84.2847
7	53	36.6	20.8935	17	84.2845
8	53	34.5	20.89292	17	84.2842
9	53	33.4	20.89261	17	84.2843
10	53	33.9	20.89275	17	84.2853

GAUTAMPUR V.F					
Pl.no	mm	ss	latitude	mm	longitude
1	51	56.4	20.86567	22	84.368
2	51	54.7	20.86519	22	84.3691
3	51	53.7	20.86492	22	84.3707
4	51	54.9	20.86525	22	84.371
5	51	58	20.86611	22	84.3712
6	51	58.4	20.86622	22	84.3707
7	51	58.3	20.86619	22	84.3699
8	52	0.3	20.86675	22	84.3686
9	51	59.7	20.86658	22	84.3679
10	51	58.5	20.86625	22	84.3676
11	51	56.5	20.86569	22	84.3674

GUNDURIMUNDA V.F					
Pl.no	mm	ss	latitude	mm	longitude
1	56	25.7	20.94047	41	84.6998
2	56	23.7	20.93992	42	84.7012
3	56	23	20.93972	42	84.7018
4	56	22.3	20.93953	42	84.7025
5	56	21.4	20.93928	42	84.7033
6	56	24.1	20.94003	42	84.7036
7	56	25.9	20.94053	42	84.7031
8	56	27.6	20.941	42	84.7025
9	56	28	20.94111	42	84.7019
10	56	28.3	20.94119	42	84.7011
11	56	28	20.94111	42	84.7001

	GURJANG V.F				
Pl.no	mm	ss	latitude	mm	longitude
1	59	5.9	20.98497	32	84.5463
2	58	59.9	20.98331	32	84.5463
3	58	54	20.98167	32	84.5456
4	58	54.3	20.98175	32	84.5445
5	58	55.8	20.98217	32	84.5438
6	58	57.7	20.98269	32	84.5433
7	58	59.7	20.98325	32	84.5433
8	59	0.4	20.98344	32	84.5433
9	59	2.4	20.984	32	84.5438
10	59	4.9	20.98469	32	84.5446
11	59	6.6	20.98517	32	84.5453
12	59	6.6	20.98517	32	84.5458

HATUAPADA V.F					
Pl.no	mm	ss	latitude	mm	longitude
1	52	59.2	20.88311	17	84.2947
2	52	59.8	20.88328	17	84.2935
3	52	58.2	20.88283	17	84.2934
4	52	56.6	20.88239	17	84.2937
5	52	56.3	20.88231	17	84.2943
6	52	56.3	20.88231	17	84.2947
7	52	57	20.8825	17	84.2951
8	52	59.1	20.88308	17	84.2953

JHARBOINDA V.F (2)					
Pl.no	mm	ss	latitude	mm	longitude
1	53	41.9	20.89497	42	84.7096
2	53	39.1	20.89419	42	84.7093
3	53	38.8	20.89411	42	84.7095
4	53	37.7	20.89381	42	84.7096
5	53	39.1	20.89419	42	84.7102

	JHARBOINDA V.F				
Pl.no	mm	ss	Latitude	mm	longitude
1	53	43.5	20.89542	42	84.7096
2	53	46.3	20.89619	42	84.7081
3	53	51.4	20.89761	42	84.7084
4	53	52.1	20.89781	42	84.7094
5	53	47.2	20.89644	42	84.7111
6	53	45.2	20.89589	42	84.7105

	KIAKATA V.F				
Pl.no	mm	ss	Latitude	mm	longitude
1	52	44.7	20.87908	19	84.3216
2	52	48	20.88	19	84.3215
3	52	49.5	20.88042	19	84.3216
4	52	50.1	20.88058	19	84.322
5	52	49.7	20.88047	19	84.3226
6	52	50.3	20.88064	19	84.3244
7	52	50.2	20.88061	19	84.3254
8	52	48.7	20.88019	19	84.3264
9	52	45.1	20.87919	19	84.3262
10	52	45.1	20.87919	19	84.3248
11	52	44.9	20.87914	19	84.3238
12	52	44.6	20.87906	19	84.3224

	MALIPADAR V.F				
Pl.no	mm	ss	Latitude	mm	longitude
1	44	45.3	20.74592	30	84.5138
2	44	51.4	20.74761	30	84.5144
3	44	57.8	20.74939	30	84.5144
4	45	0	20.75	30	84.5133
5	44	58	20.74944	30	84.5128
6	44	55.3	20.74869	30	84.5127
7	44	50.9	20.74747	30	84.5127
8	44	49.2	20.747	30	84.5129
9	44	46	20.74611	30	84.5124

	MANIK PATHAR V.F				
Pl.no	mm	ss	Latitude	mm	longitude
1	43	39.9	20.72775	31	84.5188
2	43	38.1	20.72725	31	84.5183
3	43	38.4	20.72733	31	84.5174
4	43	38	20.72722	30	84.5162
5	43	36.4	20.72678	30	84.5158
6	43	35.3	20.72647	30	84.5157
7	43	33.3	20.72592	30	84.5159
8	43	34	20.72611	31	84.5174
9	43	34.7	20.72631	31	84.519
10	43	37.2	20.727	31	84.5199

	MUNDAPADA V.F				
Pl.no	mm	ss	Latitude	mm	longitude
1	51	56.6	20.86572	20	84.3368
2	51	58.4	20.86622	20	84.3372
3	52	0.2	20.86672	20	84.3374
4	52	1.1	20.86697	20	84.3365
5	52	0.7	20.86686	20	84.336
6	51	57.2	20.86589	20	84.3352
7	51	53.6	20.86489	20	84.3345
8	51	50.4	20.864	20	84.3352
9	51	55.3	20.86536	20	84.3366

	NAKTINALI V.F				
Pl.no	mm	ss	Latitude	mm	longitude
1	0	9.9	21.00275	28	84.4754
2	0	11.2	21.00311	28	84.4756
3	0	12.2	21.00339	28	84.4751
4	0	9.7	21.0027	28	84.4743
5	0	8.3	21.0023	28	84.4741
6	0	5	21.00139	28	84.4739
7	0	4	21.00111	28	84.4748
8	0	7.6	21.0021	28	84.4752

	RATANPADA V.F				
Pl.no	mm	ss	Latitude	mm	longitude
1	49	35.4	20.8265	23	84.386
2	49	35.9	20.82664	23	84.3869
3	49	35.4	20.8265	23	84.3883
4	49	31.7	20.82547	23	84.3882
5	49	27.8	20.82439	23	84.3883
6	49	27.1	20.82419	23	84.387
7	49	28.9	20.82469	23	84.3867
8	49	32.2	20.82561	23	84.3865

	SARVANGUNI V.F				
Pl.no	mm	ss	latitude	mm	longitude
1	58	33.6	20.976	33	84.566
2	58	29.8	20.97494	33	84.5658
3	58	24.3	20.97342	33	84.5657
4	58	19.6	20.97211	33	84.5651
5	58	19.1	20.97197	33	84.5658
6	58	21	20.9725	33	84.5666
7	58	27.1	20.97419	34	84.5672
8	58	33.2	20.97589	33	84.5663

SINGARIMUNDA V.F					
Pl.no	mm	ss	latitude	mm	longitude
1	49	32.7	20.82575	22	84.37786
2	49	31.1	20.82531	22	84.3745
3	49	34.2	20.82617	22	84.37311
4	49	35.3	20.82647	22	84.37189
5	49	35	20.82639	22	84.37069
6	49	37.8	20.82717	22	84.37097
7	49	37.2	20.827	22	84.373
8	49	37.6	20.82711	22	84.37531
9	49	40.8	20.828	22	84.37711
10	49	36.8	20.82689	22	84.37861

MADHAPUR V.F					
Pl.no	mm	ss	latitude	mm	longitude
1	48	17.6		27	84.37786
2	48	18.4		27	84.3745
3	48	17.4		27	84.37311
4	48	14.7		27	84.37189
5	48	15.4		27	84.37069
6	48	15.9		27	84.37097

THELKONALI V.F					
Pl.no	mm	ss	latitude	mm	longitude
1	58	29.6		34	
2	58	28.7		34	
3	58	30		34	
4	58	29.7		34	
5	58	32.2		35	
6	58	35.7		35	
7	58	35.7		35	

2.3.5.2 GPS Locations of ProtectedForests:

PAPASARA P.F					
Pl.no	mm	ss	latitude	mm	longitude
1	55	7.9	20.91886	39	84.66247
2	55	9.1	20.91919	39	84.66269
3	55	10.8	20.91967	39	84.66256
4	55	11.8	20.91994	39	84.663
5	55	13.3	20.92036	39	84.66328
6	55	14.8	20.92078	39	84.66331
7	55	14.7	20.92075	39	84.66367
8	55	14.4	20.92067	39	84.66417
9	55	14.2	20.92061	39	84.66481
10	55	14.3	20.92064	39	84.66569
11	55	14.4	20.92067	39	84.66589
12	55	18.2	20.92172	39	84.66525
13	55	20.5	20.92236	39	84.66408
14	55	20.7	20.92242	39	84.66369
15	55	20.1	20.92225	39	84.66322
16	55	20.9	20.92247	39	84.66286
17	55	20.5	20.92236	39	84.66242
18	55	20.1	20.92225	39	84.66164
19	55	18.5	20.92181	39	84.66061
20	55	18.2	20.92172	39	84.65967
21	55	17.7	20.92158	39	84.65836
22	55	9.8	20.91939	39	84.659
23	55	3.7	20.91769	39	84.65961
24	55	2.4	20.91733	39	84.66094

	NUA - KUAJHARI P.F				
Pl.no	mm	ss	latitude	mm	longitude
1	55	26.6	20.92406	38	84.64275
2	55	21.4	20.92261	38	84.64381
3	55	19.1	20.92197	38	84.64486
4	55	16.3	20.92119	38	84.64564
5	55	13	20.92028	38	84.64606
6	55	8.7	20.91908	38	84.64669
7	55	6	20.91833	38	84.64617
8	55	4.6	20.91794	38	84.64461
9	55	3.9	20.91775	38	84.64453
10	55	5.3	20.91814	38	84.64347
11	55	6.6	20.9185	38	84.64292
12	55	6.4	20.91844	38	84.64272
13	55	7.2	20.91867	38	84.64236
14	55	12.4	20.92011	38	84.64189
15	55	15.7	20.92103	38	84.64111
16	55	20.4	20.92233	38	84.63989
17	55	21.9	20.92275	38	84.63872
18	55	18.6	20.92183	38	84.63772
19	55	18.1	20.92169	38	84.63708
20	55	17	20.92139	38	84.63658
21	55	18	20.92167	38	84.63594
22	55	22.3	20.92286	38	84.63475
23	55	22.8	20.923	38	84.63358
24	55	24.1	20.92336	37	84.63231
25	55	25.8	20.92383	37	84.63106
26	55	28.4	20.92456	37	84.62983
27	55	30.4	20.92511	37	84.62992
28	55	30.8	20.92522	37	84.62922
29	55	31.5	20.92542	37	84.62842
30	55	32.8	20.92578	37	84.62769
31	55	42.9	20.92858	37	84.62842
32	55	42.5	20.92847	37	84.62903
33	55	40.8	20.928	37	84.63017
34	55	35.9	20.92664	37	84.63006
35	55	31.4	20.92539	37	84.63217
36	55	32.5	20.92569	37	84.63264
37	55	31.7	20.92547	38	84.63349
38	55	30.3	20.92508	38	84.63359
39	55	25.7	20.92381	38	84.63669
40	55	26.3	20.92397	38	84.64039

NAKTIDEULA P.F					
Pl.no	mm	ss	latitude	mm	longitude
1	50	8	20.83556	23	84.38514
2	50	0.3	20.83342	23	84.38342
3	49	57.5	20.83264	23	84.38503
4	50	3.1	20.83419	23	84.387
5	50	9.3	20.83592	23	84.38828
6	50	12.6	20.83683	23	84.38856
7	50	13.8	20.83717	23	84.38706

KUAJHARI P.F					
Pl.no	mm	ss	latitude	mm	longitude
1	55	25	20.92361	38	84.64569
2	55	25.4	20.92372	38	84.64628
3	55	27.9	20.92442	38	84.64633
4	55	29.6	20.92489	38	84.64586
5	55	29.3	20.92481	38	84.64536
6	55	30.1	20.92503	38	84.64408
7	55	32.4	20.92567	38	84.64503
8	55	34.4	20.92622	38	84.64478
9	55	37.2	20.927	38	84.64539
10	55	36.3	20.92675	38	84.64608
11	55	34.6	20.92628	38	84.64606
12	55	34.8	20.92633	38	84.64686
13	55	36	20.92667	38	84.64758
14	55	40	20.92778	38	84.64781
15	55	41.8	20.92828	38	84.64742
16	55	43.7	20.92881	38	84.64697
17	55	45.3	20.92925	38	84.64592
18	55	41.5	20.92819	38	84.645
19	55	39	20.9275	38	84.643
20	55	43.1	20.92864	38	84.64122
21	55	43.2	20.92867	38	84.64033
22	55	41.2	20.92811	38	84.63969
23	55	39.3	20.92758	38	84.63972
24	55	35.8	20.92661	38	84.64011
25	55	33.9	20.92608	38	84.64125
26	55	32.1	20.92558	38	84.64172
27	55	30.3	20.92508	38	84.64214
28	55	27.7	20.92436	38	84.64183
29	55	29.6	20.92489	38	84.64117
30	55	30.7	20.92519	38	84.64053

31	55	32	20.92556	38	84.63953
32	55	34.2	20.92617	38	84.63936
33	55	35	20.92639	38	84.63872
34	55	36.5	20.92681	38	84.63822
35	55	37.1	20.92697	38	84.63764
36	55	36.5	20.92681	38	84.63692
37	55	36.7	20.92686	38	84.63619
38	55	38	20.92722	38	84.63569
39	55	39.5	20.92764	38	84.63503
40	55	41.1	20.92808	38	84.63492
41	55	40.9	20.92803	38	84.63367
42	55	39.2	20.92756	37	84.63292
43	55	39.3	20.92758	37	84.63203
44	55	39.7	20.92769	37	84.63153
45	55	31.4	20.92539	37	84.63217
46	55	32.5	20.92569	37	84.63264
47	55	31.7	20.92547	38	84.63349
48	55	30.3	20.92508	38	84.63359
49	55	32.5	20.92569	38	84.63611
50	55	29.4	20.92483	38	84.63781
51	55	26.3	20.92397	38	84.64039
52	55	26.8	20.92411	38	84.64339

BILEINALI P.F					
Pl.no	mm	ss	latitude	mm	longitude
1	55	0.8	20.91689	39	84.66622
2	55	3	20.9175	39	84.66617
3	55	4.3	20.91786	39	84.66581
4	55	4.5	20.91792	39	84.66522
5	55	5.8	20.91828	39	84.66464
6	55	5.9	20.91831	39	84.66428
7	55	6.5	20.91847	39	84.66381
8	55	7	20.91861	39	84.66339
9	55	6.8	20.91856	39	84.66306
10	55	7.9	20.91886	39	84.66247
11	55	1.2	20.917	39	84.66169
12	55	0.7	20.91686	39	84.66261
13	55	0.6	20.91683	39	84.66303
14	54	59.3	20.91647	39	84.66414
15	54	58.2	20.91617	39	84.66469
16	54	56	20.91556	39	84.66486
17	54	55.8	20.9155	39	84.66569
18	54	56.3	20.91564	39	84.66592
19	54	57.9	20.91608	39	84.66581
20	55	0.4	20.91678	39	84.66594

BARAPADAR P.F					
Pl.no	mm	ss	latitude	mm	longitude
24	52	45.8	20.87939	25	84.42319
23	52	46.6	20.87961	25	84.42011
22	52	47.5	20.87986	24	84.41628
21	52	45.3	20.87925	24	84.41647
20	52	42.9	20.87858	24	84.41606
19	52	41.7	20.87858	24	84.41633
18	52	40.8	20.87825	25	84.41708
17	52	39.5	20.878	25	84.41714
16	52	36.4	20.87764	25	84.41722
15	52	33.3	20.87678	25	84.41775
14	52	31.1	20.87592	25	84.41917
13	52	28.1	20.87531	25	84.41964
12	52	26.1	20.87447	25	84.41994
11	52	24.7	20.87392	25	84.42158
10	52	25.2	20.87353	25	84.4225
9	52	26.3	20.87367	25	84.42306
8	52	27.1	20.87397	25	84.42331
7	52	28.6	20.87461	25	84.42294
6	52	35	20.87639	25	84.42253
5	52	39.5	20.87764	25	84.42425
4	52	39.4	20.87761	25	84.42464
3	52	41	20.87806	25	84.42633
2	52	41.9	20.87831	25	84.4265
1	52	46	20.87944	25	84.42633

2.4 Land use, land use change and forestry (LULUCF)

2.4.1 Land use pattern

2.4.1.1 In the division the forest area is in a major proportion. The total forest area as per DLC report is 86,929.412 ha, this amounts to 47.22% of the total geographical area of the division. Net sown area for agriculture is 29,752 ha. Fallow lands are present over an area 23,233 ha. The detailed land use pattern in two blocks as per District Stastical hand book-2001 &2011 is given in **Table No: 2.18** and **Table No: 2.19** as follows.

Table: 2.18LAND UTILISATION PATTERN (Ha.)		
Category	Athamallik	Total
Misc. Tree Crops	378	1456
Pasture & Grazing Lands	1770	4419
Cultivable Waste	2499	5987
Non-Agricultural Use	4844	7452
Barren & Uncultivable Land	1837	3708
Current Fallow	5597	12316
Other Fallows	3544	7864
Net Sown Area	18019	33649
Source: District Statistical Handbook, 2001		

Table: 2.19	LAND UTILISATION PATTERN (Ha.)	
Category	Athamallik	Total
Misc. Tree Crops	331	855
Pasture & Grazing Lands	4922	7082
Cultivable Waste	3382	5677
Non-Agricultural Use	6136	8719
Barren & Uncultivable Land	3180	8762
Current Fallow	7883	14542
Other Fallows	4918	8691
Net Sown Area	15983	29752
Source: District Statistical Handbook, 2011		

On Comparison of land utilisation pattern as per the information published in 2011 against that of 2001; it is noticed that the Misc. Tree Crops, Cultivable Waste and Net Sown Area have decreased that of Pasture & Grazing Lands, Non-Agricultural Use, Barren & Uncultivable Land, Current Fallow and other Fallow lands have increased which shows a negative trend in the land utilisation pattern.

2.4.1.2 Maximum people are marginal farmers (54.34%), they have a control over 22.38% area. Small farmers constitute 30.88% of the farming community and they control 34.35% area. Large farmers having average area of more than 10 ha constitute only 0.31%. In the scheduled caste and Scheduled Tribes, the small farmers control more area than marginal farmers. The details of number of people in different categories and the area operated in different categories are given in **Table No: 2.20** The details furnished in the table are the average figures of Angul district.

Table: 2.20	**DETAILS OF SIZE OF OPERATIONAL HOLDINGS**					
Category	**All Social Groups**			**Scheduled Caste**		**Scheduled Tribes**
Type	**Avg. area**	**% People**	**% Area**	**% Peopl**	**% Area**	**% Area**
Marginal	0.5 - 1.0	54.34	22.38	9.1	3.27	3.06
Small	1.0 - 2.0	30.88	34.35	3.1	3.31	4.96
Semi-med	2.0 - 4.0	11.73	26.61	1	2.21	3.32
Medium	4.0 - 10	2.74	12.62	0.1	0.44	1.23
Large	10 - 20 & Above	0.31	4.04	0.004	0.04	0.15
Total		100	100	13.304	9.27	12.72
Source: District Statistical Handbook, 2001						

2.4.1.3 In the division, there are 62,654 ha of cultivable area. This includes 33,316 ha of high land, 19,888 ha of medium land and 9450 ha of low land. It is seen that the proportion of high and medium lands are more in Athamallik block and low lands are more in Kishorenagar block and the number of farm families are more in Kishorenagar block. The details are given in the **Table No: 2.21.**

Table: 2.21 EXTENT OF CULTIVABLE LAND IN THE DIVISION								
		Cultivable Area			Cultivated Land			Farm
S.No.	Block	High	Medium	Low	High	Low	Total	Families
1	Athamallik	20924	12780	4700	20792	4700	35492	13399
2	Kishorenagar	12392	7108	4750	14755	4800	25088	14698
	Total	33316	19888	9450	35547	9500	60580	28097
Source: Dist. Agricultural Officer, Angul								

2.4.1.4 In the division there is one medium irrigation project on Manjore near Manarbeda village constructed but it is still not completely functional due to non-settlement of rehabilitation issue. After completion, this project is expected to provide irrigation facility to 6090 ha during Kharif and 4335 ha during Rabi. The irrigated area under khariff and Rabi crop is furnished in **Table No.2.22.**

It is seen that the minor irrigation potential created is more in Kishorenagar block and the lift irrigation potential which was coming down over a period of time has again increased.

Table: 2.22 IRRIGATION POTENTIAL OF ATHAMALLIK DIVISION					
Year	Minor irrigation in Ha		Lift irrigation in ha		Other sources
	Athamallik	Kishorenagar	Athamallik	Kishorenagar	Kishorenagar
2000-01	2053	2587	943	528	Dug well- 426 Ha. Bore well-494 Ha. Agriculture Deptt.) Bore well-568 Ha. (L.I Department) Bore well- 50 a.(Water holding Structure) Others- 856 Ha. (Ponds, Mini ponds, anchayat Ponds) **Total- 2394 Ha.**
2001-02	2334	2295	901	479	
2002-03	42	174	92	220	
2003-04	1330	2367	142	164	
2004-05	1860	2474	---	80	
2010-11	2283	2543	893	830	3912
2011-12		2367 Ha.		852 Ha.	
2012-13		2367 Ha.		852 Ha.	
2013-14		2367 Ha.		852 Ha.	
2014-15		2367 Ha.		852 Ha.	
2016-17		2367 Ha.		852 Ha.	
2017-18		2367 Ha.		852 Ha.	
2018-19		2367 Ha.		852 Ha.	
2019-20		2367 Ha.		852 Ha.	
2020-21		2367 Ha.		852 Ha.	
Source: Dist. Agricultural Officer, Angul					

Table: 2.23 IRRIGATION POTENTIAL OF MANJORE PROJECT		
Year	KHARIFF in Ha	RABI in ha
2014-15	4300	500
2015-16	4300	500
2016-17	4800	500
2017-18	5700	500
2018-19	5700	2000
2019-20	5713	2000
202021	6775	2000

2.4.1.5 Cropping Pattern

2.4.1.5.1 Most of the cultivated area is covered under double crops like in uplands, where Bengal gram, Field Pea & vegetables are taken after the harvest of groundnut and early kharif paddy. In the medium lands wheat, Onion, Garlic, pulse crops like Mung, Biri, Khesari, Vegetables and Groundnut crops are taken after the harvest of medium duration paddy crops. In the low lands, Paddy and pulses are grown after the harvest of paddy. In assured irrigation sources, three crops like paddy-vegetable-pulses: Paddy-Potato-til: Paddy-pulse-Groundnut etc are taken.

2.4.1.5.2 The important crops grown in Kharif season are paddy, Maize, Ragi, Mung, Arhar, Cow Pea, Groundnut, Til, Turmeric, Zinger, and Vegetables like Brinjal, Tomato, early Cauliflower, etc. Different crops grown in Rabi season are Paddy, Wheat, Maize, Gram, Fieldpea, Mung, Biri, Musturd, Sunflower, Sugar cane, Potato, Onion, Garlic, and Coriander etc. In this division, mainly the pulses production like Mung, Biri, Arhar is predominant and they are sold in outside the division. The important horticultural crops grown in the division are Mango, Banana, Litchi, Pomegranate, etc. Litchi is predominantly grown in Bamur range area. The important crops grown in the division along with the yield

Table: 2.24	PRODUCTION OF MAJOR CROPS IN ATHAMALLIK DIVISION						
Crop	2000-01			2001-02		2002-03	
	Area in Ha	Yield in Kg/ha	Production in metric ton.	Area in ha	Production in metric ton.	Yield in kg/ha	Production in metric ton.
Paddy	20579	300	6018	21885	32487	916	19660
Wheat	367	1368	502	331	538	1667	360
Maize	979	479	469	1097	1266	2039	2302
Ragi	34	470	16	21	15	471	8
Mung	7016	107	750	7510	1433	102	642
Biri	9933	106	1052	10616	2146	121	1321
Arahar	3393	632	2144	3445	4320	823	2897
Til	16362	145	2379	16672	4853	267	3729
Groundnut	1275	1324	1688	1759	2177	1347	1940
Caster	183	541	99	111	66	553	62
Mustard	2970	104	311	3100	354	125	351
Sunflower	238	1403	334	126	50	365	27
Potato	418	5217	2181	551	3065	3970	2025
Sweet Potato	503	8797	4425	470	4790	9593	4710
Onion	1055	9732	10268	1205	14420	11131	12022
Chilly	683	622	425	696	490	657	502
Garlic	482	3288	1585	270	1038	3524	934
Zinger	44	3000	132	35	102	2753	234
Sugarcane	135	48140	6499	75	3651	30685	2731

Table: 2.25	PRODUCTION OF MAJOR CROPS IN ATHAMALLIK DIVISION						
Crop	2013-14			2014-15		2015-16	
	Area in Ha	Yield in Kg/ha	Production in Qtl	Area in ha	Production in Qtl	Yield in kg/ha	Production in Qtl
Paddy	19960	2738	54650.5	21040	50244	2208	46413
Wheat	104	1988	207	42	83	1990	19.9
Maize	1605	2703	4338	1613	4352	2796	4518
Ragi	25	760	19	25	19	764	19.1
Mung	6445	608	3919	6455	3931	618	3992
Biri	7613	638	4857	7623	4894	629	4895
Arahar	3612	838	3027	3610	3054	826	2984
Til	11014	538	5926	11005	5899	521	5744
Groundnut	1288	830	1069	1203	1013	838	1068
Caster	5	618	3.1	8	5	636	7.6
Mustard	2589	816	2113	2608	2144	790	2125
Sunflower	310	985	305	288	284	970	212
Potato	488	9484	4628	486	4601	9470	4640
Sweet Potato	93	9866	918	92	908	9865	888
Onion	2049	10538	21592	2040	21416	10540	21586
Chilly	99	1049	104	97	102	1050	108
Garlic	195	3646	711	190	693	3640	710
Zinger	130	1709	222	132	227	1722	226
Sugarcane	25	25030	1876	35	2626	75060	1726
Source: District Agricultural Officer, Athmallik.							

On analysis of the production of major crops for the year 2000-01,2001-02 and 2002-03 to that of 2013-14,2014-15 & 2015-16; it is observed that there is tremendous increase in paddy, maize,mung,biri,til,mustard etc mainly due to irrigation facility and adoption of better technology.The cultivation in sweet potato,sugar cane etc has decreased mainly due to animal depredation.

Occupational structure

The total working population is 1, 18,191 (51.24%) out of the total population of 2, 30, 671. In the working population, 51,496 (43.57%) are female, and 66,695 (56.43%) are male. The classification of working population is given in **Table: 2.26.** Thus the female contribute substantially to the economic activity and household income. Out of the total 1, 18,191 workers, the main workers are 57,047 (48.27%) and marginal workers are 61,144 (51.73%). Men are in major proportion of main workers (73.20%) and women are mostly engaged in marginal works (59.21%). The details of categories of workers and classification of main workers are provided in **Table No: 2.27 and Table No: 2.28** respectively. The classification of marginal workers is provided in **Table No.2.29**. The agricultural sector provides employment to people for only 6-7 months. In the other times, the people mostly depend on the forest for their livelihood

Table: 2.26 CLASSIFICATION OF POPULATION

Category	Male		Female		Total
	Population	%	Population	%	%
Main Workers	41758	73.2	15289	26.8	48.27
Marginal Work	24937	40.78	36207	59.22	51.73
Total	66695	56.43	51496	43.57	100

Source: District Statistical Handbook, 2011

Table: 2.27 CLASSIFICATION OF POPULATION

Category	Male		Female		Total
	Population	%	Population	%	%
Main Workers	44740	74.5	15288	25.5	56.6
Marginal Workers	16461	35.8	29509	64.2	43.4
Total	61201	57.7	44797	42.3	100

Source: District Statistical Handbook, 2001

On comparison of classification of population published in the statistical handbook of 2011 to that of 2001; it is observed that while the main workers has decreased from 60,000 to 57,000; that of marginal workers has increased from 46,000 to 61,000 Nos.

Table: 2.28 CLASSIFICATION OF MAIN WORKERS			
Sl. No	Category	Population	Percentage
1	Cultivators	21,062	36.92
2	Agricultural labour	15,316	26.85
3	Household Sector	4680	8.2
4	Other Workers	15989	28.03
Total		**57047**	**100**
Source: District Statistical Handbook, 2011			

Table: 2.29 CLASSIFICATION OF MARGINAL WORKERS			
Sl. No	Category	Population	Percentage
1	Cultivators	7235	11.83
2	Agricultural labour	38,530	63.02
3	Household Sector	5994	9.8
4	Other Workers	9385	15.35
Total		**61144**	**100**
Source: District Statistical Handbook, 2011			

2.4.1.6 : Change in Forest Cover

Forest Survey of India, Dehradun conducts survey of Forest Cover on the basis of satellite imagery of all states and publish the report in the ' India State of Forest Report' on

Sl. No.	Classification of Forest Cover	Canopy density in %
1	Very Dense Forest	70% & above
2	Moderately Dense Forest	40 to 70%
3	Open Forest	10 to 40%
4	Scrub	Less than 10%

The latest India State of Forest Report was published in the year 2015. The previous India State of Forest Report was published in the year 2013. On comparison of the Forest Cover of Athmallik Forest Division of the year 2015 to that of 2013; the following change of Forest Cover under various category was noticed.

Sl. No.	Category of Forest Cover	Area as per report,2013.(Ha)	Area as per report,2015.(Ha)	Increase in cover
1	Very Dense Forest	9304.623	9270.959	(--)33.664
2	Moderately DensForest	46347.372	46397.687	(+) 50.315
3	Open Forest	24054.718	24036.604	(--)18.114
	TOTAL	**79,706.71**	**79,705.25**	**(–) 1.463**
4	Scrub	6070.277	6059.385	(--)10.892
Source: FITGC,ARANYA BHAWAN,Bhubaneswar.				

Sl. No.	Category of Land	Area as per report,2013.(Ha)	Area as per report,2015.(Ha)	Increase /Decrease
1	Non Forest	94,891.33	95,764.76	(+)873.428
2	Water	4134.931	3273.856	(-) 861.075
Source: FITGC,ARANYA BHAWAN,Bhubaneswar.				

On analysis; it is observed that in the Forest Cover as well as in the Water level, there is a negative trend.

2.4.2 Diversion of Forest Land

For different non-forestry purposes like Irrigation Project, Construction of Railways, PMGSY roads, Transmission Lines, Pipelines, Irrigation projects, etc. forest land to the tune of 772.156 ha has been diverted in Athmallik Division. Against this diversion, compensatory afforestation has been taken up over an area of 1637.607ha (Non Forest – 334.527, Degraded Forest – 1303.08**).** Mutation of Non Forest land in lieu of diverted forest land has been made in favour of forest department in 06 nos. of cases over an area of 195.3952 ha and declared as Protected Forests under section 33 of the O F. Act, 1972. The details of land diverted for non-forestry purposes and compensatory afforestation raised are furnished in **Table- 2.30** and the details of Non Forests land mutated in favour of Forest Departmrnt (PF) is furnished in **Table No 2.31.**

Table No. 2.30 Details of diversion of the forest area in F.C. Act, 1980							
S. No.	Name of the Project	Name of F.B. with Status	Area diverted (in Ha)	Area allotted for CA(ha)	Plantation Site	Year of diversion	Range
1	Manjore Irrigation Project	1. Nuagan RF	52	504.77	Sunderg arh Divn	1997	Madhapur
		2. Khesra Fores	444.63				
		Total	496.63				
2	Talcher-Sambalpur Railway	Kadalimunda F	0.9	251.1231	Bonai Div	1992	Handapa/Bamur
		2. Khesra Fores	41.214				
		Total	42.114				
3	400 KVDC Line From	Khesra Forest	41.36	152	Athamallik Divn	2003	Handapa/Bamur
4	401 KVDC Line From Meramandali to	Kutulsingha RF	2.55	103.05	Athamallik Divn	2003	Handapa/Bamur
		Khesra Forest	48.99				
		Total	51.54				
5	Handapa Chhak to Patrapada PMGSY	Nil	prescribed by the GoI,MoEF vide their F.No			2010	Handapa
6	Paradeep to Sambalpur-Raipur - Ranchi pipeline Project.	Ghosar RF				2013	Handapa/Bamur
		Revenue Fores	0.1894 Ha				
			10.3946 Ha				
			Total : 10.584				
7	2x765K. V.S/C transmission line from Angul to Jharsuguda pooling	Revenue Fores	129.928	612.7 (Degraded Forest)	Athmallik Division	2014	Handapa,Bamur,Dhandatopa & Madhapur
		Total	772.156				
Source: DFO, Athamallik							

TABLE- 2.31 list of the non-forestry land mutated in favour of forest department (PF)					
Sl. No	Name of the Project approved under FC Act.1980	Forest area diverted (in ha.)	Non Forestry area mutated (in ha.)	Notification No	Remarks
1	2x600MWThermal Power Plant in Angul Forest Division by M.S Jindal India Thermal Power Limited.	39.1493	39.1493 (Kishorenagar Tahasil/ Bamur Range)	Declared u/s-33 of O.F.A-1972 as per Notification No. 10F(Div)-493/2012 17087/F & E, dated 17.08.2013 of the Govt of Odisha, F & E Dept.	
2	Dhauragoth Minor Irrigation Project.	12.869	12.8690 (Athamallik Tahasil/MadhapurRange	Declared u/s-33 of O.F.A-1972 as per Notification No. 10F(Div)-20/2009 23541/F & E, dated 03.11.2010 of the Govt of Odisha, F & E Dept.	
3	Mandakini Coal block A of M.s Mandakini Coal Company Ltd in Angul Dist.	22.9262	22.9262 (Kishorenagar Tahasil/ Handapa Range)	Declared u/s-33 of O.F.A-1972 as per Notification No. 10F(Con)-475/2012 23620/ F&E, dated 16.11.2013 of the Govt of Odisha, F & E Dept.	
4	Mandakini Coal block A of M.s Mandakini Coal Company Ltd in Angul Dist.	60.8749	60.8749 (Kishorenagar Tahasil/ Handapa Range)	Declared u/s-33 of O.F.A-1972 as per Notification No. 10F(Con)-475/2012 23626/F & E, dated 16.11.2013 of the Govt of Odisha, F & E Dept.	
5	Mandakini Coal block A of M.s Mandakini Coal Company Ltd in Angul Dist.	49.7619	49.7619(Kishorenagar Tahasil/ Handapa Range)	Declared u/s-33 of O.F.A-1972 as per Notification No. 10F(Con)-475/2012 23632/F & E, dated 16.11.2013 of the Govt of Odisha, F & E Dept.	
6	Mandakini Coal block A of M.s Mandakini Coal Company Ltd in Angul Dist.	9.8139	9.8139(Kishorenagar Tahasil/ Handapa Range)	Declared u/s-33 of O.F.A-1972 as per Notification No. 10F(Div)-493/2012 17087/F & E, dated 17.08.2013 of the Govt of Odisha, F & E Dept.	
	Total	195.3952	195.3952		
Source: Divisional Forest Officer, Athmallik					

2.4.3 ENCROACHMENTS

2.4.3.1 This is not a very serious problem in this division barring few blocks. Some of the encroachments were done long back i.e. before 1980 and some are done after 1980. Mostly encroachments are either for homestead or agriculture purposes. Problem of podu cultivation is not acute in the division. Many offence cases have been initiated against the encroachers and the cases are pending in court of law.

2.4.3.2 There are 19 scheduled caste families occupying an area of 0.3078 ha of Khesra forest in the Pulleswar village and they are identified as eligible encroachments for settlement by Government of Orissa and a proposal under Forest (Conservation) Act, 1980 has been sent to Government of India in the year 2000. The details of Pre-80 and post 80 encroachments furnished by the D.F.O Athamallik are given in **Table No: 2.32 & 2.33** respectively. Before 1980, nearly 152 families encroached an area of 39.5452 ha of forest and after 1980 nearly 223 families encroached an area of 32.3422 ha of forest in different Reserved and Khesra Forest blocks. 02 cases are booked for eviction of ineligible encroachers in pre-80 encroachment cases in RF areas which are under trial. Against post-80 encroachment cases in RF areas, 38 cases are filed in the court out of which 07 cases are acquitted and balance 31 cases are under trial.

Table: 2.32 DETAILS OF PRE-80 ENCROACHMENTS

Range	Name of Forest	Name of Village	No. of families	Purpose	Area in Ha
Athamallik	Puleswar KF	Puleswar	28	Homestead	0.4536
Madhapur	Gadadharpur KF	Gadadharpur	8	-do-	0.1296
	Hatuapada KF	Hatuapada	21	-do-	0.3411
Dhandatopa	Kutulsingha RF	Kutulsingha	8	-do-	11.8495
Bamur	Ghosar RF	Ghosar	23	-do-	25.6
	Chelikhai KF	Chelikhai	4	-do-	0.0648
	Badabahal RF	Badabahal	2	-do-	0.324
	Brahmanipal KF	Brahmanipal	14	-do-	0.2268
	Kamalkata KF	Kamalkata	1	-do-	0.0162
Handapa	Ichhapur KF	Ichhapur	5	-do-	0.081
	Kundali KF	Kundali	7	-do-	0.1134
	Nuakholruguda KF	Nuakholruguda	6	-do-	0.0972
	Cherkhaman KF	Cherkhaman	11	-do-	0.1782
	Arjundham KF	Arjundham	5	-do-	0.081
	Nua Balikhaman KF	Nua Balikhaman	3	-do-	0.0486
	Chandrabahal KF	Chandrabahal	5	-do-	0.081
	Karadabahali KF	Karadabahali	1	-do-	0.0162
Total			**152**		**39.5452**

Source: DFO, Athamallik

During verification of boundary pillars, some encroachments are noticed the details of which are furnished as below in **Table No. 2.34.**

Table No. 2.34 Encroachments detected during field verification

Sl.No	Name of the Forest Block.	Purpose of encroachment	Area encroached (in acre)	LATITUDE			LONGITUDE		
				D	M	S	D	M	S
1	Purunapani DPF	Pond	25	20	51	2.07	84	27	41.6
				20	50	44.08	84	27	43.6
2	Dandarugudi RF	Cow shed	0.5	20	58	4.4	84	37	12.6
3	Kadalimunda RF	Railway track	0.75	20	55	11.8	84	46	41
4	Kuber Hill DPF	Paddy field	2.25	20	46	14.3	84	29	9.7
5	Kuber Hill DPF	Irrigation canal	4	20	46	15.7	84	29	4.8
6	Kusumkhuri RF	Paddy field	0.15	20	38	41.5	84	39	17.3
7	Kusumkhuri RF	Homestead	1.35	20	38	21.5	84	39	34.1
8	Kusumkhuri RF	Homestead	19.76	20	38	20.2	84	39	47.8
9	Kusumkhuri RF	Homestead	3.125	20	38	19.7	84	39	58.3
10	Kusumkhuri RF	Homestead	1.25	20	38	23.2	84	40	20.2
11	Kusumkhuri RF	Madha badi	25	20	38	31.4	84	41	32.4
11	Handapa RF	Paddy field	2.5	20	59	46.2	84	44	47.4
12	Handapa RF	Paddy field	0.625	20	59	5.5	84	44	51,7
13	Ghosar RF	Paddy field	2	20	55	51.2	84	29	13
14	Ghosar RF	Paddy field	1	20	55	47.1	84	29	28.6
15	Ghosar RF	Paddy field	2.5	20	55	43	84	29	46.7
16	Ghosar RF	Paddy field	4	20	55	39.9	84	30	1.7
17	Ghosar RF	Paddy field	1	20	55	39.9	84	30	20.2
18	Ghosar RF	Paddy field	15	20	55	2	84	31	21.3
19	Ghosar RF	Paddy field	1	20	55	45.9	84	30	20.5
20	Ghosar RF	Crop field	2	20	56	27.4	84	28	41
21	Ghosar RF	Crop field	2	20	56	34.5	84	28	23.7
22	Ghosar RF	Homestead & School	5	20	56	7.3	84	28	3.9
23	Ghosar RF	Homestead	4	20	56	5.6	84	28	7.5
24	Ghosar RF	Homestead	2	20	56	2.7	84	28	17.7
25	Ghosar RF	PWD Road	2	20	56	53.6	84	29	4.6
26	Digi DPF		10	20	57	3.6	84	25	31.2
				20	56	57.1	84	25	10.6
27	Digi DPF	Crop field	5	20	56	30.6	84	25	6.3
				20	56	26.1	84	25	23.1
28	Digi DPF	Crop field	16	20	56	29.4	84	25	41.2
				20	56	33.4	84	25	44.4
29	Gundurijharan DPF	Farm House	10	21	1	46.3	84	45	17.9
				21	1	40.6	84	45	19.3
30	Gundurijharan DPF	Digging of Hole	2	21	1	21.7	84	46	31.7
31	Muchhapur'B'	Crop field	10	20	51	12.6	84	22	56.4
				20	51	1.3	84	22	54.7
32	Muchhapur'B'	Crop field	1	20	50	57.6	84	22	51.2
33	Kuturukani DPF	Crop field	12.3	20	58	10.5	84	40	35.2
34	Kuturukani DPF	Crop field	38.75	20	58	28.1	84	39	33.2
				20	58	34.8	84	39	32.5

2.4.4 Implementation of Forest Right Act, 2006.

In Athmallik Forest Division, consequent upon implementation of S.T. & other Traditional Forest Dwellers (Recognition of Forest Right) Act, 2006, no title has been issued to any beneficiary for Individual Right in any RF Block.Individual rights has been granted over an area of 99.977 Ac in Revenue Forests the details of which is furnished in **Annexure-2.1**

2.5 Threats to the Forests.

In Atmallik Forest Division, there is no such evidence of threat to the existence of forests. There is no serious problem of encroachment in this division for podu/shifting cultivation or any such purposes barring few blocks for homestead or agriculture purposes. Also the division is free from any mining activities and industrial developments. One irrigation project has been established and there is no fresh proposal of such project. However the following threats to the Forest of this Division can not be overlooked.

2.5.1 Flood:

River Mahanadi flows in the southern boundary of the Division. Chances of Flood in the future may be anticipated in which there is possibility of damage to the adjoining forest.

2.5.2 Encroachment:

Entire households in the catchment area of Manjore irrigation project are not relocated. In case their reclocation is settled on compensation basis; then there is every possibility of encroachment in the Forest.

2.5.3 Maoist movement:

Movement of naxalist in the Forest area is heard. Protection of Forest may hamper as the staff will be reluctant to stay and patrol in the Forest.

2.6 Distribution of different forest types.

2.6.1 According to the classification made by Champion and Seth in their "Revised Survey of Forest Type in India" 1962, the types of forests present in the division are in the following categories.

(i) 3C/C2e North Indian Tropical Moist Peninsular Sal Forests represented by the two sub-types i.e.
3C /C2e (i) North Indian Tropical Moist Peninsular high level Sal.
3C / C2e (ii) North Indian Tropical Moist Peninsular low level Sal.
(ii) 5B/C1c Dry Peninsular Sal Forest
(iii) 5B/C2- Northern Tropical Dry Mixed Deciduous Forests.
(iv) 5B/ DS1 Dry Deciduous Scrubs.
(v) Dry Bamboo Brakes

2.6.2 DISTRIBUTION OF DIFFERENT TYPES OF FORESTS

There are six different types of forests present in the division. The majority of the forests are Northern Dry Mixed Deciduous Forests (10,038.5306ha), followed by Dry Peninsular Sal Forests (16,900 ha). The distribution of different types of forests in various Reserved Forest blocks is given in **Table No: 2.35** and **2.36** and the types of forests in Demarcated Protected Forests is given in **Table No: 2.37** In DPFs mainly Northern Dry Mixed Deciduous Forests (3578.78 ha), and Dry Peninsular Sal (1980.91 ha) are found.

Table: 2.35 EXTENT OF VARIOUS FOREST TYPES IN RF BLOCKS		
Type Of Forest	Forest Block	Area in Ha (Approx)
3C/C2e-Moist Pen	Talaipathar	4,210
	Northern	3,894.67
	Total	8,104.67
5B/C1c Dry Penins	Northern	15,280
	Handapa	1,620
	Total	16,900
5B/C2 Northern D	East Baruni	1,445.54
	Bankimundi	275
	Dantarikhol	975
	Kutulsingha	1,150.09
	Guja	310
	Bindhyabasini	275.84
	Kishoreban	344.56
	Kadalimunda	267.1
	Kholdangiani	88.4
	Bijamalhia	108.5
	Kusumkuhuri	120.4
	Mahendrapur	85.8
	Handapa	179.21
	Ghosar	740.3406
	Nuagan	598
	Talaipathar	2,802.54
	West Baruni	240.21
	Dandarugudi	32
	Total	10,038.53
5B/DS1 Dry Decid	East Baruni	161
	Bankimundi	118.07
	Dantarikhol	649.64
	Kutulsingha	494
	Guja	36.18
	Kadalimunda	30.23
	Kholdangiani	132.71
	Bijamalhia	108.45
	Kusumkuhuri	491.64
	Mahendrapur	348.27
	Ghosar	400
	Nuagan	608.93
	Dandarugudi	130.31
	West Baruni	160
	Total	3,869.43
5B/E9 Dry Bambo	Hatidhara	
	Talaipathar	
	Dantarikhol	
	Kadalimunda	
	Kutulsingha	
	Bankimundi	
	Total	38,912.63

Table: 2.36 BLOCKWISE FOREST TYPES OF ATHAMALLIK DIVISION				
S .No.	RF Block	Type of Forest	Area in Ha	% Area
1	Kusumkuhuri	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	120.4	0.31
		(ii) 5B/DS1 Dry Deciduous Scrub	491.64	1.26
2	Talaipathar	(i) 3C/C2e Moist Peninsular Sal Forest	4210	10.82
		(ii) 5B/C2 Northern Dry Mixed Deciduous Forest	2802.54	7.2
3	Mahendrapur	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	85.8	0.22
		(ii) 5B/DS1 Dry Deciduous Scrub	348.27	0.89
4	Kutulsingha	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	1150.09	2.96
		(ii) 5B/DS1 Dry Deciduous Scrub	494	1.27
5	Dantarikhol	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	975	2.51
		(ii) 5B/DS1 Dry Deciduous Scrub	649.64	1.67
6	East Baruni	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	1445.54	3.71
		(ii) 5B/DS1 Dry Deciduous Scrub	161	0.41
7	West Baruni	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	240.21	0.61
		(ii) 5B/DS1 Dry Deciduous Scrub	160	0.41
8	Nuagan	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	598	1.54
		(ii) 5B/DS1 Dry Deciduous Scrub	608.93	1.56
9	Northern	(I) 5B/C1c Dry Peninsular Sal Forest	15280	39.27
		(ii) 3C/C2e Moist Peninsular Sal Forest	3894.67	10.01
10	Handapa	(I) 5B/C1c Dry Peninsular Sal Forest	1620	4.16
		(ii) 5B/C2 Northern Dry Mixed Deciduous Forest	179.21	0.46
11	Dandarugudi	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	32	0.8
		(ii) 5B/DS1 Dry Deciduous Scrub	130.31	0.33
12	Kholdangiani	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	88.4	0.23
		(ii) 5B/DS1 Dry Deciduous Scrub	132.71	0.34
13	Kadalimunda	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	267.1	0.69
		(ii) 5B/DS1 Dry Deciduous Scrub	30.23	0.08
14	Bankimundi	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	275	0.71
		(ii) 5B/DS1 Dry Deciduous Scrub	118.07	0.3
15	Bindhyabasini	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	275.84	0.71
16	Kishoreban	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	344.56	0.89
17	Ghosar	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	740.3406	1.9
		(ii) 5B/DS1 Dry Deciduous Scrub	400	1.02
18	Guja	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	310	0.8
		(ii) 5B/DS1 Dry Deciduous Scrub	36.18	0.93
19	Bijamalhia	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	108.5	0.28
		(ii) 5B/DS1 Dry Deciduous Scrub	108.45	0.28
		Total	38,912.63	

Table: 2.37 FOREST TYPES IN PROTECTED FORESTS			
S.No.	Forest Type	Name of PF Block	Area in Ha (Approx)
1	5B/C1c Dry Peninsular Sal Forest	Kuturukani	920
		Gundurijharan	480.91
		Batipurunapani	580
		Total	1980.91
2	5B/C2 Northern Dry Mixed Deciduous Forests	Kuber Hill	10
		Thakurgarh	110.62
		Pitabalibahal	160
		Rampur	114.33
		Purunapani	125.55
		Muchhapur 'A'	24
		Muchhapur 'B'	8
		Gundurijharan	322
		Kuturukani	306.13
		Batipurunapani	634.08
		Mangalpur	15.79
		Solanda	170
		Berham	150
		Susab	90
		Bhangamunda	111.22
		Digi	141
		Tileswar	1022.07
		Tulusipur	43.99
		Bajpur	20
		Total	3578.78
3	5B/DS1 Dry Deciduous Scrub	Kuber Hill	50
		Thakurgarh	29
		Purunapani	8
		Muchhapur 'A'	30.58
		Muchhapur 'B'	20.77
		Mangalpur	72
		Solanda	19.8
		Berham	35.35
		Susab	51.64
		Bajpur	49.12
		Total	366.26
4	5B/E9 Dry Bamboo Brakes	Tileswar	
		Rampur	
		Total	5925.95

2.7 Tree cover outside forest area. Assessment of tree covered outside forest area has not been done in the current working plan. There is however potential for extension of forestry outside the forest areas.

2.7.1 Distribution of seedlings: To increase tree cover outside forest areas, the deptt. has been distributing seedling of tree species free of cost to local people under 13th F.C Grant, CAMPA, MGNREGS, Increasing green cover (Agro Forestry and Farm Forestry). Details of seedlings distributed under various schemes from 2010-11 to 2019-20 is furnished in **Table No.2.38.**

TABLE NO. 2.38 AGRO FORESTRY			
Sl No.	Year	**Name of the Scheme**	**No. of seedlings distributed**
1	2010-11		100000
2		CAMPA	100000
3	2011-12	Increasing tree cover outside the Forest Area.	500000
4		Agro Forestry	0
5	2012-13	Farm Forestry	500000
6	2013-14	Farm Forestry	740000
7		Agro Forestry	500000
8	2014-15	Farm Forestry	740000
9		Agro Forestry	500000
10	2015-16	Agro Forestry	500000
11	2016-17	State Plan	400000
12	2017-18	MGNREGS	500000
13	2018-19	State Plan	300000
14	2019-20	MGNREGS	200000

2.7.2 Road side avenue plantation:

Details of plantations raised on road side under various schemes is furnished in Table. No. 2.39 as follows

TABLE No. 2.39		DETAILS OF AVENUE PLANTATIONS			
Sl No.	**Year of creation.**	**Name of the Range.**	**Name of the Scheme.**	**Location**	**Length in Km.**
1	2013-14	Madhapur	MGNREGS	Madhapur----- Bamur near Raniakata.	12Rkm
2			MGNREGS	Madhapur----- Bamur near Sargiseni.	12Rkm
3			MGNREGS	Khandhapada-- Dudum	04Rkm
4			MGNREGS	Bhoipada Chhak-Beladula	08Rkm
5			MGNREGS	Raniakata-Sanjamura	06Rkm
6			MGNREGS	Kampala-Deuli	06Rkm
7			MGNREGS	Dudum-Deberapali	06Rkm
8			MGNREGS	Khadarapada-Bijipur	06Rkm
9			MGNREGS	Bankapalasa-Sanjamura	06Rkm
10		Dhandatopa	MGNREGS	Sanhulla-Ghodabandhuni	08Rkm
11			MGNREGS	Kantapada-Ranikathia	10Rkm
12		Handapa	MGNREGS	Sisukata-Batrakhol	12 Rkm
13			MGNREGS	Pedipathar-Berham	08Rkm
14			MGNREGS	Patapathar-Papasara	06Rkm
15			MGNREGS	Sanahulla-Paiksahi PWD Road to Dadar RD Road	06Rkm
16		Bamur	MGNREGS	Gargadbahal-Bamur	10Rkm
17			MGNREGS	Kishorenagar-Tusar	30Rkm

18	2014-15	Dhandatopa	MGNREGS	Akharakata-Pathragumpha RD Road.	10Rkm
19			MGNREGS	Paiksahi-Sapghara RD Road.	06 Rkm
20		Madhapur	MGNREGS	Madhapur-Jamunali RD Road.	12Rkm
21		Handapa	MGNREGS	Nakchi-Ghanpur RD Road.	04Rkm
22		Bamur	MGNREGS	Madhapur-Bamur RD Road.	06 Rkm
23	2015-16	Dhandatopa	MGNREGS	Thakurgarh-Cherkhandi	04 Rkm
24			MGNREGS	Sandadar-Tapdhol	04Rkm
25		Handapa	MGNREGS	Garuda-Khadakbahal.	06Rkm
26		Bamur	MGNREGS	Dadarpali-Angapada	06 Rkm
27	2016-17	Bamur	OMBADC	Manitri to Hingmandol	8
				TalapadarChack to Jhinkidadar	4
28	2017-18	Bamur	OMBADC	Dalimura to Sahajbahal	5
29	2018-19	Athmallik	MGNREGS	HaridakothaChhak to Haridakotha village	4
			GMM	BahaliChhak to Bahali village	2
				Aida Chhak to Aida Village	2
				OlthaChhak to Oltha village	2
		Madhapur		LaupalChhak to Tainsar	10
				Bhoipadachhak to Beladula village	5
		Madhapur	State Plan	Khadarapada to Deulbeda	8
			(GMM)	Deulbeda to Odasingha	8
				Sargiseni to Manjore Dam	4
				Manarbedachhak to Manarbeda village	4
				Sargiseni to Bandhupali	8
				Bandhupalichhak to Kampala	6
				Sargiseni to Bijpur	8
				Bhoipadachhak to Beladula village	2
				Bhoipadachhak to Bhoipada village	2

30	2019-20	Handapa	MGNREGS (Pure)	Jharboinda-Solanda	2
				NG-55 to Badahula	6
				Charkhaman to Gundurijharan	6
				Maimura to Korab Avenue Plantation	10
				Purusomal to Angapada	8
		Athmallik	Project Proponent	Malipadar to Nuaghar	8
				Aida to Kalamatii	10
				Anandapur to Tabada	6
				Gopapur to Maimura	6
		Dhandatopa		Khairasahi to sadanandapur	2
				Paiksahi to Mindol	6
				Kenchuanali to Raida	4
				Bhuasuninali to Akharakata	6
		Madhapur		Khadarapada to Bijipur	6
				Sanjamura Mundi chowk to Ghosrakhol	10
				Manjore PWD Road to Bharatapur village	3
		Handapa		Ichhapur to BadibahalChhak	6
				Sanahula to Khadaramunda	6
				RD Road to Hinjirida	2
				Bileinali to Bhejigoth	4
				Badibahal to High school road	2
				Badahula Temple to Dhundi	2
		Bamur		Pipalbahal to Jairat	8
				Tusar to Orada	10
				Kadalimunda to Bramhanipali	7

31	2020-21	Dhandatopa	MGNREGS (Pure)	Kantapada to Jamukani	6
				Alekhapur to Basudevpur	8
		Madhapur		Kundanali to Sorisapank	3
		Handapa		Mahulnali to Badadar	6
				Rainali to Batrakhol	6
		Bamur		Bhangamalia to Tusar	5
		Bamur		Avenue Plan Ghosar to Haridanali	10
				Bhangamalia to Kadalimunda	5
				Manikpur to Dhourapali	5
				Sargipali Railway Station to Sargipali Village	1
		Handapa		Anlabarini to Baliamba RD Road	6
				Renovation Plan Luhamunda toGolasar	6
				Ranibhuin to Krushanapur RD Road	8
				Ghanpur to Serenda	6
				Ghosar to Haridanali	10

2.8 Shifting Cultivation (Jhumming)

Podu or shifting cultivation is not prevailing in this Division

CHAPTER-3

3. Maintenance, Conservation and Enhancement of Biondiversity.

3.1 Forest composition and distribution

The tract of Athamallik division is situated within the tropical zone. The mean annual temperature is high and humidity is low. Winters are short and are not very cold barring few places. The rainfall is not low, but most of it is distributed in the monsoon season, leaving most of months with few or no rainfall. These climatic conditions favour Deciduous Forests in most of the areas of the division. Broadly the forests in this division are pure Sal forests, Mixed forests and Bamboo forests. The bamboo is mostly associated with mixed forests and Sal forests. Bamboos do not exist in Northern RF except for a stray presence here and there. Sal is in major proportion in Northern RF and the forest tends to become miscellaneous in Talaipathar.

In the portions of the division where Gondwana group of geological formation are met, Bamboo is almost absent. It is a remarkable feature. In other areas of the division Bamboo occurs extensively. The main species of Bamboo is *Dendrocalamus strictus* and it is associated with Sal and mixed forests throughout the division except Northern RF. Bamboo is present to a large extent in Talaipathar, Dantarikhol, Kadalimunda, Kutulsingha, and Bankimundi.

3.1.1 CLASSIFICATION OF FORESTS

According to the classification made by Champion and Seth in their "Revised Survey of Forest Type in India" 1962, the types of forests present in the division are in the following categories.

(i) 2B/ C3 Orissa Tropical Semi Evergreen Forests

(ii) 3C/C2e North Indian Tropical Moist Peninsular Sal Forests represented by the two sub-types i.e. 3C /C2e (i) North Indian Tropical Moist Peninsular high level Sal.

3C / C2e (ii) North Indian Tropical Moist Peninsular low level Sal.

(iii) 5B/C1c Dry Peninsular Sal Forest

(iv) 5B/C2- Northern Tropical Dry Mixed Deciduous Forests.

(v) 5B/ DS1 Dry Deciduous Scrubs.

(vi) Dry Bamboo Brakes

3.1.2 2B/ C3 - ORISSA TROPICAL SEMI EVERGREEN FORESTS

3.1.2 2B/ C3 - ORISSA TROPICAL SEMI EVERGREEN FORESTS

Group 2	Tropical Semi Evergreen Forests
Subgroup	2B Northern Tropical Semi Evergreen Forests
Type	2B/C3 Orissa Tropical Semi Evergreen Forests

3.1.2.1 Floristic composition

3.1.2.1.1 Top storey trees are deciduous and remain leafless for a shorter period of time but the middle storey is mostly evergreen having species like *Elaeocarpus robustus*, *Beilschmeidia roxburghiana, Amoora spectabilis*, *Mangifera indica*, etc. The main species present in the top storey are *Shorea robusta, Terminalia tomentosa, Adina cordifolia, Mangifera indica, Mitragyna parviflora, Terminalia bellerica, Pterocarpus marsupium,* etc.

3.1.2.1.2 The middle storey contains mainly *Dillenia pentagyna, Bridelia retusa, Xylia xylocarpa, Strychnos nuxvomica, Aegle marmelos, Elaeocarpus robustus, Beilschmeidia roxburghiana, Glochidion laceolarium, Wrightia tomemtosa*, *Diospyros embryopteris, Mangifera indica, Musa sapiestum.*

3.1.2.1.3 The important species on the ground canopy are *Clinogyne dichotoma, Holarrhena antidysenterica, Ferns, Nyctanthes arbortristis Ixora arborea.* The important climber species present are *Bauhinia vahalii, Smilax macrophylla, Asparagus recemosus* etc.

3.1.2.2 Occurrence

These forests are absent.

3.1.3 3C/C2e NORTH INDIAN TROPICAL MOIST PENINSULAR SAL

Group 3	Tropical Moist Deciduous Forests
Sub group	3C North Indian Moist Deciduous Forests
Type	3C/C2 Moist Sal bearing Forests
Sub type	3C/C2e (i) Moist Peninsular High level Sal
	3C/C2e (ii) Moist Peninsular Low level Sal

3.1.3.1 Floristic Composition

3.1.3.1.1 It is characterized by the presence of Sal as principal species, constituting 50 to 70 percent of the stock of different site qualities. Both the Sub-types i.e. (a) 3C/C2e (i) North Indian Tropical Moist Peninsular high level Sal and (b) 3c/C2e (ii) North Indian Tropical Moist Peninsular low level Sal occur in the forests. The high level Sal forests are associated with species like *Anogeissus latifolia, Terminaia tomentosa, Ougeinia dalbergioides* etc. which are more akin to the dry deciduous forest, where as the low level Sal forests are characterized by dense undergrowth because of its comparatively cooler climate and species like S*yzygium cumini, Albizzia species, Emblica officinalis,* etc. are the common associates.

3.1.3.1.2 The main species present in the top storey are *Shorea robusta, Terminalia tomentosa, Anogeissus latifolia, Pterocarpus marsupium, Adina cordifolia, Syzygium cumini, Mytragyna parvifolia and Albizzia procera*

3.1.3.1.3 The middle storey contains *Dalbergia latifolia, Ougeinia oojinensis, Gmelina arborea, Bridelia retusa, Aegle marmelos, Careya arborea, Mallotus philippinensis, Cleistanthus collinus, Dillenia pentagyna* etc.

3.1.3.1.4 The ground flora comprises *Holarrhena antidysentrica, Nyctanthes arbortristis, Ixora arobrea, Indigofera pulchella, Casearia tomentosa* etc. The important climbers present are *Bauhinia vahlii, Combretum decandrum, Smilax macrophylla, Butea superba* etc.

3.1.3.2 Occurrence

It occurs in the area as shown in Table 2.35 and Table 2.36.

3.1.4 5B/C1c DRY PENINSULAR SAL FORESTS

Group 5	Tropical Dry Deciduous Forests
Sub group	5B Northern Tropical Dry Deciduous Forests
Type	5B/C1c Dry Peninsular Sal Forests

3.1.4.1 Floristic Composition

3.1.4.1.1 In these forests the proportion of Sal is high, sometimes even up to 90 percent purity. It occurs mainly on sandstone, Khondalite. The quality class of Sal is poor on the upper slopes, where the soil is shallow and in the plains and valleys good quality Sal of Q III and Q IV is present especially in Northern Reserved Forest. The Sal is associated with *Syzygium cumini, Terminalia tomentosa, Dalbergia paniculata, Madhuca indica, Albizzia procera, Diosporys melanoxylon, Glochidion zeylanicum* in Northern RF. Bamboo is completely absent in Northern RF. In Talaipathar RF Sal is mixed with *Terminalia tomentosa, Anogeissus latifolia, Terminalia bellirica, Terminalia chebula, Pterocarpus marsupium* etc.

3.1.4.1,2 The middle storey comprises Dalbergia latifolia, *Bridelia retusa,Careya arborea, Cleistanthus collinus, Buchnania lanzan, Lagerstromia parviflora, Aegle marmelos, Emblica officinalis, Mallotus philipinensis and Gmelina arborea* etc.

3.1.4.1.3 The ground flora comprises *Holarrhena antidysenterica. Omdogpfera cassopodos. Ixora arborea, Chloroxylon swietenia, Phoenix acaulis, Woodfordia fructicosa, Lantana camara, Flemingia chappar,* etc. The important climbers present are *Bauhinia vahalii, Butea superba, Asparagus recemosus, Combretum decandrum, Millettia auriculata* etc.

3.1.4.2 Occurrence

It occurs in the area as shown in Table 2.35 and Table 2.36.

3.1.5 5B/C2- NORTHERN TROPICAL DRY MIXED DECIDUOUS FORESTS

Group 5	Tropical Dry Deciduous Forests
Sub group	5B Northern Tropical Dry Deciduous Forests
Type	5B/C2 Northern Tropical Dry Mixed Deciduous Forests

3.1.5.1 Floristic Composition

3.1.5.1.1 This type of forests generally occurs on the basic rocks and also occurs over a considerable area on khondalite. The upper canopy is light often a broken canopy and is usually with trees having relatively short boles and poor form. There is usually thin shrubby undergrowth. The forest is entirely leafless and soil is fully exposed in the hot weather condition and in the monsoon it takes a luxuriant appearance.

3.1.5.1.2 The main species found in the top canopy are *Terminalia tomentosa, Anogeissus latifolia, Pterocarpus marsupium, Bombax ceiba, Dalbergia paniculata, Lannea coromandelica, Terminalia bellirica, Madhuca indica, Boswellia serrata, Adina cordifolia, Ficus sps., Albizia lebbeck, Schleichera oleosa, Stereospermum colais, Mitragyna parviflora* etc. Sal is generally either absent or present as scattered individuals.

3.1.5.1.3 The main species present in the middle storey are *Diospyros melanoxylon, Buchanania lanzan, Sterculia urens, Dillenia petagyna, Bridelia retusa, Diospyros montana, Dalbergia sisso, Terminalia chebula, Careya arborea, Erythrina variegata*, *Soymida febrifuga, Semecarpus anacardium, Emblica officinalis, Syzygium cumini, Lagerstroemia parviflora, Cleistanthus collinus, Diosyros embryopteris* etc.

3.1.5.1.4 The main species present in the ground flora are *Bauhinia retusa, Bauhinia purpuria, Indigofera pulchella, Holarrhena antidysenterica, Cassia fistula, Helicteres isora, Woodfordia fructicosa, Choloroxylon swietenia, Ixora arborea,Gardenia latifolia, Gardenia gummifera, Phoenix acaulis, Grewia tiliaefolia, Clerodendron vixcosum, Oroxylon indicum, Litsea glutinosa etc.* The important climbers are *Bauhinia vahlii, Butea superba, Acacia pennata, Smilax macrophylla, Combretum decandrum, Solena amplexicaulis, Asparagus recemosus, Dioscorea oppositifolia, Dioscorea bulbifera, Ichnocarpus frustescens, Cissampelos pareira* etc., *Dendrocalamus strictus* (Salia Bamboo) is also found.

3.1.5.1.5 Frequent occurrence of fire disturbs the establishment of regeneration of all kinds of species and tends to favour xerophytic and fire resistant species

3.1.5.2 Occurrence

This type occurs extensively in East Baruni, Bankimundi, Dantarikhol, Kutulsingha, Guja, Bindhyabasini, Kishoreban, Kadalimunda, Kholdangiani, Bijamalhia, Kusumkuhuri, Mahendrapur, Handapa, Ghosar, Nuagan, Talaipathar, West Baruni, and Dandarugudi blocks. The details of extent of area in each block is given in **Table No: 2.35 & 2.36.** This is the most common type in many Protected Forests like Kuber hill, Thakurgarh, Pitabalibahal, Rampur, Purunapani, Muchhapur 'A' and Muchhapur 'B', Gundurijharan, Kuturukani, Batipurunapani, Mangalpur, Solanda, Berham, Susab, Bhangamunda, Digi, Tileswar, Tulusipur, Bajpur. The details of extent of area are given in **Table No: 2.37.**

3.1.6.1 5B/ DS1 DRY DECIDUOUS SCRUBS

Group 5	Tropical Dry Deciduous Forests
Sub group	5B Northern Tropical Dry Deciduous Forests
Type	5B/DS1 Dry Deciduous Scrub

3.1.6.1 Floristic Composition

In this forest, the soil has become unproductive and supports shrubby growth of 3-6 mts height and some tree species also stemmed from the base. The forest is on various stages of degradation, which are directly or indirectly connected with felling, lopping, grazing, and frequent fires. The main species present in the top canopy are *Acacia catechu, Zizyphus xylocarpus, Zizyphus mauritiana, Boswellia serrata, Terminalia tomentosa, Gardenia sps, Holarrhena antidysenterica, Woodfordia fructicosa, Carrisa apaca, Lannea coromandelica, Phoenix sylvestris, Randia malabarica, Cleistanthus collinus*, *Diosporyros melanoxylon, Cassia fistula, Lagerstroemia parviflora* etc. The lower canopy includes *Ageratum conyzoides, Alangium salvifolium, Ixora arborea, Gardenia gummifera, and Mimosa rubicaulis. The important climbers are Combretum decandrum, Butea superba* etc. Bamboo is also present here and there but it has a bushy growth. Sal also occurs occasionally.

3.1.6.2 Occurrence

This type of forests occur in number of blocks like East Baruni, Bankimundi, Dantarikhol, Kutulsingha, Guja, Kadalimunda, Kholdangiani, Bijamalhia, Kusumkuhuri, Mahendrapur, Ghosar, Nuagan, Dandarugudi, West Baruni, etc. The detailed extent of area in each block is given in the table. They also occur in Kuber hill, Thakurgarh, Purunapani, Muchhapur 'A', Muchhapur 'B', Mangalpur, Solanda, Berham, Susab and Bajpur PFs.

Group 5	Tropical Dry Deciduous Forests
Edaphic type E9	Dry Bamboo Brakes

3.1.7.1 Floristic Composition

Mainly Bamboo occur in the division as a part of second storey in Northern Dry Mixed Deciduous Forest and in Dry Peninsular Sal Forest, but Bamboo constitutes main crop with a few scattered trees on some of the very dry hill slopes and hill tops. In some of the blocks bamboo is in a much degraded condition. Mainly one species of bamboo i.e., *Dendrocalamus strictus* form dense brakes. Annual fires are common in these forests.

3.1.7.2 Occurrence

Good bamboo growth occurs in Talaipathar RFs. It is in a degraded state in Dantarikhol, Kadalimunda, Kutulsingha, and Bankimundi. Bamboo brakes also exist in Tileswar and Rampur PFs. The details of extent of area in each block is given in **Table No: 2.35, 2.36 & 2.37.**

3.2 Plants species diversity

The data collected during sample point enumeration such as number of individuals of each species and the DBH of each tree are utilized to derive secondary attributes like basal area(BA,m2/ ha), density(D,tree per ha) and frequency(F, no of quadrates where trees are present in relation to total plots observed). Relative values of BA, D and F has been calculated. The importance Value Index (IVI) has been calculated by adding up relative basal area(RBAF), relative density (RD) and relative frequency (RF). However, in case of shrubs & herbs, the IVI is calculated on the basis of relative values,i.e. relative frequency and relative density. It is assumed that the dominance of a species increases with an increasing importance value and that the species with lowest importance value is the lowest dominant one. The maximum value IVI value is 300(100 each for RBA,RD and RF). The following formula is used for calculation of IVI value.

$$\textbf{Density of a species} = \frac{\text{Total no of individuals of a species}}{\text{Total area of quadrats studied}}$$

$$\textbf{Frequency of a species(\%)} = \frac{\text{No of quadrats in which a species occurs}}{\text{Total number of quadrats studied.}} \times 100$$

$$\textbf{Relative Density} = \frac{\text{Density of a species}}{\text{Total density of all species}} \times 100$$

$$\textbf{Relative Frequency} = \frac{\text{Frequency of a species}}{\text{Sum of frequencies of all species}} \times 100$$

$$\textbf{Relative basal area of species} = \frac{\text{Total basal area of a species}}{\text{Total basal area of all species}} \times 100$$

IVI= RD+RF+RBAF

Basing on the above calculation; biodiversity assessment is done in sample plots of various Forest Blocks, the result of which is furnished in **Table No 3.1** as follows.

TABLE NO. 3. 1 Biodiversity assessment of Trees in Handapa RF

Sl.No.	Species	Nos	D	RD	F(%)	RF	BA	RBA	IVI
1	Sal	616	280	73.69	100	14.47	11.42	42.69	**130.85**
2	Kendu	37	16.82	4.43	72.73	10.53	0.94	3.51	18.47
3	Jamu	12	5.45	1.43	36.36	5.26	0.98	3.66	10.35
4	Sissoo	1	0.45	0.12	4.55	0.66	0.7	2.62	3.44
5	Chara	38	17.27	4.54	72.73	10.53	0.42	1.57	16.64
6	Mahula	40	18.18	4.78	72.73	10.53	2.5	9.35	25.16
7	Rohini	2	0.91	0.24	9.09	1.32	0.18	0.67	2.23
8	Asan	40	1.82	0.48	68.18	9.87	1.08	4.04	14.39
9	Kusum	7	3.18	0.84	31.82	4.6	0.78	2.92	8.36
10	Khakad	4	1.82	0.48	18.18	2.63	0.18	0.67	3.78
11	Bahada	6	2.73	0.72	27.27	3.95	0.28	1.05	5.72
12	Bhalia	4	1.82	0.48	18.18	2.63	0.33	1.23	4.34
13	Moi	2	0.91	0.24	9.09	1.32	0.49	1.83	3.39
14	Karada	1	0.45	0.12	4.55	0.66	0.18	0.67	1.45
15	Harida	1	0.45	0.12	4.55	0.66	0.18	0.67	1.45
16	Barabakalia	26	11.82	3.11	22.73	3.29	2.24	8.37	14.77
17	Amla	2	0.91	0.24	4.55	0.66	0.35	1.31	2.21
18	Kumbhi	3	1.36	0.36	4.55	0.66	0.18	0.67	1.69
19	Patamasu	1	0.45	0.12	4.55	0.66	0.18	0.67	1.45
20	Dhaura	12	5.45	1.43	36.36	5.26	0.5	1.87	8.56
21	Halda	3	1.36	0.36	13.64	1.97	0.39	1.46	3.79
22	Kurum	1	0.45	0.12	4.55	0.66	0.18	0.67	1.45
23	Piasal	2	0.91	0.24	9.09	1.32	0.18	0.67	2.23
24	Rai	4	1.82	0.48	13.64	1.97	1.02	3.81	6.26
25	Bheru	1	0.45	0.12	4.55	0.66	0.18	0.67	1.45
26	Sidha	5	2.27	0.6	18.18	2.63	0.22	0.82	4.05
27	Bara	1	0.45	0.12	4.55	0.66	0.49	1.83	2.61

Sal is the most dominant species and the percentage of dominance is 43.62%.

Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses are furnished in **Table No.3.2** as follows. The maximum IVI value is 200.

Table No. 3.2 Biodiversity assessment of Shrubs,Herbs, Climbers & Grasses in Handapa RF								
Shrubs								
	Sl. No.	Species	Nos	D (nos/sqmt)	RD	F(%)	RF	IVI
	1	Panchana muja	6	0.0075	37.13	6.82	37.5	74.63
	2	Dhataki	3	0.0038	18.81	3.41	18.75	37.56
	3	Telkurma	4	0.0051	25.25	4.55	25.01	50.26
	4	Ghurudu	3	0.0038	18.81	3.41	18.75	37.56
Herbs								
	Sl. No.	Species	Nos	D (nos/sqmt)	RD	F(%)	RF	IVI
	1	Putuakanta	5	0.0568	31.24	5.68	35.7	66.9
	2	Phoenix	11	0.125	68.76	10.23	64.3	133.06

Grass								
	Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
	1	Chepti	74	0.8409	33.95	10.23	50	83.95
	2	Channa	123	1.3977	56.42	7.95	39	**95.42**
	3		21	0.2386	9.63	2.27	11	20.63

Climbers								
	Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
	1	Sualoi	10	0 .1136	100	5.68	100	200

TABLE NO. 3. 1 Biodiversity assessment of Trees in Bankimundi RF									
Sl.No.	Species	Nos	D	RD	F(%)	RF	BA	RBA	IVI
1	Asan	4	13.33	6.45	33.33	4.35	1.34	9.91	20.71
2	Mahul	5	16.67	8.07	100	13.04	1.97	14.57	35.68
3	Patuli	1	3.33	1.61	33.33	4.35	0.18	1.33	7.29
4	Bheru	2	6.67	3.23	33.33	4.35	0.18	1.33	8.91
5	Kusum	2	6.67	3.23	33.33	4.35	0.73	5.4	12.98
6	Sidha	6	20	9.68	33.33	4.35	1.06	7.84	21.87
7	Bahada	1	3.33	1.61	33.33	4.35	0.49	3.62	9.58
8	Dhaura	1	3.33	1.61	33.33	4.35	0.96	7.1	13.06
9	Moi	1	3.33	1.61	33.33	4.35	0.18	1.33	7.29
10	Tentela	1	3.33	1.61	33.33	4.35	0.49	3.62	9.58
11	Kumbhi	1	3.33	1.61	33.33	4.35	0.18	1.33	7.29
12	Kendu	6	16.67	8.67	100	13.04	1.29	9.54	31.25
13	Karada	26	86.67	41.94	66.67	8.69	2.3	17.01	67.64
14	Sissoo	1	3.33	1.61	33.33	4.35	0.18	1.33	7.29
15	Kasi	1	3.33	1.61	33.33	4.35	0.18	1.33	7.29
16	Khakad	1	3.33	1.61	33.33	4.35	0.18	1.33	7.29
17	Jamu	2	6.67	3.23	33.33	4.35	1.45	10.72	18.3
18	Simli	1	3.33	1.61	33.33	4.35	0.18	1.33	7.29

Karada is the most dominant species and the percentage of dominance is 43.62%.

Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses are furnished in **Table No.3.2** as follows. The maximum IVI value is 200.

TableNo. 3.2 Biodiversity assessment of Shrubs,Herbs, Climbers & Grasses in Bankimundi RF

Shrubs								
	Sl. No.	Species	Nos	D (nos/sqmt)	RD	F(%)	RF	IVI
	1	Kurein	2	0.0185	28.6	8.33	25	53.6
	2	Dhataki	3	0.0277	42.81	16.67	50	92.81
	3	Mura	2	0.0185	28.6	8.33	25	53.6
Herbs								
	Sl. No.	Species	Nos	D (nos/sqmt)	RD	F(%)	RF	IVI
	1	Poksungha	9	0 .7500	100	8.33	100	200

Grass								
	Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
	1	Chepti	13	1.0833	100	8.33	100	200

TABLE NO. 3.1 Biodiversity assessment of Trees in East Baruni RF

Sl.No.	Species	Nos	D	RD	F(%)	RF	BA	RBA	IVI
1	Sal	83	46.11	12.37	50	4.81	1.875	11	28.18
2	Kendu	11	6.11	1.64	39	3.75	0.32	1.9	7.29
3	Kasi	4	2.22	0.59	17	1.63	0.71	4.15	6.37
4	Amla	2	1.11	0.3	12	1.15	0.18	1.04	2.49
5	Chara	32	17.78	4.77	72	6.92	0.48	2.83	14.52
6	Mahula	16	8.89	2.38	45	4.33	0.49	2.88	9.59
7	Ankula	2	0.55	0.15	12	1.15	0.98	5.77	7.07
8	Asan	106	58.89	15.8	95	9.14	1.491	8.75	**33.69**
9	Kusum	4	2.22	0.59	23	2.21	0.34	2	4.8
10	Khakad	4	2.22	0.59	17	1.63	0.24	1.38	3.6
11	Bahada	3	1.67	0.45	12	1.15	0.58	3.4	5
12	Bhalia	5	2.78	0.75	28	2.69	0.24	1.49	4.93
13	Moi	8	4.44	1.18	23	2.21	0.51	3	6.39
14	Karada	128	71.1	19.06	100	9.62	1.33	7.79	36.47
15	Simli	1	0.55	0.15	6	0.58	0.49	2.89	3.62
16	Barabakalia	13	7.22	1.94	45	4.33	0.52	3.07	9.34
17	Anchu	1	0.55	0.15	6	0.58	0.18	1.04	1.77
18	Kumbhi	14	7.78	2.09	39	3.75	0.4	2.35	8.19
19	Patamasu	2	1.11	0.3	6	0.58	0.35	2.07	2.95
20	Dhaura	86	47.78	12.82	95	9.14	1.07	6.28	28.24
21	Halda	20	11.11	2.98	45	4.33	0.6	3.52	10.83
22	Kurum	3	1.67	0.45	12	1.15	0.26	1.56	3.16
23	Tentela	3	1.67	0.45	12	1.15	0.42	2.48	4.08
24	Dhoben	4	2.22	0.59	11	1.06	0.51	3	15.48
25	Bheru	24	13.33	3.58	45	4.33	0.65	3.82	11.73
26	Sidha	67	37.23	9.99	89	8.56	0.9	5.28	23.83
27	Bela	13	7.23	1.94	33	3.17	0.46	2.73	7.84
28	Sunari	12	6.67	1.79	45	4.33	0.26	1.56	7.68
29	Misc	1	0.55	0.15	6	0.58	0.18	1.04	1.77

Asan is the most dominant species and the percentage of dominance is 11.23%.

Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses are furnished in **Table No.3.2** as follows. The maximum IVI value is 200.

Table No. 3.2 Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses in East Baruni RF

	Sl. No.	Species	Nos	D (nos/sqmt)	RD	F(%)	RF	IVI
Shrubs								
	1	Giliri	1	0.0015	2.32	1.39	2.38	4.7
	2	Jhatiki	3	0.0046	7.11	4.17	7.15	14.26
	3	Telkurma	13	0.0201	31.07	18.05	30.94	**62.01**
	4	Ghuntuli	5	0.0077	11.9	6.95	11.91	23.81
	5	Tenteikoli	9	0.0139	21.48	12.5	21.43	42.91
	6	Salara	1	0.0015	2.32	1.39	2.38	4.7
	7	Kurei	9	0.0139	21.48	12.5	21.43	42.91
	8	Buduli	1	0.0015	2.32	1.39	2.38	4.7
Herbs								
	Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
	1	Bhuinneem	18	0.0025	51.48	25	51.48	**102.96**
	2	Talamuli	13	0.0018	37.07	18	37.07	74.14
	3	Indrajal	1	0.0139	2.86	1.39	2.86	5.72
	4	Ankranti	1	0.0139	2.86	1.39	2.86	5.72
	5	Salaparni	2	0.0278	5.72	2.78	5.72	11.44

Grass								
	Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
	1	Bena	19	0.2639	22.62	26.39	22.35	44.97
	2	Bausuni	8	0.1111	9.52	11.11	9.41	18.93
	3	Phulpati	25	0.3472	29.76	39.72	29.41	**59.17**
	4	Sikula	3	0.0417	3.57	4.17	3.53	7.1
	5	Daba	4	0.0555	4.76	5.55	4.7	9.46
	6	Baunsipati	5	0.0694	5.95	6.94	5.88	11.83
	7	Mutha	8	0.1111	9.52	11.11	9.41	18.93
	8	Biskhapan	1	0.0139	1.19	1.39	1.18	2.37
	9	Kukudachuli	8	0.1111	9.52	12.5	10.59	20.11
	10	Ganjemuthi	1	0.0139	1.19	1.39	1.18	2.37
	11	Lahenga	2	0.0278	2.38	2.78	2.36	4.74

Climbers								
	Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
	1	Khirei	24	0.3333	27.57	33.33	26.96	**54.53**
	2	Atandi	21	0.2916	24.12	30.56	24.72	48.84
	3	Bhadolia	2	0.0278	2.3	2.78	2.25	4.55
	4	Dantari	3	0.0417	3.45	4.17	3.37	6.82
	5	Handiphute	2	0.0278	2.3	2.78	2.25	4.55
	6	Kulathia	15	0.2085	17.25	20.85	16.86	34.11
	7	Khireiloi	15	0.2085	17.25	22.22	17.97	35.22
	8	Muturi	1	0.0139	1.15	1.39	1.12	2.27
	9	Madhumati	1	0.0139	1.15	1.39	1.12	2.27
	10	Masia	2	0.0278	2.3	2.78	2.25	4.55
	11	Sualoi	1	0.0139	1.15	1.39	1.12	2.27

TABLE NO. 3. 1 Biodiversity assessment of Trees in Nuagaon RF

Sl.No.	Species	Nos	D	RD	F(%)	RF	BA	RBA	IVI
1	Sal	270	192.86	40.78	93.33	9.39	4.45	24.87	75.04
2	Anchu	4	2.67	0.56	20	2.01	0.23	1.28	3.85
3	Dhoben	13	8.67	1.83	33.33	3.35	0.58	3.24	8.42
4	Moi	8	5.33	1.13	33.33	3.35	0.35	1.96	6.44
5	Asan	129	86	18.19	100	10.67	1.71	9.56	38.42
6	Bija	9	6	1.27	33.33	3.35	0.44	2.46	7.08
7	Kendu	32	21.33	4.51	100	10.67	0.47	2.63	17.81
8	Bahada	8	5.33	1.23	20	2.01	0.68	3.8	7.04
9	Barabakalia	13	8.67	1.83	40	4.02	0.49	2.74	8.59
10	Kendu	10	6.67	1.41	66.67	6.7	0.18	1.01	9.12
11	Chara	48	32	6.77	66.67	6.7	1.07	5.98	19.45
12	Dhaura	21	14	2.96	66.67	6.7	0.56	3.13	12.79
13	Kumbhi	16	10.67	2.26	33.33	3.35	0.57	3.19	8.8
14	Mahula	50	33.33	7.05	86.67	8.73	1.56	8.72	24.5
15	Rohini	28	18.67	3.95	60	6.03	0.9	5.03	15.01
16	Harida	3	2	0.42	20	2.01	0.18	1.01	3.44
17	Jamun	2	1.33	0.28	13.33	1.34	0.18	1.01	2.63
18	Bheru	9	6	1.27	33.33	3.35	0.38	2.12	6.74
19	Chikni	1	0.67	0.14	6.67	0.67	0.18	1.01	1.82
20	Damaghuruda	1	0.67	0.14	6.67	0.67	0.18	1.01	1.82
21	Arjun	1	0.67	0.14	6.67	0.67	0.18	1.01	1.82
22	Kaya	1	0.67	0.14	6.67	0.67	0.18	1.01	1.82
23	Halda	1	0.67	0.14	6.67	0.67	0.18	1.01	1.82
24	Kurum	1	0.67	0.14	6.67	0.67	0.18	1.01	1.82
25	Mandi	1	0.67	0.14	6.67	0.67	0.18	1.01	1.82
26	Patuli	2	1.33	0.28	6.67	0.67	0.33	1.84	2.79
27	Rajmoi	2	1.33	0.28	13.33	1.34	0.33	1.84	3.46
28	Sidha	2	1.33	0.28	13.33	1.34	0.33	1.84	3.46
29	Bhalia	2	1.33	0.28	13.33	1.34	0.33	1.84	3.46
30	Sundari	2	1.33	0.28	13.33	1.34	0.33	1.84	3.46

Sal is the most dominant species and the percentage of dominance is 25.01%.

Table No. 3. 2 Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses in Nuagaon RF								
Shrubs								
	Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
	1	Giliri	5	0.92	13.1	8.33	13.51	26.61
	2	Telkurma	20	3.7	52.7	31.67	51.36	**104.06**
	3	Kurei	2	0.37	5.27	3.33	5.4	10.67
	4	Tenteikoli	6	1.11	15.81	10	16.22	32.03
	5	Jhatiki	2	0.37	5.27	3.33	5.4	10.67
	6	Bhadbhadli	1	0.18	2.56	1.67	2.71	5.27
	7	Katak	2	0.37	5.27	3.33	5.4	10.67
Herbs								
	Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
	1	Khajuri	26	0.4333	41.93	41.66	41.66	**83.59**
	2	Talamuli	21	0.35	33.87	35	35	68.87
	3	Bhuinneem	11	0.1833	17.74	16.67	16.67	34.41
	4	Apamaranga	1	0.0167	1.62	1.67	1.67	3.29
	5	Poksungha	1	0.0167	1.62	1.67	1.67	3.29
	6	Satabari	1	0.0167	1.62	1.67	1.67	3.29
	7	Salapani	1	0.0167	1.62	1.67	1.67	3.29

Grass							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Bena	30	0.5	51.73	50	52.64	**102.64**
2	Panaghi	2	0.0333	3.45	3.33	3.51	6.84
3	Sikula	8	0.1333	13.79	13.33	14.03	27.36
4	Baunsuni	2	0.0333	3.45	3.33	3.51	6.84
5	Panasi	2	0.0333	3.45	3.33	3.51	6.84
6	Mandia	1	0.0167	1.73	1.67	1.76	3.43
7	Phulphuti	2	0.0333	3.45	3.33	3.51	6.84
8	Daba	7	0.1167	12.07	10	10.53	22.2
9	Mutha	1	0.0167	1.73	1.67	1.76	3.43
10	Bahnshapatni	3	0.05	5.17	5	5.26	10.26

Climbers							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Muturi loi	8	0.1333	17.02	13.33	17.39	34.41
2	Khirei loi	28	0.4667	59.58	45	58.7	**118.28**
3	Siali	2	0.0333	4.25	3.33	4.34	8.59
4	Buduli	1	0.0167	2.13	1.67	2.18	3.85
5	Kuluthia	6	0.1	12.77	10	13.04	23.04
6	Atandi	2	0.0333	4.25	3.33	4.34	7.67

TABLE NO. 3. 1 Biodiversity assessment of Trees in Bindhyabasini RF									
Sl.No.	Species	Nos	D	RD	F(%)	RF	BA	RBA	IVI
1	Piasal	3	30	5.64	20	1.61	0.85	5.68	12.93
2	Bahada	4	20	3.76	40	3.22	0.35	2.34	9.32
3	Chara	9	18	3.38	100	8.06	0.44	2.94	14.38
4	Dhaura	28	56	10.52	100	8.06	1.52	10.15	28.73
5	Bheru	4	13.33	2.5	60	4.83	0.44	2.94	10.27
6	Karada	43	86	16.16	100	8.06	1.84	12.29	**36.51**
7	Sidha	20	50	9.39	80	6.44	0.88	5.88	21.71
8	Asana	4	13.33	2.5	60	4.83	0.6	4.01	11.34
9	Barabakalia	12	24	4.51	100	8.06	1.52	10.15	22.72
10	Bela	29	58	10.89	100	8.06	1.56	10.42	29.37
11	Kurum	5	17	3.19	60	4.83	0.4	2.67	10.69
12	Kumbhi	6	15	2.82	80	6.44	0.42	2.81	12.07
13	Halda	6	15	2.82	80	6.44	0.5	3.34	12.6
14	Sunari	1	10	1.88	20	1.61	0.18	1.2	4.69
15	Kusum	4	13.33	2.5	60	4.83	0.24	01,60	8.93
16	Moi	15	50	9.39	60	4.83	1.72	11.49	25.71
17	Dhoben	1	10	1.88	20	1.61	0.18	1.2	4.69
18	Kendu	4	13.33	2.5	60	4.83	0.97	6.48	13.81
19	Mahul	1	10	1.88	20	1.61	0.18	1.2	4.69
20	Danghurudu	1	10	1.88	20	1.61	0.18	1.2	4.69

Karada is the most dominant species and the percentage of dominance is 12.17%.

Table No. 3.2 Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses in Bindhyabasini RF								
Shrubs								
	Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
	1	Tenteikoli	6	3.33	46.12	30	46.15	**92.27**
	2	Bhuduli	2	1.11	15.37	10	15.38	30.75
	3	Kurei	5	2.78	38.51	25	38.46	76.97
Herbs								
	Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
	1	Bhuinneem	8	0.4	100	40	100	200

Grass							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Phulphati	8	0.4	89	40	89	**178**
2	Bausuni	1	0.05	11	5	11	22

Climbers							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Atandi	6	0.3	27.27	30	27.27	54.54
2	Dantari	2	0.1	9.1	10	9.1	18.2
3	Khirei	9	0.45	40.91	45	40.91	**81.82**
4	Sualoi	4	0.2	18.18	20	18.18	36.36
5	Bichhuati	1	0.05	4.55	5	4.55	9.1

TABLE NO. 3. 1 Biodiversity assessment of Trees in KusumkhuriRF									
Sl.No.	Species	Nos	D	RD	F(%)	RF	BA	RBA	IVI
1	Karada	14	70	25	100	8.33	1.55	10.66	**43.99**
2	Barabakalia	6	30	10.71	100	8.33	1	10.15	29.19
3	Asan	4	20	7.14	100	8.33	0.51	5.18	20.65
4	Bheru	2	10	3.57	50	4.17	0.35	3.55	11.19
5	Chara	4	20	7.14	100	8.33	0.35	3.55	19.02
6	Tentala	2	10	3.57	100	8.33	0.57	5.79	17.69
7	Kumbhi	2	10	3.57	100	8.33	0.73	7.41	19.31
8	Kusum	5	25	8.93	100	8.33	1.86	18.89	36.15
9	Mahul	4	20	7.14	100	8.33	0.35	3.55	19.02
10	Bija	1	5	1.78	50	4.17	0.49	4.97	10.92
11	Mbi	2	10	3.57	50	4.17	0.35	3.55	11.29
12	Sissoo	4	20	7.14	50	4.17	0.71	7.21	18.52
13	Kendu	4	20	7.14	100	8.33	0.67	6.8	22.27
14	Sal	1	5	1.78	50	4.17	0.18	1.83	7.78
15	Bahada	1	5	1.78	50	4.17	0.18	1.83	7.78

Karada is the most dominant species and the percentage of dominance is 14.66 %.

Table No. 3. 2 Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses							
Climbers							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Buduli	1	0.125	100	12.5	100	200

Table NO. 3. 1 Biodiversity assessment of Trees in Ghosar RF									
Sl.No.	Species	Nos	D	RD	F(%)	RF	BA	RBA	IVI
1	Mahul	8	20	5.52	100	17.39	0.99	6.78	29.69
2	Sal	81	202	55.8	100	17.39	6.97	47.74	**120.93**
3	Char	10	25	6.91	100	17.39	0.44	3.01	27.31
4	Palasa	9	45	12.43	50	8.69	2.84	19.45	40.57
5	Kumbhi	2	10	2.76	50	8.69	0.18	1.23	12.68
6	Asan	2	10	2.76	50	8.69	0.57	3.9	15.35
7	Patamasu	1	10	2.76	25	4.35	0.49	3.36	10.47
8	Jamun	1	10	2.76	25	4.35	0.96	6.57	13.68
9	Kendu	2	10	2.76	50	8.69	0.49	3.36	10.47
10	Sidha	2	20	5.52	25	4.35	0.67	4.59	14.46

Sal is the most dominant species and the percentage of dominance is 40.31 %.

Table No. 3. 2 Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses in Ghosar RF								
Shrubs								
	Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
	1	Kurei	4	0.028	66.67	25	66.67	**133.34**
	2	Telkurma	2	0.014	33.33	12.5	33.33	66.66
Herbs								
	Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
	1	Bhuinneem	6	0.375	100	37.5	100	200

Grass							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Sikula	2	0.125	50	12.5	50	100
2	Mutha	2	0.125	50	12.5	50	100
Climbers							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Sualoi	3	0.1875	30	18.75	30	60
2	Muturi	4	0.25	40	25	40	**80**
3	Buduli	2	0.125	20	12.5	20	40
4	Charamul	1	0.0625	10	6.25	10	20

TABLE NO. 3.1 Biodiversity assessment of Trees in Kadalimunda RF									
Sl.No.	Species	Nos	D	RD	F(%)	RF	BA	RBA	IVI
1	Sidha	21	105	29.14	100	6.45	1.86	12.66	**43.25**
2	Karada	5	25	5.75	100	6.45	0.44	3	15.2
3	Mbi	4	20	4.6	100	6.45	0.67	4.56	15.61
4	Kumbhi	1	5	1.15	50	3.22	0.18	1.22	5.59
5	Barabakalia	4	20	4.6	100	6.45	1.06	7.22	18.27
6	Neem	1	5	1.15	50	3.22	0.18	1.22	5.59
7	Dhaura	15	75	17.24	100	6.45	1.64	11.16	34.85
8	Kusum	1	5	1.15	50	3.22	1.59	10.82	13.56
9	Char	5	25	5.75	100	6.45	0.44	3	15.2
10	Asan	6	30	6.9	100	6.45	1	6.81	20.16
11	Kendu	5	25	5.75	100	6.45	0.84	5.72	17.92
12	Bela	1	5	1.15	50	3.22	0.96	6.53	10.9
13	Khakad	2	10	2.3	100	6.45	0.18	1.22	9.97
14	Tentela	1	5	1.15	50	3.22	0.18	1.22	5.59
15	Giringa	1	5	1.15	50	3.22	0.18	1.22	5.59
16	Bahada	2	10	2.3	50	3.22	0.18	1.22	6.74
17	Bheru	1	10	2.3	50	3.22	0.18	1.22	6.74
18	Mahul	1	10	2.3	50	3.22	1.59	10.82	14.71
19	Jari	1	10	2.3	50	3.22	0.18	1.22	6.74
20	Patuli	1	10	2.3	50	3.22	0.18	1.22	6.74
21	Bhalia	1	10	2.3	50	3.22	0.49	3.33	8.85
22	Sissoo	1	10	2.3	50	3.22	0.49	3.33	8.85

Sidha is the most dominant species and the percentage of dominance is 14.42%.

Table No. 3.2 Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses in								
Shrubs								
	Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
	1	Kurei	1	0.0139	50	12.5	50	100
	2	Ranikathi	1	0.0139	50	12.5	50	100
Herbs								
	Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
	1	Bhuinneem	4	0.5	100	50	100	200

Climbers							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Sualoi	3	0.375	50	37.5	50	**100**
2	Buduli	1	0.125	16.67	12.5	16.67	33.34
3	Muturi	1	0.125	16.67	12.5	16.67	33.34
4	Dantari	1	0.125	16.67	12.5	16.67	33.34

Grass							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Mutha	2	0.25	40	25	40	80
2	Bena	2	0.25	40	25	40	80
3	Sikula	1	0.125	20	12.5	20	40

TABLE NO. 3. 1 Biodiversity assessment of Trees in Kholodangiani RF									
Sl.No.	Species	Nos	D	RD	F(%)	RF	BA	RBA	IVI
1	Sidha	5	50	21.74	100	8.33	0.8839	10.16	40.23
2	Mahula	2	20	8.69	100	8.33	0.3536	4.06	21.08
3	Asan	6	60	26.09	100	8.33	1.7678	20.31	**54.73**
4	Kumbhi	2	20	8.69	100	8.33	0.3536	4.06	21.08
5	Ankula	1	10	4.35	100	8.33	0.1768	2.03	14.71
6	Khakad	1	10	4.35	100	8.33	0.1768	2.03	14.71
7	Tentela	1	10	4.35	100	8.33	0.1768	2.03	14.71
8	Bheru	1	10	4.35	100	8.33	0.1768	2.03	14.71
9	Kendu	1	10	4.35	100	8.33	0.9625	11.06	23.74
10	Kalchia	1	10	4.35	100	8.33	0.1768	2.03	14.71
11	Halda	1	10	4.35	100	8.33	0.1768	2.03	14.71
12	Bara	1	10	4.35	100	8.33	3.3197	38.15	50.83

Asan is the most dominant species and the percentage of dominance is 18.24%.

Table No. 3.2 Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses in Kholdangiani RF							
Shrubs							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Kurei	2	0.0555	39.98	50	40	79.98
2	Mura	3	0.0833	60.02	75	60	120.02

TABLE NO. 3. 1 Biodiversity assessment of Trees in Bijamaliha RF									
Sl.No.	Species	Nos	D	RD	F(%)	RF	BA	RBA	IVI
1	Asan	22	73.33	17.19	100	11.54	1.71	10.12	**38.85**
2	Kusum	2	6.67	1.56	33.33	3.84	0.35	2.07	7.47
3	Sidha	10	33.33	7.81	33.33	3.84	1.77	10.47	22.12
4	Bahada	12	40	9.37	66.67	7.69	2.08	12.31	29.37
5	Patamasu	1	3.33	0.78	33.33	3.84	0.96	5.68	10.3
6	Kumbhi	6	20	4.69	66,67	7.69	1.08	6.39	18.77
7	Char	11	36.67	8.59	100	11.54	0.65	3.85	23.98
8	Dhaura	2	6.67	1.56	33.33	3.84	0.67	3.94	9.34
9	Karada	2	6.67	1.56	33.33	3.84	0.35	2.07	7.47
10	Sunari	2	6.67	1.56	33.33	3.84	0.18	1.06	5.68
11	Badachakunda	2	6.67	1.56	33.33	3.84	1.77	10.47	22.12
12	Teak	11	36.67	8.59	66.67	7.69	0.97	5.68	21.96
13	Acacia	2	6.67	1.56	33.33	3.84	0.71	4.2	11.16
14	Rohini	2	6.67	1.56	33.33	3.84	1.94	11.48	23.91
15	Sal	18	60	14.06	66.67	7.69	1.9	6.51	28.26
16	Mahul	3	10	2.34	66.67	7.69	0.26	1.54	11.57
17	Gambhari	2	6.67	1.56	33.33	3.84	0.35	2.07	7.47

Asan is the most dominant species and the percentage of dominance is 12.95%.

Table No. 3. 2 Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses in Bijamalia RF							
	Shrubs						
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Salapani	1	0.0092	24.36	8.33	25	49.36
2	Telkurma	3	0.0278	75.14	25	75	**150.14**
Herbs							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Biskhapuri	1	0.0833	100	8.33	100	200

Grass							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Sikula	1	0.0833	16.67	8.33	16.67	33.34
2	Phulphuti	2	0.1667	33.34	16.67	33.34	66.68
3	Bena	2	0.1667	33.34	16.67	33.34	66.68
4	Mutha	1	0.0833	16.67	8.33	16.67	33.34

TABLE NO. 3.1 Biodiversity assessment of Trees in Mahendrapur RF									
Sl.No.	Species	Nos	D	RD	F(%)	RF	BA	RBA	IVI
1	Barabakalia	7	23.33	5.34	67	7.42	3.29	14.14	26.9
2	Karada	39	130	29.77	67	7.42	8.24	35.41	**72.6**
3	Kurum	8	26.67	6.11	67	7.42	1.18	5.07	18.6
4	Asan	11	36.67	8.4	100	11.07	0.96	4.12	23.59
5	Sidha	4	13.33	3.05	67	7.42	0.35	1.5	11.97
6	Sunari	3	10	2.29	67	7.42	0.26	1.12	10.83
7	Kasi	4	10	2.29	67	7.42	0.67	2.88	12.59
8	Khakad	1	3.33	0.76	33.33	3.69	0.18	0.77	5.22
9	Kangad	1	3.33	0.76	33.33	3.69	0.18	0.77	5.22
10	Mbi	11	36.67	8.4	67	7.42	0.97	4.17	19.99
11	Kusum	1	3.33	0.76	33.33	3.69	0.18	0.77	5.22
12	Kumbhi	5	16.67	3.82	67	7.42	0.44	1.89	13.13
13	Dhaura	5	16.67	3.82	67	7.42	0.6	2.58	13.82
14	Bahada	4	13,33	3.05	67	7.42	0.51	2.19	12.66
15	Sal	28	93.33	21.37	33.33	3.69	5.26	22.6	47.66

Karada is the most dominant species and the percentage of dominance is 24.20 %.

Table No. 3. 2 Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses in							
Shrubs							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Bhadali	3	0.0278	60.04	16.67	66.68	**126.72**
2	Telkurma	2	0.0185	39.96	8.33	33.32	73.28
Herbs							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Khapari	4	0.3333	50	33.33	66.67	**116.68**
2	Bhuinneem	3	0.25	37.5	8.33	16.66	54.16
3	Akanbindha	1	0.0833	12.5	8.33	16.66	29.16

Climbers							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Kuluthia	6	0.5	27.27	33.33	26.67	**53.94**
2	Hadakankadi	1	0.0833	4.54	8.33	6.67	11.21
3	Buduli	3	0.25	13.64	16.67	13.34	26.98
4	Sualoi	4	0.3333	18.18	25	20	38.18
5	Bichhuati	1	0.0833	4.54	8.33	6.66	11.2
6	Dantari	1	0.0833	4.54	8.33	6.66	11.2
7	Atandi	2	0.1667	9.09	8.33	6.66	15.75
8	Ganjor	1	0.0833	4.54	8.33	6.66	11.2
9	Betal	3	0.25	13.64	8.33	6.66	20.3

Grass							
Sl. No.	Species	Nos	D (nos/sqm	RD	F(%)	RF	IVI
1	Phulphuti	7	0.5833	43.75	25	37.5	**81.25**
2	Phatphati	5	0.4167	31.25	25	37.5	68.75
3	Bausapatni	1	0.0833	6.25	8.33	12.5	18.75
4	Phuluri	3	0.25	18.75	8.33	12.5	31.25

Sal is the most dominant species and the percentage of dominance is 14.06 %.

Table No. 3.2 Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses in GujaRF

Shrubs				
Sl. No.	Species	D (nos/sqmt)	F(%)	IVI
1	Gatikhadika	0.0139	12.5	57.17
2	Jhatiki	0.0069	6.25	28.48
3	Telkurma	0.0278	25	**114.34**
Herbs				
Sl. No.	Species	D (nos/sqmt)	F(%)	IVI
1	Bhuinneem	0.6875	68.75	200

Climbers				
Species	D (nos/sqmt)	F(%)	RF	IVI
Atandi	0.5	43.75	35	**73.09**
Sualoi	0.125	12.5	10	19.52
Khiria	0.375	37.5	30	58.57
Kuluthia	0.125	12.5	10	19.52
Muturi	0.1875	18.75	15	29.28

Grass					
Species	D (nos/sqmt)	RD	F(%)	RF	IVI
Bausapatni	0.1875	15	18.75	15	30
Kukudachule	0.1875	15	18.75	15	30
Sikula	0.1875	15	18.75	15	30
Bausuni	0.125	10	12.5	10	20
Phulphuti	0.25	20	25	20	40
Iswarjata	0.1875	15	18.75	15	30
Bena	0.125	10	12.5	10	20

TABLE NO. 3. 1 Biodiversity assessment of Trees in West BaruniRF							
Sl.No.	Nos	RD	F(%)	RF	BA	RBA	IVI
1	10	4.21	33.33	4.17	1.198	7.44	15.82
2	36	15.19	83.33	10.42	2.718	16.88	42.49
3	90	37.47	100	12.5	3.385	21.02	**71.09**
4	1	0.42	16.67	2.08	0.178	1.11	3.61
5	40	16.88	100	12.5	1.493	9.27	38.65
6	1	0.42	16.67	2.08	0.178	1.11	3.61
7	1	0.42	16.67	2.08	0.178	1.11	3.61
8	1	0.42	16.67	2.08	0.178	1.11	3.61
9	7	2.95	33.33	4.17	0.776	4.82	11.94
10	7	2.95	16.67	2.08	2.18	13.54	18.57
11	18	7.59	83.33	10.42	0.762	4.73	22.74
12	7	2.95	66.67	8.33	0.388	2.41	13.69
13	4	1.69	50	6.25	0.236	1.46	9.4
14	1	0.42	16.67	2.08	0.178	1.11	3.61
15	1	0.42	16.67	2.08	0.178	1.11	3.61
16	5	2.11	33.33	4.17	0.442	2.74	9.02
17	2	0.84	33.33	4.17	0.57	3.54	8.55
18	2	0.84	16.67	2.08	0.353	2.19	5.11
19	1	0.42	16.67	2.08	0.178	1.11	3.61
20	1	0.42	16.67	2.08	0.178	1.11	3.61
21	1	0.42	16.67	2.08	0.178	1.11	3.61

Karada is the most dominant species and the percentage of dominance is 23.70 %.

Table No. 3. 2 Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses in West Barunei RF					
Shrubs					
Species	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
Telkurma	0.0139	8.12	25	16.22	24.34
Salapani	0.0463	27.04	41.67	27.03	**54.07**
Ghuntuli	0.0231	13.49	20.83	13.51	27
Damaghurudu	0.0046	2.69	4.17	2.7	5.4
Kurein	0.0463	27.04	33.33	21.62	48.66
Mura	0.0278	16.24	20.83	13.51	29.75
Sunaregeda	0.0046	2.69	4.17	2.7	5.4
Betela	0.0046	2.69	4.17	2.7	5.4
Herbs					
Species	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
Bhuinneem	0.3333	100	33.33	100	200

Climbers				
Sl. No.	**Species**	**Nos**	**RD**	**RF**
1	Khereiloi	9	40.89	40.89
2	Muturi	3	13.63	13.63
3	Kuluthia	4	18.21	18.21
4	Buduli	1	4.58	4.58
5	Atandi	5	22.68	22.68

Grass						
Species	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
Sikula	6	0.25	20.68	25	20.68	41.36
Bausuni	3	0.125	10.34	12.5	10.34	20.68
Phulphuti	12	0.5	41.36	50	41.36	**82.72**
Phatphati	4	0.167	13.81	16.67	13.81	27.62
Bena	1	0.0429	3.47	4.17	3.47	6.94
Mutha	2	0.083	6.86	8.33	6.86	13.72
Poksungha	1	0.042	3.47	4.17	3.47	6.94
Bena	2	0.042	10	12.5	10	20

TABLE NO. 3. 1 Biodiversity assessment of Trees in KutulsinghaRF								
Sl.No.	Nos	D	RD	F(%)	RF	BA	RBA	IVI
1	42	35	11.51	83.33	7.46	2.4	5.48	**24.45**
2	42	35	11.51	91.67	8.21	1.23	2.79	22.51
3	42	35	11.51	83.33	7.46	1.7	3.86	22.83
4	14	11.67	3.84	58.33	5.22	1.57	3.56	12.62
5	19	15.83	5.21	75	6.71	0.84	1.91	13.83
6	16	13.33	4.38	50	4.48	2.88	6.54	15.4
7	4	3.33	1.09	25	2.24	0.71	1.61	4.94
8	13	10.83	3.56	33.33	2.98	1.32	3	9.54
9	28	23.33	7.67	66.67	5.97	0.66	1.5	15.14
10	2	1.67	0.55	8.33	0.75	0.35	0.79	2.09
11	6	5	1.64	16.67	1.49	1.47	3.34	6.47
12	8	6.67	2.19	33.33	2.98	0.94	2.13	7.3

13	21	17.5	5.75	50	4.48	2.19	4.97	15.2
14	10	8.33	2.74	50	4.48	1.03	2.34	9.56
15	2	1.67	0.55	16.67	1.49	0.18	0.41	2.45
16	10	8.33	2.74	33.33	2.98	1.7	3.86	9.58
17	15	12.5	4.11	33.33	2.98	2.16	4.9	11.99
18	3	2.5	0.82	25	2.24	0.18	0.41	3.47
19	10	8.33	2.74	41.67	3.73	0.48	1.09	7.56
20	1	0.83	0.27	8.33	0.75	0.18	0.41	1.43
21	4	3.33	1.09	16.67	1.49	2.55	5.79	8.37
22	7	5.83	1.92	25	2.24	1.04	2.36	6.52
23	11	9.17	3.01	16.67	1.49	1.13	2.56	7.06
24	9	7.5	2.47	25	2.24	5.66	12.85	17.56
25	6	5	1.64	41.67	3.73	0.56	1.27	6.64
26	1	0.83	0.27	8.33	0.75	0.49	1.11	2.13
27	7	5.83	1.92	16.67	1.49	4.55	10.33	13.74
28	1	0.83	0.27	8.33	0.75	0.18	0.41	1.43
29	1	0.83	0.27	8.33	0.75	0.49	1.11	2.13
30	2	1.67	0.55	16.67	1.49	0.18	0.41	2.45
31	1	0.83	0.27	8.33	0.75	1.16	2.63	3.93
32	4	3.33	1.09	25	2.24	1.54	3.49	6.82
33	1	0.83	0.27	8.33	0.75	0.18	0.41	1.43
34	1	0.83	0.27	8.33	0.75	0.18	0.41	1.43

Sidha is the most dominant species and the percentage of dominance is 08.15 %.

Table No. 3.2 Biodiversity assessment of Shrubs, Herbs, Climbers &						
Shrubs						
Species	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
Gharapadi	11	0.025	24.04	22.92	26.83	50.87
Mura	8	0.018	17.31	16.67	19.52	36.83
Kurein	17	0.039	37.5	31.25	36.58	**74.08**
Bainche	8	0.018	17.31	10.42	12.2	29.51
Vadalia	1	0.002	1.92	2.08	2.43	4.35
Salapani	1	0.002	1.92	2.08	2.43	4.35
Herbs						
Species	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
Bhuinneem	13	0.271	81.14	27.08	81.25	**162.39**
Satabari	2	0.042	12.58	4.17	12.51	25.09
Akanabindha	1	0.021	6.29	2.08	6.24	12.53

Climbers						
Species	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
Sualoi	19	0.396	57.64	37.5	56.25	**113.89**
Pichhuli	5	0.104	15.14	10.42	15.63	30.77
Charmul	4	0.083	12.08	8.33	12.5	24.58
Atandi	4	0.083	12,08	8.33	12.5	24.58
Sialiloi	1	0.021	3.06	2.08	3.12	6.18

Grass							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Mutha	2	0.042	11.86	4.17	11.77	23.63
2	Samarakhai	5	0.104	29.38	10.42	29.41	**58.79**
3	Panasi	2	0.042	11.86	4.17	11.77	23.63
4	Dabachana	2	0.042	11.86	4.17	11.77	23.63
5	Luchaguri	3	0.062	17.51	6.25	17.64	35.15
6	Chepti	3	0.062	17.51	6.25	17.64	35.15

TABLE NO. 3.1 Biodiversity assessment of Trees in Dantarikhol RF								
Sl.No.	Nos	D	RD	F(%)	RF	BA	RBA	IVI
1	27	19.28	5.89	100	6.48	0.93	4.36	16.73
2	21	15	4.58	57.15	3.7	0.62	2.91	11.19
3	51	36.43	11.14	85.71	5.55	1.55	7.27	**23.96**
4	1	0.71	0.22	7.14	0.46	0.18	0.84	1.52
5	1	0.71	0.22	7.14	0.46	0.18	0.84	1.52
6	9	6.43	1.96	42.86	2.78	1.16	5.44	10.18
7	17	12.14	3.71	78.57	5.09	0.3	1.41	10.21
8	9	6.43	1.96	35.71	2.31	0.73	3.42	7.69
9	32	22.86	6.99	92.86	6.02	0.99	4.64	17.65
10	14	10	3.06	35.71	2.31	0.68	3.19	8.56
11	5	3.57	1.09	28.57	1.85	0.73	3.42	6.36
12	20	14.28	4.36	78.57	5.09	0.48	2.25	11.7
13	24	17.14	5.24	85.71	5.55	0.72	3.42	14.21
14	46	32.86	10.05	71.43	4.63	1.68	7.88	22.56
15	2	1.43	0.44	14.28	0.92	0.33	1.55	2.91
16	35	25	7.64	78.57	5.09	0.78	3.66	16.39
17	11	7.86	2.4	71.43	4.63	0.29	1.36	8.39
18	9	6.43	1.96	7.14	0.46	0.49	2.25	4.67
19	6	4.29	1.31	0.29	0.02	0.42	1.97	3.3
20	2	1.43	0.44	14.28	0.92	0.33	1.55	2.91

21	17	12.14	3.71	78.57	5.09	1.03	4.83	13.63
22	20	14.28	4.36	64.29	4.17	0.55	2.58	11.11
23	9	6.43	1.96	42.86	2.78	0.47	2.2	6.94
24	4	2.86	0.87	28.57	1.85	0.18	0.84	3.56
25	15	10.71	3.27	50	3.24	0.51	2.39	8.9
26	2	1.43	0.44	14.28	0.92	0.96	4.5	5.86
27	7	5	1.53	35.71	2.31	0.25	1.17	5.01
28	10	7.14	2.18	57.14	3.7	0.26	1.22	7.1
29	3	2.14	0.65	14.28	0.92	0.26	1.22	2.79
30	5	3.57	1.09	21.43	1.39	0.4	1.88	4.36
31	1	0.71	0.22	7.14	0.46	0.49	2.25	2.93
32	3	2.14	0.65	21.43	1.39	0.28	1.31	3.35
33	8	5.71	1.74	42.86	2.78	0.24	1.12	5.64
34	3	2.14	0.65	14.28	0.92	0.26	1.22	2.79
35	1	0.71	0.22	7.14	0.46	0.18	0.84	1.52
36	2	1.43	0.44	14.28	0.92	0.73	3.42	4.78
37	1	0.71	0.22	7.14	0.46	0.49	2.25	2.93
38	5	3.57	1.09	28.57	1.85	0.22	1.03	3.97

Dhaura is the most dominant species and the percentage of dominance is 07.98 %.

Table No. 3.2 Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses in Dantarikhol RF

Shrubs						
Species	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
Jhatiki	5	0.01	16.13	8.93	17.87	34
Salapani	1	0.002	3.22	1.78	3.56	6.78
Kurein	18	0.036	58.06	26.78	53.58	**111.64**
Telkurma	3	0.006	9.68	5.36	10.72	20.4
Mura	1	0.002	3.22	1.78	3.56	6.78
Gharapadi	1	0.002	3.22	1.78	3.56	6.78
Talamuli	2	0.004	6.45	3.57	7.14	13.59
Herbs						
Species	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
Satabari	6	0.106	21.28	10.71	22.21	43.49
Bhuinneem	18	0.321	64.46	30.36	62.97	**127.43**
Talamuli	3	0.053	10.64	5.36	11.12	21.76
Akanabindha	1	0.018	3.61	1.78	3.69	7.3

Climbers						
Sl. No.	Species	Nos	D (nos/sqmt)	RD	F(%)	RF
1	Muturi	11	0.196	43.85	19.64	44.02
2	Bichhuti	1	0.018	4.03	1.78	3.99
3	Sualoi	4	0.071	15.89	7.14	16
4	Buduli	3	0.054	12.08	5.36	12.01
5	Chermaru	2	0.036	8.05	3.57	8
6	Panaloi	2	0.036	8.05	3.57	8
7	Swarnaloi	1	0.018	4.03	1.78	3.99
8	Salaraloi	1	0.018	4.03	1.78	3.99
Grass						
Sl. No.	Species	Nos	D (nos/sqmt)	RD	F(%)	RF
1	Mutha	24	0.428	53.3	42.86	53.34
2	Bausuni	5	0.089	11.08	8.93	11.13
3	Duba	1	0.018	2.24	1.78	2.21
4	Chepti	2	0.036	4.48	3.57	4.44
5	Phuluri	2	0.036	4.48	3.57	4.44
6	Sikula	11	0.196	24.41	19.64	24.44

TABLE NO. 3.1 Biodiversity assessment of Trees in TALAIPATHAR RF										
Sl.No.	Species	Number	Plots	D	RD	F%	RF	BA	RBA	IVI
1	Asan	265	65	34.42	10.24	84.42	10.22	2.118	6.84	27.3
2	Chara	106	40	13.77	4.09	51.95	6.29	0.637	2.06	12.44
3	Dhaura	215	60	27.92	8.3	77.92	9.43	2.357	7.61	25.35
4	Gambhari	1	1	0.13	0.04	1.3	0.16	0.491	1.59	1.78
5	Harida	7	7	0.91	0.27	9.09	1.1	0.985	3.18	4.55
6	Jamun	45	23	5.84	1.74	29.87	3.62	1.815	5.86	11.22
7	Kasi	37	16	4.81	1.43	20.78	2.52	1.018	3.29	7.23
8	Kurum	34	23	4.42	1.31	29.87	3.62	1.074	3.47	8.4
9	Kendu	79	39	10.26	3.05	50.65	6.13	1.946	6.29	15.47
10	Karada	195	48	25.32	7.53	62.34	7.55	1.432	4.63	19.7
11	Mahula	128	54	16.62	4.94	70.13	8.49	2.118	6.84	20.28
12	Mundi	41	20	5.32	1.58	25.97	3.14	0.975	3.15	7.88
13	Moi	108	45	14.03	4.17	58.44	7.08	1.256	4.06	15.3
14	Misc	546	73	70.91	21.09	94.81	11.48	4.575	14.78	47.34
15	Piasal	21	14	2.73	0.81	18.18	2.2	0.624	2.02	5.03
16	Sal	684	67	88.83	26.42	87.01	10.53	5.76	18.6	**55.56**
17	Sissoo	6	5	0.78	0.23	6.49	0.79	1.155	3.73	4.75
18	Sidha	71	36	9.22	2.74	46.75	5.66	0.623	2.01	10.42

Sal is the most dominant species and the percentage of dominance is 18.52 %.

Table No. 3.2 Biodiversity assessment of Shrubs, Herbs, Climbers & Grasses in Taleipathar RF							
Shrubs							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Telkurma	47	0.017	20.73	12.66	20.65	41.38
2	Kurein	45	0.016	19.51	14.61	23.82	**43.33**
3	Mura	3	0.001	1.22	0.97	1.58	2.8
4	Giliari	30	0.011	13.41	7.47	12.18	25.59
5	Baincha	8	0.003	3.66	2.6	4.24	7.9
6	Jatiki	41	0.015	18.29	11.69	19.06	37.35
7	Fenix	1	0.001	1.22	0.32	0.52	1.74
8	Gurudu	2	0.001	1.22	0.65	1.06	2.28
9	Pingu	7	0.003	3.66	1.62	2.64	6.3
10	Sunaregeda	2	0.001	1.22	0.32	0.52	1.74
11	Salapani	4	0.001	1.22	0.97	1.58	2.8
12	Banakhajuri	9	0.003	3.66	2.92	4.76	8.42
13	Tenteikoli	2	0.001	1.22	0.65	1.06	2.28
14	Nahalabedi	1	0.001	1.22	0.32	0.52	1.74
15	Ghuntli	2	0.001	1.22	0.65	1.06	2.28
16	Urukula	1	0.001	1.22	0.32	0.52	1.74
17	Lahalbedi	4	0.001	1.22	1.3	2.12	3.34
18	Bhuinkurma	1	0.001	1.22	0.32	0.52	1.74
19	Damaghurudu	1	0.001	1.22	0.32	0.52	1.74
20	Kukurchatia	1	0.001	1.22	0.32	0.52	1.74
21	Ghutikhadika	4	0.001	1.22	0.32	0.52	1.74

Herbs							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Talamuli	34	0.11	35.48	11.04	35.81	71.29
2	Bhuinneem	55	0.178	57.42	17.53	56.86	**114.28**
3	Satabari	5	0.016	5.16	1.62	5.25	10.41
4	Banasaru	1	0.003	0.97	0.32	1.04	2.01
5	Akanabindha	1	0.003	0.97	0.32	1.04	2.01

Climbers							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Sualoi	43	0.14	44.02	13.96	43.5	**87.52**
2	Muturi	29	0.094	29.56	9.41	29.32	58.88
3	Siali	9	0.029	9.12	2.92	9.1	18.22
4	Buduli	1	0.003	0.94	0.32	0.99	1.93
5	Masialoi	1	0.003	0.94	0.32	0.99	1.93
6	Panialu	1	0.003	0.94	0.32	0.99	1.93
7	Turuda loi	1	0.003	0.94	0.32	0.99	1.93
8	Banakulathi	2	0.006	1.89	0.65	2.02	3.91
9	Dantari	1	0.003	0.94	0.32	0.99	1.93
10	Bichhuati	1	0.003	0.94	0.32	0.99	1.93
11	Atandi	2	0.006	1.89	0.65	2.02	3.91
12	Kuluthia	1	0.003	0.94	0.32	0.99	1.93
13	Cheramur	5	0.016	5.03	1.62	5.05	10.08
14	Kirikinchi	1	0.003	0.94	0.32	0.99	1.93
15	Kantari	1	0.003	0.94	0.32	0.99	1.93

Grass							
Sl. No.	**Species**	**Nos**	**D (nos/sqmt)**	**RD**	**F(%)**	**RF**	**IVI**
1	Bena	4	0.013	1.53	1.3	1.56	3.09
2	Bausuni	20	0.065	7.66	6.5	7.82	15.48
3	Mutha	84	0.273	32.19	26.95	32.43	**64.62**
4	Sikula	48	0.156	18.4	15.26	18.36	36.76
5	Chepti	51	0.166	19.57	16.23	19.53	39.1
6	Poksungha	32	0.104	12.26	10.06	12.11	24.37
7	Phatphati	3	0.01	1.18	0.97	1.17	2.35
8	Dabchana	9	0.029	3.42	2.92	3.51	6.93
9	Mayurchulia	8	0.026	3.07	2.27	2.73	5.8
10	Tentei	1	0.003	0.35	0.32	0.38	0.73
11	Banamaricha	1	0.003	0.35	0.32	0.38	0.73

Sal is the most dominant species and the percentage of dominance is 16.95 %.

Table No. 3.1 Biodiversity assessment of Trees of Northern RF										
Sl.No.	Species	Number	Plots	D	RD	P%	RF	BA	RBA	IVI
1	Asan	480	157	23.53	4.96	76.96	10.42	2.036	5.39	20.77
2	Chara	554	168	27.16	5.72	82.35	11.15	0.633	1.68	18.55
3	Dhaura	148	71	7.25	1.53	34.8	4.71	1.57	4.16	10.4
4	Gambhari	14	11	0.69	0.14	5.39	0.73	13.632	36.12	36.99
5	Harida	28	18	1.37	0.29	8.82	1.19	0.692	1.83	3.32
6	Jamun	230	104	11.27	2.37	50.98	6.9	1.385	3.67	12.95
7	Kasi	70	43	3.43	0.72	21.08	2.85	0.831	2.2	5.78
8	Kurum	8	8	0.39	0.08	3.92	0.53	0.392	1.04	1.65
9	Kendu	619	167	30.34	6.39	81.86	11.08	1.776	4.71	22.18
10	Karada	119	48	5.83	1.23	23.53	3.19	0.74	1.96	6.37
11	Mahula	523	175	25.64	5.4	85.78	11.61	1.984	5.26	22.27
12	Mundi	16	14	0.78	0.17	6.86	0.93	0.1	0.26	1.36
13	Moi	80	52	3.92	0.83	25.49	3.45	1.017	2.69	6.97
14	Misc	710	170	34.8	7.33	83.33	11.28	2.86	7.58	26.19
15	Piasal	64	40	3.14	0.66	19.61	2.65	0.901	2.39	5.7
16	Sal	5909	202	289.66	61.01	99.02	13.4	6.371	16.88	**91.3**
17	Sissoo	7	7	0.34	0.07	3.43	0.46	0.605	1.6	2.14
18	Sidha	106	52	5.2	1.09	25.49	3.45	0.217	0.57	5.12

Sal is the most dominant species and the percentage of dominance is 30.43 %.

Table No. 3.2 Biodiversity assessment of shrubs of Northern RF							
Sl.No.	Species	Number	D	RD	F%	RF	IVI
1	Bhuincha	39	0.005	5.71	4.29	5.8	11.51
2	Fonix	197	0.027	28.84	19.36	26.2	**55.04**
3	Khajuri	93	0.013	13.62	11.4	15.42	29.04
4	Giliri	45	0.006	6.59	4.78	6.47	13.06
5	Kurei	38	0.005	5.56	4.41	5.97	11.53
6	Telkurma	68	0.009	9.96	6.5	8.79	18.75
7	Ranikalthi	32	0.004	4.69	3.68	4.97	9.66
8	Ghurudu	69	0.009	10.1	7.23	9.78	19.89
9	Lalbeli	2	0	0.29	0.25	0.33	0.62
10	Mura	3	0	0.44	0.37	0.5	0.94
11	Urguna	6	0.001	0.88	0.74	0.99	1.87
12	Kamalagunc	1	0	0.15	0.12	0.17	0.31
13	Panchanmaj	28	0.004	4.1	3.43	4.64	8.74
14	Dhatiki	23	0.003	3.37	2.57	3.48	6.85
15	Poksungha	27	0.004	3.95	3.31	4.48	8.43
16	Salapani	1	0	0.15	0.12	0.17	0.31
17	Mamuri	4	0.001	0.59	0.49	0.66	1.25
18	Salara	4	0.001	0.59	0.37	0.5	1.08
19	Gangasiuli	1	0	0.15	0.12	0.17	0.31
20	Ghuntuli	2	0	0.29	0.12	0.17	0.46
21	Sunaragadi	1	0	0.15	0.12	0.17	0.31
22	Phanphana	1	0	0.15	0.12	0.17	0.31

Biodiversity assessment of herbs of Northern RF							
Sl.No.	Species	Number	D	RD	F%	RF	IVI
1	Bhuinneem	95	0.116	64.68	10.54	62.77	**127.45**
2	Indrajal	8	0.01	5.45	0.98	5.84	11.29
3	Iswarjata	9	0.011	6.13	1.1	6.57	12.7
4	Talamuli	27	0.033	18.38	3.31	19.71	38.09
5	Akanabindu	2	0.002	1.36	0.25	1.46	2.82
6	Bajramuli	2	0.002	1.36	0.25	1.46	2.82
7	Bisalyakarani	1	0.001	0.68	0.12	0.73	1.41
8	Taptakhandi	2	0.002	1.36	0.25	1.46	2.82

Biodiversity assessment of climbers of Northern RF							
Sl.No.	Species	Number	D	RD	F%	RF	IVI
1	Atandi	37	0.045	9.81	4.41	10	19.81
2	Gunja	8	0.01	2.12	0.98	2.22	4.34
3	Sualoi	91	0.112	24.14	10.91	24.72	48.86
4	Kululthia	17	0.021	4.51	2.08	4.72	9.23
5	Panialu	3	0.004	0.8	0.37	0.83	1.63
6	Kirkinchi	12	0.015	3.18	0.86	1.94	5.13
7	Khiria	56	0.069	14.85	6.74	15.28	30.13
8	Muturi	53	0.065	14.06	6.5	14.72	28.78
9	Patua	1	0.001	0.27	0.12	0.28	0.54
10	Buduli	3	0.004	0.8	0.37	0.83	1.63
11	Siali	36	0.044	9.55	4.41	10	19.55
12	Chermaru	9	0.011	2.39	1.1	2.5	4.89
13	Pingu	14	0.017	3.71	1.35	3.06	6.77
14	Handiphata	3	0.004	0.8	0.37	0.83	1.63
15	Ankla	1	0.001	0.27	0.12	0.28	0.54
16	Satabari	10	0.012	2.65	1.23	2.78	5.43
17	Bhuinkhakaru	1	0.001	0.27	0.12	0.28	0.54
18	Arkala	1	0.001	0.27	0.12	0.28	0.54
19	Tilei	2	0.002	0.53	0.25	0.56	1.09
20	Masia	1	0.001	0.27	0.12	0.28	0.54
21	Takualoi	4	0.005	1.06	0.49	1.11	2.17
22	Sankaloi	2	0.002	0.53	0.25	0.56	1.09
23	Dantari	3	0.004	0.8	0.37	0.83	1.63
24	Jhimlai	1	0.001	0.27	0.12	0.28	0.54
25	Misc	6	0.007	1.59	0.12	0.28	1.87
26	Udaloi	1	0.001	0.27	0.12	0.28	0.54
27	Batalaloi	1	0.001	0.27	0.12	0.28	0.54
28	Chhapiria	2	0.002	0.28	0.25	0.28	0.56
29	Cane	1	0.001	0.14	0.12	0.14	0.28

3.3 Status of biodiversity conservation in forests

3.3.1 Biological diversity or biodiversity is the variety of all life forms on earth. Its complexities are measured in terms of variation at genetic, species and ecosystem levels. The totality of genes, species and ecosystem of a region makes up the vital natural resource and a reduction in its frequency constitutes a loss of biodiversity.

3.3.2 No systematic scientific study has been carried out in the past in the forests of Athamallik Division regarding the diversity of life forms. The natural forests possess myriad of living organisms that are inter-dependent for their survival. So depletion of any one species will adversely affect the population of other species. Present management of forests is aimed at maintaining this symbiotic relationship. In the previous Working Plan an attempt has been made to study the species richness of different flora. Therefore, it is more appropriate to say it Floristic Diversity instead of Bio Diversity.

3.3.3 The earlier concept of forest management was revenue or rather timber oriented. In the recent past floristic diversity management has also been given weightage in the forestry planning and management. With better understanding of inter dependence of species, floristic diversity importance has been realized of late. Now each and every tree, herb, shrub, climber, fungi, algae etc. are equally weighted for the scientific research to prove it to be indispensable for the benefit of mankind. Hence emphasis has been laid on the floristic diversity studies in this Plan.

3.3.4 Method of Studies:

Floristic diversity survey has been undertaken in all the forest blocks during the preparation of previous working plan. A random sampling technique was adopted for the purpose. In each block, three random sample plots of size 20 mt. X 20 mt. were laid. They were laid down with the help of four pegs fixed at four corners of the plot. In order to avoid repetition of counting, the plot was divided into strips by a 2-meter rope/ pole. Counting was done meticulously along the line of the rope /pole to ensure minimum error. The details of all species of trees, shrubs, herbs/grasses, and climbers were recorded. In case of difficulty in identifying a species, knowledgeable local people, vaidyas, and retired forest staff were consulted.

In order to arrive at the species diversity from the field data, **Modified Simpson's Floristic Diversity Index** was used. The formula being,

$$\mathbf{D = 1 - [\sum (ni/N)^2]}$$

D refers to Floristic diversity Index

i refers to number of species from 1 to n

N is total number of individuals of all the species

ni is the number of individuals of the given species, i, in the sampled area

The index D is a ratio, which varies from 0 to 1

3,3.5 Findings of the Studies

The abstract of survey in different blocks is given below in **Table No: 3.3**. In the survey, 98 tree species, 28 shrub species 39 herbs species, 11 grass species are found. Numbers of species reflected in the survey are the species that could be identified. There are also some species left out which couldn't be identified.

Table: 3.3 ABSTRACT OF FLORISTIC DIVERSITY INDEX

Sl. No.	Name of the Block	Max No. Of Species	Floristic Diversity Index
RESERVED FORESTS			
1	Northern	114	0.964142
2	Handapa	97	0.970677
3	Talaipathar	96	0.974344
4	Kadalimunda	82	0.956959
5	Dandarugudi	59	0.895295
6	Kishoreban	78	0.958837
7	Kholdangiani	71	0.9102
8	Bankimundi	68	0.947756
9	Dantarikhol	74	0.916846
10	Kutulsingha	82	0.955783
11	Mahendrapur	63	0.959614
12	Nuagan	59	0.942657
13	Kusumkuhuri	80	0.93534
14	Bindhyabasini	83	0.957414
15	Ghosar	57	0.851175
16	East Baruni	70	0.9601
17	West Baruni	68	0.960261
18	Bijamalhia	74	0.959252
19	Guja	63	0.936813
PROTECTED FORESTS			
20	Kuber Hills	60	0.96313
21	Thakurgarh	46	0.909672
22	Pitabalibahal	60	0.94779
23	Rampur	56	0.918588
24	Purunapani	50	0.943707
25	Muchhapur A	55	0.952025
26	Muchhapur B	45	0.928612
27	Mangalpur	52	0.952549
28	Gundurijharan	76	0.948411
29	Kuturukani	64	0.92127
30	Solanda	57	0.950263
31	Berham	55	0.948155
32	Susab	62	0.933622
33	Bhangamunda	52	0.943733
34	Digi	41	0.947203
35	Batipuranapani	65	0.924809
36	Tileswar	72	0.953378
37	Tulusipur	52	0.941279
38	Bajpur	43	0.928956

During the current working plan period no in-situ or ex-situ conservation efforts were undertaken on any of the species in Athmallik Forest Division. No conservation efforts on sensitive / RET / IUCN red listed species have been undertaken in the Division. However, centre as well as state guidelines/strategic plan are being implemented.

LIST OF RET SPECIES OF ATHAMALLIK DIVISION LISTED IN IUCN RED DATA BOOK			
(A)_FLORA			
FLORA=COMMON TREES			
LOCAL NAME	***BOTANICAL NAME***	***FAMILY***	***IUCN status***
Agasti	*Sesbaniagrandiflora*	*Fabaceae*	*TN*
Amata	*Bauhinia racemosa*	*Caesalpinlaceae*	*TN*
Ambada	*Spondiusmangifera*	*Anacardiaceae*	*TN*
Arjuna	*Terminaliaarjuna*	*Combretaceae*	*TN*
Ashoka	*Saracaasoca*	*Caesalpinlaceae*	*EN*
Bandhan	*Desmodiumoojeinensis*	*Fabaceae*	*TN*
Barun	*Cratevareligiosa/ C.nur*	*Capparaceae*	*EN*
Bhenta	*Limoniaacidissima*	*Rutaceae*	*EN*
Bija	*Pterocarpusmarsupium*	*Fabaceae*	*EN*
Chadaigudi	*Vitexpeduncularis*	*Verbenaceae*	*EN*
Chandan	*Santalum album*	*Santalaceae*	*EN*
Dam kuruda	*Gardenia latifolia*	*Rubiaceae*	*TN*
Dauranja	*Holopteliaintegrifolia*	*Ulmaceae*	*TN*
Dhaura	*Anogeissuslatifolia*	*Combretaceae*	*TN*
Genduli	*Sterculiaurens*	*Sterculiaceae*	*EN*
Ghanto	*Zizyphusmauritiana*	*Rhamnaceae*	*TN*
Giringa	*Pterospermumheyneami*	*Sterculiaceae*	*TN*
Haldu(Halamda)	*Haldinacordifolia (Adin*	*Rubiaceae*	*EN*
Harida	*Terminaliachebula*	*Combretaceae*	*TN*
Jari	*Ficusamplissima*	*Moraceae*	*TN*
Kaitho	*Feroniaelephantum*	*Rutaceae*	*TN*
Kamalagundi	*Mallotusphillippensis*	*Euphorbiaceae*	*TN*
Kansa	*Hymenodictyonexcellsu*	*Rubiaceae*	*TN*
Khaira	*Acacia catechu*	*Mimosaceae*	*TN*
Kochila	*Strychnosnux-vomica*	*Strychnaceae*	*TN*
Masania	*Aporusaoctendra*	*Euphorbiaceae*	*EN*
Pahadisisoo	*Dalbergialatifolia*	*Fabaceae*	*TN*
Panigambhari	*Trewianudiflora*	*Euphorbiaceae*	*TN*
Rohini	*Soymidafebrifuga*	*Meliaceae*	*EN*
Sal	*Shorearobusta*	*Dipterocarpaceae*	*TN*
Thelka	*Tamilnadiauliginosa*	*Rubiaceae*	*RR*
Toon	*Toonaciliata*	*Meliaceae*	*RR*

FLORA=HERBS AND SHRUBS			
LOCAL NAME	**BOTANICAL NAME**	**FAMILY**	
Amada/Ama-haldi	Curcuma amada	Zingiberaceae	EN
Agnijhal	Clausenaexcavata	Rutaceae	
Akanabindhi	Cissampelospareria	Menispermaceae	TN
Baghanakhi	Martyniaannua	Pedaliaceae	TN
Banamalli	Jasminiumauriculatum	Oleaceae	EN
Bana-piaja	Urgineaindica	Liliaceae	RR
Brahmi/Thalkuni	Hydrocotyleasiatica	Apiaceae	EN
Hansalata	Aristolochiabracteata	Aristolochiaceae	EN
Mehandi(Manjuati)	Lawsoniainermis	Lythraceae	TN
Mohana (Pottua)	Randiadumetorum	Rubiaceae	EN
Punarnava/Pugincan	Boerhaviadiffusa	Nyctaginaceae	EN
Raktachitaparu(Lal-c	Plumbagorosea/P.indica	Plumbaginaceae	RR
Salaparni	Desmodiumgangeticum	Fabaceae	EN
Sikakaya	Acacia sinuta	Mimosaceae	TN
Tulasi(Dhala)	Ocimumbasilicum	Lamiaceae	EN

FLORA=CLIMBERS			
LOCAL NAME	BOTANICAL NAME	FAMILY	
Brudhadaraka	Argyreia nervosa	Convolvulaceae	RR
Gilo	Entadaacandens/E.pursaitha	Mimosaceae	EN
Gunja (Kaincha)	Abrusprecatorius	Fabaceae	EN
Madang	Loranthusscurrula	Loranthaceae	EN
Muturi	Smilax macrophylla	Smilaceae	EN
Nirmuli	Cassythafiliformis	Cassytha	EN
FLORA=GRASSES			
LOCAL NAME	BOTANICAL NAME	FAMILY	
Dhanwaritari	Cymbopogonflexuosus	Poaceae	EN
Sabai (Panasi)	Eulaliopsisbinata	Poaceae	TN

(A)_FAUNA			
FAUNA= MAMMALS			
LOCAL NAME	ENGLISH NAME	LATIN NAME	
Bagha	Tiger	Pantheratigris	RR
Bajrakapta	Pangolin	Maniscrassicaudata	EN
Bhalu	Sloth bear	Melursusursinus	EN
Chausingha	The Four horned antelope	Tetracerusquadricornis	RR
GadaBhalu	Ratel	Mellivoracapensis	RR
Gurandi	Mouse deer	Tragulusmeminna	RR
Harina	Spotted deer	Axis axis	EN
KalarapatriaBagha	Leopard (Panther)	Pantherapardus	EN
Ramsiali	Wolf	Canis lupus	RR
Saliapatani	Small Indian civet	Viverriculaindica	EN
Saliapatani	Toddycat	Paradoxurushermaphroditus	EN
Sambar	Sambar	Cervus unicolor	EN

3.4 Status of species prone to over exploitation

Athmallik Forest Division has medicine plants of importance which were subjected to over exploitation. Important among them were Lodha, Medha, Amla, Bhuin Neem, Patalagaruda etc.

No species will be preferred at the cost of any other species. All species are to be given equal importance for conservation of species biodiversity and development of the forest. The emphasis of management is on conservation of balanced forest in which the natural selection of the species will be encouraged. The fruit bearing and important NTFP species such as Mahula, Amla, Chara, Kendu, Bahada, Harida and Bela will not be felled.

Suggestion of the Gram Panchayat where Biodiversity Management Committees shall be constituted under Biodiversity Act, 2002 and Biodiversity Rules, 2004.should be taken. So far 47 BMC have constituted in Athamallik Forest Division. The CD Block wise list of the BMC constituted is furnished below. Step should be taken to constitute more Biodiversity Management Committees where it is not constituted.

BMC(s) Constituted in Atthamalik Block of Angul District							
Sl.No	Name of BMC	Date of selection of Members by Local Bodies/GP	Date of Constitution of BMC	Name of Gramapanchayat	Name of Sub-Division	Name of Forest Division	Name of District
1	Aida	28/12/2018	28/12/2018	Aida	Athamalik	Athamallik	Angul
2	Lunahandi	12/12/2018	12/12/2018	Lunahandi	Athamalik	Athamallik	Angul
3	Kiakata	28/01/2019	28/01/2019	Kiakata	Athamalik	Athamallik	Angul
4	Paikasahi	26.11.2018	30.11.2018	Paikasahi	Athamallik	Athamallik	Angul
5	Kampala	17.12.2018	17.12.2018	Kampala	Athamallik	Athamallik	Angul
6	Pedipathar	13.12.2018	13.12.2018	Pedipathar	Athamallik	Athamallik	Angul
7	Krutubasapur	26.12.2018	26.12.2018	Krutubasapur	Athamallik	Athamallik	Angul
8	Sanhula	14.12.2018	14.12.2018	Sanhula	Athamallik	Athamallik	Angul
9	Kurmtapa	24.12.2018	24.12.2018	Kurmtapa	Athamallik	Athamallik	Angul
10	Sapaghara	14.12.2018	14.12.2018	Sapaghara	Athamallik	Athamallik	Angul
11	Purunamanitri	08.10.2015	08.10.2015	Purunamanitri	Athamallik	Athamallik	Angul
12	Thakurgarh	24.09.2015	24.09.2015	Thakurgarh	Athamallik	Athamallik	Angul
13	Ambasaramunda	20.10.2015	28.10.2015	Ambasaramunda	Athamallik	Athamallik	Angul
14	Nagaon	29.10.2015	29.10.2015	Nagaon	Athamallik	Athamallik	Angul
15	Kandhapada	30.10.2015	30.10.2015	Kandhapada	Athamallik	Athamallik	Angul
16	Madhapur GP BMC	19.11.2015	20.11.2015	Madhapur	Athamallik	Athamallik	Angul
17	Basudevpur GP BMC	30.11.2015	30.11.2015	Basudevpur	Athamallik	Athamallik	Angul
18	Luhasingha GP BMC	20.11.2015	21.11.2015	Luhasingha	Athamallik	Satkosia WI	Angul
19	Tusar GP BMC	06.11.2015	06.11.2015	Tusar	Athamallik	Athamallik	Angul
20	Jamudoli GP BMC	30.11.2015	30.11.2015	Jamudoli	Athamallik	Athamallik	Angul
21	Kudagaon GP BMC	17.11.2015	18.11.2015	Kudagaon	Athamallik	Athamallik	Angul
22	Kantapada	26/01/2015	26/01/2015	Kantapada	Athamallik	Athamallik	Angul
23	Tapdhol	20/03/2015	24/03/2015	Tapdhol	Athamallik	Athamallik	Angul
24	Maimura	25/03/2015	25/03/2015	Maimura	Athamallik	Athamallik	Angul

BMC(s) Constituted in Kishornagar Block of Angul District							
Sl. No	Name of BMC	Date of selection of Members by Local Bodies/GP	Date of Constitution of BMC	Name of Gramapanchayat	Name of Sub-Division	Name of Forest Division	Name of District
1	Dhaurapali	21/08/2018	21/08/2018	Dhaurapali	Athamalik	Athamalik	Angul
2	Himitira	15/08/2018	17/08/2018	Himitira	Athamalik	Athamalik	Angul
3	Kataranga	25/07/2018	26/07/2018	Kataranga	Athamalik	Athamalik	Angul
4	Bamur	27/08/2018	27/08/2018	Bamur	Athamalik	Athamalik	Angul
5	Bileinali	22/08/2018	22/08/2018	Bileinali	Athamalik	Athamalik	Angul
6	Luhamunda	26/08/2018	26/08/2018	Luhamunda	Athamalik	Athamalik	Angul
7	Thelkanali	31/12/2018	31/12/2018	Thelkanali	Athamalik	Athamalik	Angul
8	Angapada	15/08/2018	15/08/2018	Angapada	Athamalik	Athamalik	Angul
9	Oskapali	31/12/2018	31/12/2018	Uskapali	Athamalik	Athamalik	Angul
10	Jharabereni	05/01/2019	05/01/2019	Jharabereni	Athamalik	Athamalik	Angul
11	Jairat	26/12/2018	26/12/2018	Jairat	Athamalik	Athamalik	Angul
12	Urukula	31/12/2018	31/12/2018	Urukula	Athamalik	Athamalik	Angul
13	Dhandarpal	22/11/2018	22/11/2018	Dhandarpal	Athamalik	Athamalik	Angul
14	Sanjamura	15/09/2015	15/09/2015	Sanjamura	Athamalik	Athamalik	Angul
15	Gaonboinda	15/09/2018	15/09/2018	Gaonboinda	Athamalik	Athamalik	Angul
16	Kadalimunda	24/09/2018	24/09/2018	Kadalimunda	Athamalik	Athamalik	Angul
17	Jamunali	15/09/2018	19-092018	Jamunali	Athamalik	Athamalik	Angul
18	Nunukapasi	15/09/2018	15/09/2018	Nunukapasi	Athamalik	Athamalik	Angul
19	Handapa	26/09/2018	26/09/2018	Handapa	Athamalik	Athamalik	Angul
20	Ambapal	22/09/2018	24/09/2018	Ambapal	Athamalik	Athamalik	Angul
21	Kanteikulia	23/09/2018	26/09/2018	Kanteikulia	Athamalik	Athamalik	Angul
22	Nakchi	05/09/2018	25/09/2018	Nakchi	Athamalik	Athamalik	Angul
23	Raniakata	25/09/2018	25/09/2018	Raniakata	Athamalik	Athamalik	Angul

Source- **Executive Director NEWS,Angul**

3.5 Conservation of genetic resources

The Silvicultural Division has a research garden in Talaipathar RF, Compartment No.1C over an area of 20 ha. This was constituted in the year 1982.In this garden the progeny trails of Teak and Gambhar are being done. Teak seeds brought from Berbera, Raigada, Purnakote and Malkangiri are grown for progeny trails. The measurements like number of plants, average diameter, and survival percentage for each year plantation are recorded in the month of January to March. Progeny trails of Gambhar, the seeds of which are brought from Bolangir are also done in the garden. Clonal Seed Orchards of Teak are also grown here. The main problem in this garden is that the comparative studies of the different experiments done in different years are not analyzed to draw specific inferences and the average height measurements are also not taken and hence it is difficult to determine the growth pattern of the species grown here. Another problem is that the matured teak trees in the garden are prone to illicit felling frequently and it is still further difficult to analyze the research observations.

There was a Preservation Plot in Northern RF, compartment no.3. But there is no maintenance like climber cutting, cleaning etc. in the plot. Hence the plot is also not looked after by the Silvicultural Division now.

The Forests of Athmallik Division contain a large number of species which yield a variety of Non-Timber Forest Produce (NTFPs). The huge demand for a few varieties of NTFPs is resulting in unsustainable and destructive exploitation of these resources by the primary collectors which is abetted by Traders and Middlemen. No systematic study has been done in the past in the Division to access the potential production of various NTFPs and to ascertain impact of collection etc. of such NTFP on sustainability of Forest.

Medicinal plants are site specific and adapted to particular micro-climate zone. Secondly the Medicinal properties of these plants and their uses in curing various ailments are known to the local traditional healers. Therefore while dealing with the preservation, conservation and propagation of Medicinal plants, it is not possible to segregate the traditional ecological knowledge pertaining to ethno-botany, about occurrence, method of non-destructive collection, treatment and user of Medicinal plants species in curing various ailments. At present rigid protection measures to the medicinal plants should be ensured against all sorts of biotic interference, fire etc. Documentation of medicinal plants species along with traditional ecological knowledge on them must form an integral aspect of preservation and conservation of Medicinal plants, so that importance of these plant species should be realised in the traditional health care process. Unsustainable ways of harvesting and unrestricted working have led to the reduction in population of some of the high demand

The practical answer to this problem is cultivation of medicinal plant species in herbal gardens and production of their seedlings in nurseries so as to preserve the rich heritage for posterity. The important Medicinal plants are as follows:-

Myrabolans, Amla, Harida, Bahada, Patal Garuda, Aswagandha, Bhuin Neem, Gudmari, Pasanabhedi, Shatabari, Gheekuanri, Safed Musli, Brahmi. The Orissa Plantation Manual 1977 shall be followed while carrying out this plantation.

The Divisional staff must have clear perception of threats from various faulty/injurious local practices that adversely affect the sustenance of Forests. Keeping in view, the perceived threats to Forests, they shall take appropriate steps to minimize the impact of injury practices on the Forests. Vulnerable Forests may be temporarily closed for NTFP collection for specified periods so that regeneration of desired species is not adversely affected. Collection period may be reduced in some cases to ensure that sufficient seeds are left in the forest floor to induce regeneration. The Divisional staff may work in close co-operation with local people who may be motivated not to collect entire seed from the forest floors and to allow some seeds to remain on the ground for regeneration purposes. Similarly, local peoples need to be encouraged to adopt more friendly technique to collect barks, branches leaves and roots, so that forests are not adversely affected. They may also be encouraged not to resort to Forest Fire.

3.6 Fauna and their habitats

3.6.1. General History: Athmallik forest Division has rich biodiversity of flora and fauna. Forests of Athmallik like Hatidhara and Taleipathar are contiguous to the forests of Satkosia sanctuary of Angul district and Baisipali sanctuary of Nayagarh district. They function as corridor for terrestrial migratory animals. However depletion of natural forest has caused threat to fauna as a result there is increase in man animal conflict. Wild life menace by way of attack on human beings, cattle lifting, crop damage, intrusion to human habitation etc. are common phenomena due to destruction of their habitat. Poaching is another problem wherever forests exist. In the past wild life were not managed under any systematic prescription upto 1995. From the outgoing plan period, separate prescription for management and development of wild life are being prescribed.

3.6.2. Mammals, Birds, Reptiles and Fishes:

The commonly sighted animals are Elephant, Barking Deer, Mouse Deer, Hyena, Wild Dog, Sloth Bear, Jackal, Indian Fox, Wolf, Indian Squirrels, Flying Squirrels, Porcupines, Rabits, Rats. Birds like Peafowl's were commonly seen all over the Division. Other birds such as Jungle fowl, Quail, Horn bills, the hill Myna, Orioles, Bulbul, Para kits and Rocket Tailed Drongo were common. Among snakes, the Indian Python and King Cobra were found in Malchhama Forests. The Cobra, Russels Vipers and Green Pit Vipers were abundantly found the Division. Among fishes Catfishes, Murals and other small fishes were found in river, tributaries and streams.

3.6.2.1; Habitats and Microhabitats of flagship wildspecies:

A wildlife habitat has four basic components,viz. food,cover,water and space.

Food: Food is an essential pre-requisite for any organism. Food availability in a habitat changes with season. Herbivores depend on the plant material for their sustenance, where as carnivores survive on the availability of prey animals. The quantity, quality and the spatial distribution of food are very important in a habitat.

Cover: It can be considered as a variation seen in a habitat, which affords protection to animals from weather,predators by offering a better vantage point. Various types of cover could be refuge cover, ambush cover, loafing cover breeding cover and roosting cover for birds.

Water: Water replenishment is essential for all wild animals. Presence of abundant food in a habitat is rendered useless,if water is not available in close proximity. A habitat becomes poor from the wildlife point of view if it is devoid of water source.

Space: Animals require physical space to live; its day-to-day requirements like procurement of food,water,cover and mates are met from this space.

Microhabitats:

Habitat richness is dependent upon the size of the forest stands or the types of habitat which come together in the edge area. An edge is the place of contact between plant communities or successional stages. Habitat richness is also closely linked with the amount of contrast seen in an edge; more the contrast, greater will be the animal richness. Such a contrast can be very significant if an early successional stage is combined with a later one in a habitat.Snags are extremely important in wildlife management,since they are used by many wild animals in their day-to-day activity. Many species of fungi,mosses and lichens use decayed wood as a substratum for growth; invertebrates use tha space, which are present in between the bark and timber, as a habitat. Birds excavate cavities, or use the existing ones for nesting, roosting or even perching. Mammals use them as dens or as escape cover; sometimes, they are also used by bats for their roosting. Each stage of snag succession is of importance to a particular wild animal in a habitat. The dead and down woody materials, on the floor of a forest, has many valuable functions in a wildlife habitat. The trunks of dead and downy trees constitute a source of food for certain birds like wood-peckers; the branches may be used as perches by some birds, and in case they are hollow,these cavities are used for nesting purposes also by many arboreal species. The root portion is also used by many partridges for nesting; small vertebrates and invertebrates, use the space between the bark and the woody material as a habitat. Many wild animals use the fallen logs for a number of purposes; generally they take shelter as hiding cover or sometimes, use them as sites for feeding or reproduction. Some wildlife habitats are unique in the sense they are constituted by certain geomorphic features,apart from plant communities. These unique habitats are usually constituted by cliffs, talus and caves. Cliffs provide considerable physical protection and concentrate a large number of birds, reptiles and mammals. If a cliff is located at a considerable height, it is considered as more suitable. Many fissures may be used by bats for roosting, reproduction or hibernation. Shallow caves are used by many animals mammals; many carnivores , including tiger,use such caves as dens for shelter and reproduction;lizards and snakes also prefer them for the purpose of shelter,hibernation and feeding. These features get an added value if they are in the close vicinity of a permanent water source.Many raptorial birds depend on the presence of cliffs for their survival.Caves provide total darkness. Some bats survive because of the presence of caves,which serve as their breeding habitat.Large concentration of vertebrates are seen in the talus and they include snakes,birds and small mammals. A talus should be sufficiently large to provide enough living space for the animals which occupy it; it should also have considerable depth, because some animals may prefer to move down while seeking the right conditions of humidity and temperature.Low-land riparian forest site that harbor diverse avian fauna, constitutes an important bird habitat.

3.6.2.2 Habitat requirements of specific species :

Basing on the wildanimals available in the division; the habitat requirements are furnished in **Table No. 3. 4** as follows.

Table No. 3.4 Habitat requirements of wild animals

Sl.No.	English Name.	Scientific Name.	Distribution.	Habitat requirments
1	Bonnet Macaque.	Macaca radiata	Northern,	Village & jungle,both in the foothills and in the plains.Feed on the ground or in the trees.Eat anything eatable,fruits,berries,leaves and shoots, also insects,grubs, spiders.
			Kishoreban, Guja,	
			East Baruni,	
			Bindhyabasini.	
2	Common	Presbytis entellus	Northern,	Live in forests, haunt shady groves around tanks and temples. They also exist in extremely dry areas where there is no other water in summer than that available in leaves and bark.Pure vegetarians, eat wild fruits,flowers,buds,shoots,leaves.
	Langur.		Kishoreban, Guja,	
			East Baruni,	
			Bindhyabasini.	
3	Leopard.	Panthera pardus.	Northern RF	Able to live & thrive almost everywhere. Not restricted to forests or heavy cover like tigers,and thrive as well in open country as among rocks & scrub.Kill and eat anything it can overpower with safety, deer, monkeys, smaller beasts of prey, larger rodents like porcupines. Leopards living outside forest areas, prey mainly on domestic animals, calves, sheep, goats and quite commonly on dogs.
			East Baruni RF,	
			Dantarikhol,	
			Taleipathar	

4	Jungle Cat.	Felis chaus	Northern, Kishoreban, Guja, East Baruni, Bindhyabasini, Bijamaliha.	Drier &more open parts, keeping more to grassland,scrub jungle,the reedy banks of rivers &marshes. Preys on small mammals, birds, &when near villages on poultry.
5	Small Indian Civet.	Viverricula indica	Northern, Kishoreban, Guja, East Baruni, Bindhyabasini, Bijamaliha.	Dry or moist conditions make no difference to the choice of habitat, but it keeps out of heavy forest and prefers long grass or scrub to live in. It shelters in holes or under rocks or lies up in grass or under bushes. Seeks its food on the ground, preying on rats,squirrels,small birds, lizards, insects and their grubs, on anything which it can catch and kill.. Given opportunity it preys on poultry.
6	The Common Moongoose.	Herpestes edwardsi	Northern, Kishoreban, Guja, East Baruni, Bindhyabasini, Bijamaliha.	Not a creature of forest,but of open lands,of scrub jungle,and cultivation. It lives in hedgerows and thickets,among groves of trees and cultivated fields,taking shelter under rocks or bushes, lying up in a hollow in the base of a tree trunk, or digging a hole for itself in the ground. Termite mounds are sometimes occupied. Prey on rats,mice,snakes,lizard and frogs, insects, scorpions, centipedes,. Birds' eggs are eaten, and to some extent fruits, and roots. Like most carnivores, mongooses eat carrion and are frequently seen taking a share of the kills of large animals.
7	Striped Hyena	Hyaena hyaena	Northern, Kishoreban, Guja, East Baruni, Bindhyabasini, Bijamaliha, Dantarikhol, Taleipathar	Rare in forested districts, abundant in open country, especially where low hills and ravines offer convenient holes and caves for shelter. Many lie concealed by day in highgrass, under bushes, or in cane fields, but the den usually preferred is a cave amongst rocks, or a hole dug in the side of a hill or ravine. Quite often a hyena enlarges a porcupine's burrow to suit its needs. Animals that have died of disease or those killed by the larger beasts of prey are the usual food of the hyena.

8	Wolf	Canis lupus	Northern, Kishoreban, Guja, East Baruni, Bindhyabasini, Bijamaliha.	May live in forests, but are more common in bare and open regions. Holes, caves, and cavities in rocks provide them with shelter in winter, and thickets of reeds and scrub with a refuge in summer. Where there is more shade ,they remain above ground,lying up in fields, or patches of scrub and thorn forest.Near human settlements they prey on cattle. In forest ares they hunt hares,in fact eat any animal or bird they can capture.
9	Jackal	Canis aureus	Northern, Kishoreban, Guja, East Baruni, Bindhyabasini, Bijamaliha, Dantarikhol, Taleipathar	Live in almost any environment. The greater number live in the lowlands, holes in the ground, among ruins, or in dense grass and scrub. Any small or wounded animal may be attacked. In season, Jackals raid melon patches and sugarcane fields. When ber trees grow,they collect to feed on fallen fruit.
10	Indian Fox	Vulpes bengalensis	Northern, Kishoreban, Guja, East Baruni, Bindhyabasini, Bijamaliha, Dantarikhol, Taleipathar	Keeps to open country. Common in the waste ,scrub, cultivation, rocky hills and broken country. Lives in a burrow dug by itself in open ground. Where land is subject to flooding,a mound, natural or artificial, is chosen. The burrow always has several openings,some blind, others leading to a central chamber, 2-3 ft below the ground. Small mammals, reptiles, insects are what this fox eats. By its consistent destruction of rats and land crabs it does real service to the farmer. Melons, ber fruit, and the shoots and pods of Cicer arietum are eaten in season.
11	Sloth Bear	Melursus ursinus	Northern, Kishoreban, Guja, East Baruni, Bindhyabasini, Bijamaliha	It live where there is sufficient forest to provide food,and favour places where outcroppings of rock and tumbled boulders offer them shelter during the hot weather and the rains. Their food consists mainly of fruits and insects, but a hungry sloth bear may be driven to eat carrion. The bear climbs for for fruit of mangoes, jamu, bael or shakes it down with its great paws. It knocks down a honeycomb and descends to eat it. Feed on insects under stones, and fallen logs,under bark, during monsoon but their main food is termite. Feed ber trees fruit, mahua flowers.

12	Common Otter	Lutra lutra	Northern,	It makes its lair among rocks and boulders, in hollows beneath the roots of trees growing by the water's edge. Fish is their main food. Failing fish, crabs, other crustacean, frogs, rodents, and waterfowl are eaten and also leaves and other vegetable matter.
			Kishoreban, Guja,	
			East Baruni,	
			Bindhyabasini, Bijamaliha	
13	Ratel	Mellivora capesis	Northern,	Live in the dry & moist deciduous zones, avoiding regions of heavy rainfall. They prefer hilly broken country where shelter is easier to find, and when living in the plains, choose the banks of streams or rivers where burrows are easily dug. They prey on mammals, birds, reptiles, insects and varies its food with fruit and honey.Like most carnivores, they feed on carrion.
			Kishoreban, Guja,	
			East Baruni,	
			Bindhyabasini, Bijamaliha	
14	Short-nosed fruit bat	Cynopterus sphinx	Northern,	It roosts singly or in small groups among palm leaves, tree hollows, and only exceptionally in ruins and caves. Often flies off with ripe fruit to roost and eat at leisure.
			Kishoreban, Guja,	
			East Baruni,	
			Bindhyabasini, Bijamaliha	
15	Threestriped palm Squirrel	Funambulus palmarum	Northern RF	It is a forest animal.Their food consists of squirrels, fruits, nuts, young shoots, buds, and bark. Insects are eaten at a pinch,as also the eggs of birds. When the silk cotton trees are in bloom, they visit the flowers to drink the nectar.
16	Whitetailed wood rat	Rattus blanfordi	Northern,	Inhabits dry or moist deciduous forests. In forests, this rat is to a great extent arboreal. It makes a large untidy nest, usually in a hole or crevice in a tree.
			Kishoreban, Guja,	
			East Baruni,	
			Bindhyabasini, Bijamaliha	
17	Lngtailed Tree Mouse	Vandeleuria oleracea	Northern,	The nest is usually placed in a hole or crevice in a tree, sometimes among the branches. Trees and shrubs are its natural haunt.
			Kishoreban, Guja,	
			East Baruni,	
			Bindhyabasini, Bijamaliha	

20	Indian Hare	Lepus nigricollis	Northern,	Large tracts of bush and jungle alternating with cultivated plains afford them ideal conditions. They feed on the grass.
			Kishoreban, Guja,	
			East Baruni,	
			Bindhyabasini, Bijamaliha,	
			Dantarikhol,	
			Taleipathar	
21	Indian Elephant	Elephas maximus	Taleipathar RF	Frequent areas covered with tall forests where the ground is hilly or undulating, and where bamboos grow in profusion. They are extremely adaptable and live in steamy humid jungle or in cool elevated forests. The food consists of various kinds of grasses and leaves, stems,and leaves of wild bamboos and plantations, all species of crops and the bark of particular kinds of trees.
			Comp 1-7,	
			Kutulusingha RF	
			Comp no-1-7 & Dantarikhol RF	
			Comp no 2 & 3.	
22	The Gaur	Bos gaurus	Taleipathar RF	They are essentially hill animals. Forests are essential to the existence of Gaur. Their food is chiefly grass, they also browse on leaves and eat the bark of certain trees. Gaur have the habit of visiting 'salt-licks", spots where the ground is impregnated with salts and other minerals. Such earth acts as a purgative and rids animals of internal parasites.
			Comp 1-7,	
			Kutulusingha RF	
			Comp no-1-7 & Dantarikhol RF	
			Comp no 2 & 3.	
23	The Chinkara	Gazella gazella	Northern,	Wastelands broken up by nullahs and ravines,scattered bush, and thin jungle are the usual haunts of Chinkara. The food consists of grass, of various leaves, crops, and fruits, such as pumpkins and melons. They go without water for long periods.
			Kishoreban, Guja,	
			East Baruni,	
			Bindhyabasini, Bijamaliha	

27	The barking Deer	Muntiacus muntjak	Taleipathar RF	The haunts of the Muntjac are thickly wooded hills. They keep to more or less thick jungle and come out to graze in the outskrits of forest or in open clearings. The food consists of various leaves and grasses and wild fruits.
			Comp 1-7,	
			Kutulusingha RF	
			Comp no-1-7 & Dantarikhol RF	
			Comp no 2 & 3.	
28	The Mouse-Deer	Tragulus meminna	Northern,	Sheltered in grass-covered rocky hill-sides or in forest. It conceals itself in the crevices of rocks or among large boulders.
			Kishoreban, Guja,	
			East Baruni,	
			Bindhyabasini, Bijamaliha	
29	The Indian Wild Boar	Sus scrofa	Northern,	They live in grass or scanty bush jungle, sometimes in forest; after the rains, quite commonly in high crops. They feed on crops, roots, tubers, insects, snakes, offal,and carrion.
			Kishoreban, Guja,	
			East Baruni,	
			Bindhyabasini, Bijamaliha ,Hatidh	
			Taleipathar	
30	The Indian pangolins	Manis crassicaudata	Kutulusingha RF- comp no 1 to 7	Usually live in burrows made by themselves, or it shelters among rocks & boulders. The food consists of the eggs, the young, and the adults of termites and ants.
			TaleipathatRF comp no 1 to7	
			Dantarikhol RF comp no 2 & 3	

31	Crocodile(Mugger)	Crocodylus	Taleipathar RF-Comp No. 5 to 13.	Hunts in water and the diet usually comprises of fish or any other large animal which can be easily preyed upon. A regular trail from the river side leads to nests which are built near the border falling within the range of Mugger.
		palustris	Nuagaon RF-	
			Comp No. 4 & 5	
			East Baruni RF-Comp No. 1 & 2.	

The life form description of animals is furnished in **Table No. 3.5** as below.

Table No. 3. 5 Life form description of wild animals available in the Division.

Sl.No.	Reproduction	Feeding	Species
1	Underground burrows	On ground or below it	Porcupine,fox,field mice
2	In burrows	On ground, trees, water or air	Birds—King fisher
3	In dens	On ground	Sloth bear,Jackal,hyena,leopard
4	Cliffs,overhangs,caves	On ground or air	Bats,reptiles,lizards,birds
5	On the ground	On the ground	Gaur,Sambar,Nilgai,chital,barking deer,wild boar, jungle cats, birds, jungle fowl, peafowl, snakes & lizards
6	On the ground	On the ground & trees	Rhesus monkey,Langur,Birds
7	On the trees among branches	On ground, trees, water or air	Squirrel,Birds
8	On trees in natural hollows or ground	On ground,trees	Lizards,birds-owl,snakes,hornbills
9	On trees in own excavated cavities	On ground,trees, or air	Birds-woodpeckers
10	On trees in cavities excavated by other species	On ground,trees, or air	Birds-mynas,parakeets
11	Marshy area,water banks	On ground or water	Aquatic birds

3.6.3 Division Census Reports

3.6.3.1 The Division has conducted the census of different animals like Leopard, Tiger, Elephant and birds in different years. The details of the census conducted in 1993 for different animals are given in the **Table 3.6**

Table No:3.6 DETAILS OF THE ANIMAL CENSUS, 1993

Sl No	Name of Animal	Number
1	Tiger	10
2	Leopard	13
3	Elephant	34
4	Wolf	37
5	Wild dog	39
6	Bear	325
7	Rattle	325
8	Wild Boar	906
9	Gaur	101
10	Sambar	169
11	Deer	130
12	Mouse deer	436
13	Barking deer	479
14	Neel Gai	59
15	Monkey	1875
16	Ape	2179
17	Porcupine	275

3.6.3.2 Bird Census: In January 2005, the Division Administration has done survey of Birds in different wet lands of the Division. The results of the survey are given in the **Table 3.7.**It seems that in the survey the number of birds sighted are very few compared to the availability in the division. However, the details are given for a reference.

Table: 3.7 RESULT OF BIRD CENSUS IN ATHAMALLIK DIVISION IN JAN, 2005							
Sl No	Name of the birds		No of birds location wise				
	Local name	Scientific name	Manjore dam site	Laupal site	Lunahandi sagar site	Mahanadi river site	Total
1	Panikua	*Phalacrocura yniger*	60	0	0	8	68
2	Baga	*Bobulcus ibis*	43	46	55	7	151
3	Raj hans		27	60	41	0	128
4	Hansrali	*Podiceps ruficollis*	67	0	51	0	118
5	Mohurali		57	45	0	0	102
6	Machharanka	*Ceryle rudies*	0	0	0	4	4
7	Water faul		0	0	0	12	12
8	Dahuka	*Centropus Sinensis*	0	0	0	3	3
		Total	254	151	147	34	586

Table: 3.8 RESULT OF BIRD CENSUS IN ATHAMALLIK DIVISION During 2010-15							
Sl.No	Species	2010	2011	2012	2013	2014	2015
1	2	3	4	5	6	7	8
1	Indian Shag	72	82	70	69	134	90
2	Little Cormorant	40	44	36	38	92	75
3	Indian Pond Heron	48	55	29	66	138	68
4	Cattle Egret	36	43	10	63	88	36
5	Little Egret						6
6	Asian Openbill	29	26	30	28	28	46
7	Lesser Whistling Duck	576	580	568	595	1000	1299
8	Brahminy Ruddy Shelduck	39	36	44	37	2	113
9	Red-crested Pochard						16
10	White-breasted Water hen						23
11	Painted Snipe	168	194	160	156		53
12	Yellow-wattled Lapwing	11	12		8	29	18
13	Grey-headed Lapwing	42	38	65	44		18
14	Common Sandpiper						83
15	White breasted kingfisher	68	77	72	87	35	66
16	Indian Pied kingfisher						7
17	Brahmani kites	1	1		1		1
18	Pamiah Kite	1	1		2		3
19	Ruddy Shelduck						8
Total		1131	1189	1084	1194	1546	2029

Bird Census conducted during 2010 to 2015 has revealed that there is an increase in the Birds population

3.6.3.3 Tiger & Leopard Census: This census was conducted in 2002 and 2004. The results are given in the **Table: 3.9**. In the previous Working Plan it was mentioned that the tiger census was carried out in April 1984 and the number of tigers found were 6, out of which 2 were male, 2 female and 2 cubs. From the table it is seen that there are only two tigers reported in 2002 and nil in 2004. The probable reason may be different timings of census. However, the leopards are present throughout the division.

Table: 3.9 TIGER/LEOPARD CENSUS REPORT DURING THE YEAR 2002 & 2004								
	Tiger				Leopard			
Range	Male	Female	Cub	Total	Male	Female	Cub	Total
Census Period: 6-1-2002 to 12-1-2002								
Athamallik	1	1		2	3	4	3	10
Madhapur	0	0	0	0	2	1	0	3
Handapa	0	0	0	0	3	3	0	6
Total	1	1	0	2	8	8	3	19
Census Period: 5-1-04 to 10-1-04								
Athamallik	0	0	0	0	3	1	0	4
Dhandatopa	0	0	0	0	0	1	1	2
Handapa	0	0	0	0	1	3	1	5
Bamur	0	0	0	0	2	1	0	3
Madhapur	0	0	0	0	0	2	0	2
Total	0	0	0	0	6	8	2	16

Last Tiger Census was conducted in the year 2016. The results are furnished in **Table No. 3. 10** as below.

Table No. 3.10 TIGER /LEOPARD CENSUS REPORT DURING THE YEAR 2016				
Name of the Range	Beat	Species	No. of Pugmarks	Total
Athmallik	Gopalpur	Leopard	2	3
	Pataka	Leopard	1	
Dhandatopa	Bhuasuninali	Leopard	1	1
Madhapur	Bharatpur	Leopard	2	4
	Ghodagadi	Leopard	2	
Handapa	Takaba	Leopard	3	5
	Ichhapur	Leopard	1	
	Hinjirida	Leopard	1	
Bamur	Tentelapani	Leopard	1	6
	Bhangamunda	Leopard	1	
	Rangamatia	Leopard	2	
	Sargipali	Leopard	1	
	Bamur	Leopard	1	
TOTAL				19

No Tiger was reported in the census. 19 Leopards are recorded and the figure remains more or less

same in comparison to previous figure.

3.6.3.4 Elephant Census: The entire division is rich in elephants. The census figures reveal that the population is increasing from census to census. In 1995, population of elephants was 20, in 1999 it was 29, 2002 it was 37 and in 2005 it is 62. Earlier the elephant population was mostly concentrated in Hatidhara, Talaipathar, East and West Baruni blocks. In the 2005 census, the elephants are also seen in Handapa and Bamur ranges. This may be due to migration from the adjoining Rairakhol division.

Table: 3.11 DETAILS OF ELEPHANT CENSUS IN 1995, 1999

Year	Range	No of Elephant available.			
		Male	Female	Unknown/Kalf	Total
1995	Athamallik	4	8	4	16
	Handapa	2	1	1	4
	Madhapur	0	0	0	0
	Total	6	9	5	20
1999	Athamallik	4	4	4	12
	Handapa	1	3	0	4
	Madhapur	3	7	3	13
	Total	8	14	7	29

Table No: 3.12 DETAILS OF ELEPHANT CENSUS, 2002													
Range	Adult 7 above			Sub. Adult 5 to 7			Juvenile 4 to 5			Calf 3 to 4			Total
	?	?	Un. Sex	?	?	Un. Sex	?	?	Un. Sex	?	?	Un. Sex	
Athamallik	4	6	0	0	2	0	2	3	0	3	2	0	22
Madhapur	6	6	0	0	0	0	0	1	2	0	0	0	15
Handapa	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	12	0	0	2	0	2	4	2	3	2	0	37
? - Male ? - Female													

T – Tusker MK- Makna (Tusk less Bull)

Table: 3.13 DETAILS OF ELEPHANT CENSUS , 2005

Name of the Range	Adult Bulls			Adult cows > 210 cm	Adult Sex. Unknown			Sub adult Bulls 151 cm to			Sub adult cows 151cm to	Sub adult US			Juvenile 121 cm - 150 cm	Calf <120 cm	Grand Total
	T	MK	Total		>240 cm	211 - 240	Total	T	MK	Total		211 - 240	151 - 210	Total			
Athamallik																	
Nuagarh	3	0	3	5	0	0	0	0	0	0	0	0	0	0	0	2	10
Jadapur	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Krutarthpur	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	4	0	4	6	0	0	0	0	0	0	0	0	0	0	0	2	12
Dhandatopa																	
Badore Nala	1	0	1	3	0	0	0	0	0	0	0	0	0	0	0	1	5
Taranda	1	0	1	3	0	0	0	0	0	0	0	0	0	0	0	2	6
Total	2	0	2	6	0	0	0	0	0	0	0	0	0	0	0	3	11
Madhapur																	
Bhoipada	2	0	2	6	0	0	0	0	0	0	0	0	0	0	2	0	10
Ghodagadi	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2
Total	2	0	2	7	0	0	0	0	0	0	0	0	0	0	3	0	12
Handapa																	
Takaba	0	0	0	0	0	0	0	1	0	1	2	0	0	0	2	0	5
Udal	1	0	1	8	0	0	0	1	0	1	0	0	0	0	3	2	15
Total	1	0	1	8	0	0	0	2	0	2	2	0	0	0	5	2	20
Bamur																	
Tentalapani	1	0	1	5	0	0	0	0	0	0	0	0	0	0	0	1	7
Total	1	0	1	5	0	0	0	0	0	0	0	0	0	0	0	1	7
G.Total	10	0	10	32	0	0	0	2	0	2	2	0	0	0	8	8	62

Table: 3.14 DETAILS OF ELEPHANT CENSUS , 2015

Name of the Range	Adult Bulls			Adult cows >=210 cm	Adult Sex Unknown			Sub adult Bulls 151 cm to 240cm			Sub Adult cows 151cm to 151-210 cm	Sub adult US			Juvenile 121 cm-150 cm	Calf <120 cm	Grand Total
	T	MK	Total		>240cm	211-240	Total	T	MK	Total		211-240	151-210	Total			
Athamallik																	
Gopalpur	2	0	2	7	0	0	0	0	0	0	5	0	0	0	3	2	19
Rajing	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	3	0	3	7	0	0	0	0	0	0	5	0	0	0	3	2	20
Dhenkanpa																	
Bipradiha	1	0	1	5	0	0	0	0	0	0	3	0	0	0	3	2	14
Total	1	0	1	5	0	0	0	0	0	0	3	0	0	0	3	2	14
Madhapur																	
Bharatpur	1	0	1	5	0	0	0	1	0	1	0	0	2	2	2	0	11
Kandhapada	1	0	1	2	0	0	0	1	0	1	0	0	0	0	1	0	5
Bijipur	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
Ghadagadi	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Naikpada	0	0	0	3	0	0	0	1	0	1	2	0	0	0	0	2	8
Total	2	0	2	11	0	0	0	4	0	4	2	0	2	2	3	2	26
Hardapa																	
Takaba	2	0	2	4	0	0	0	0	0	0	4	0	0	0	1	1	12
Total	2	0	2	4	0	0	0	0	0	0	4	0	0	0	1	1	12
Banur																	
Gadgiumura	2	0	2	5	0	0	0	0	0	0	0	0	0	0	0	2	9
Total	2	0	2	5	0	0	0	0	0	0	0	0	0	0	0	2	9
G Total	10	0	10	32	0	0	0	4	0	4	14	0	2	0	10	9	81

N.B : As per memo no.5785 dated 01.07.2015 of C.C.F.(WL),O/o the Pr.C.C.F,(WL) & C.W.L.W, the total population of elephants in different category stands 56 in numbers; the details of category wise are furnished as below.

DETAILS OF ELEPHANT CENSUS , 2015 OF ATHIRAPALLY FOREST DIVISION

Adult Bulls			Adult cows > Adult Cows >210 cm	Adult Sex, Unknown			Sub adult Bulls 151 cm to 240cm			Sub Adult cows 151cm to Sub adult cows<210cm	Sub adult US			Juvenile 121 cm -150 cm	Calf <120 cm	Grand Total
T	MK	Total		>240cm	211 - 240	Total	T	MK	Total		211 - 240	151 - 210	Total			
6	0	6	21	0	0	0	0	1	1	12	0	2	2	9	5	56

3.7 Threats and challenges to wildlife

3.7.1 Injuries to which Fauna is liable:

3.7.1.1 Grazing- The delicate balance between carrying capacity of the forest and the wild animal population has been badly disturbed due to over grazing by domestic animals. The herbivores are unable to compete with their domestic counterparts and are easily ousted by the latter. This has caused the reduction of population of herbivores in the forests and at the same time disturbed the natural food chain causing depletion of carnivores. Domestic animals are also responsible to a considerable extent in transmitting various diseases like anthrax, foot & mouth diseases; render past etc. to wild animals.

There is no report regarding the spread of epidemics in the wild animals. But there are sporadic instances of killing / poaching of wild animals in the Division, which is an important factor in depletion of wildlife.

3.7.1.2 Forest fire- This is one of the most important factor responsible for decimation of wild animals. Though controlled forest fire has been accepted as an integral aspect of forest and wildlife management but it cannot be denied that uncontrolled forest fire causes serious damages both to forest and wildlife. Fire destroys the organic matter as well as useful microorganism of the soil and thus deteriorates the soil fertility, which affects the growth of forest vegetation and succulent grasses. Due to uncontrolled fire, the wild animals lose their shelter and food. The high temperature generated during such fire also causes damage to eggs of birds and reptiles etc. and at times the wild animals also gets killed. Fire also causes the animal population to abandon their main habitat and to migrate randomly to various places, which as such disturbs the spatio-temporal utilization of habitat by animal species and consequently leads to depletion of wild animal population. At times local people also use forest fire as a medium to drive wild animals out of their habitat for poaching and so also they set fire in the forests for easy access for grazing of their cattle and collection of some NTFPs.

3.7.1.3 Human interference- Due to population explosion the pressure on the forests have increased immensely. Thus this has resulted in depletion and degradation of forest vegetation consequent upon which the wild animals suffer. The over exploitation of forests by local people for their needs of fodder, fuel wood & timber etc. and encroachment of prime forest land for agricultural purposes have seriously affected the wild animal population. Human interference through activities like timber operation, construction of roads, stone quarrying operation etc. have not only caused the loss of indigenous flora but also damages the wildlife habitat beyond repairable limit. Due to depletion of viable habitats elephants and other animals are often resorting to crop raiding and cattle lifting, as this is more tempting and easier mode of food procurement rather than moving in degraded forests devoid of vegetation.

3.7.1.4 Illegal trade- Wild animals, birds and reptiles (snakes) can be used as income generating sources by some people. Also many people are interested to keep wild animals and birds as their pets for aristocracy and pleasure. Besides, the aristocracy in the past use to keep wild animal trophies as a mark of their royal lineage. The unscrupulous traders use to engage middlemen to lure the innocent poor people living near forest areas so as to capture and kill such animals for their trade. There are regular incidents of poaching of wild animals in the Division. Poaching of fauna for meat, ivory, horn, fur, feather, hides, claws, bones etc. have directly exacerbated the decline in population of the wildlife. With the advent of modern arms and ammunitions and better roads & mobility, the poaching has become easier and at times, even the unintentional injury to the animals have been caused.

Methods of poaching the wild animals vary from place to place in the state depending upon even the type of animal being poached. Shooting is the common method for all kinds of mammals and some birds. However, poisoning of big cats, birds and large herbivores, trapping and snaring mammals like deer and some reptiles and netting small mammals, small birds and butterflies are frequently resorted to poaching of herbivores which is reportedly quite frequent mainly for meat and for their trophy and includes deer, sambar, wild boar, mouse deer, hare etc. During the hot summer months, when natural streams become dry or when paddy or other crop has ripened, these animals generally enter into the human habitation and are killed by villagers. Many cases of poaching go undetected for variety of reasons.

Specially habitats are biological in origin and provide habitat functions for small wild animal. Habitat shall be developed with the co-operation of local people using sound silvicultural techque. The aim should be to provide more food, water and shelter to the wild life so as to even reduce the man-animal conflict. It is necessary to provide adequate Forest cover to different wild animals within their habitat for shelter and protection from weather, Predators and enemies. Keeping in view this aspect, it has been prescribed in selection working circle not to fell even those matured trees which create a lasting gap in the canopy. It is necessary to create water holes and cheek dams on the higher slope across nullahs to improve water availability during summer.

The Talcher branch of the Eastern Railways was opened in 1927 and Talcher-Sambalpur railway line construction was completed in 1999. This has increased the train access to the division. The railway tract passes through Boinda, Handapa to Sambalpur. The distance from Boinda to important railway stations is given in the following **Table No: 3.15**

Table: 3.15 DISTANCE FROM BOINDA TO IMPORTANT RAILWAY STATIONS		
Sl No.	**Railway Station**	**Distance (Km)**
1	Cuttack'	160
2	Bhubaneswar	190
3	Meramundali	55
4	Dhenkanal	105
5	Handapa	7
6	Sambalpur	110
7	Jharsuguda	160
8	Rourkela	295

The National Highway 55, from Cuttack to Bargarh, passes through the division. The important district roads in the division are Athamallik to Kiakata, Athamallik to Binika, Thakurgarh to Nakchi, Paiksahi to Kanjara, Sanhulla to Paiksahi, Kiakata to Rairakhol, and Madhapur to Bamur.

Recently over the last 3-4 years number of roads connecting different villages are developed under Prime Minister Gram Sadak Yojana (PMGSY) and some of these roads play an important role for the transportation of the forest produce. They are Baruni to Tussar, Bhoipadachhak to Baradakata, Sanhulla to Mahulanali, Bantul to Sisukata, Dhaurapali to Jairat, Madhapur to Lunhandi, Salbaniasahi to Badahulla and Sanhulla to Krutibaspur, Luhamunda to Solanda, etc. PMGSY helped to connect the villages to the district and state highways. The distance between the important places of the division are given in **Table No: 3.16**

Table: 3. 16 DISTANCE BETWEEN IMPORTANT PLACES			
Sl No.	**From**	**To**	**Distance in (KM)**
1	Nakachi	Takaba- Urdol	14
2	Athamallik	Madhapur	16
3	Madhapur	Kiakata	18
4	Kiakata	Raivakhol	27
5	Athamallik	Boinda	36
6	Thakurgarh	Nakchi	16
7	Bamur	Madhapur	23
8	Ghosar	Raniakatta	14
9	Handapa	Pedipathar	12
10	Sanhula	Tentloi	22
11	Thakurgarh	Kantopada	19
12	Maimuro	Bipredihi	14
13	Athamallik	Binkei	23
14	Thakurgarh	Sanjamure	20
15	Baruni	Kishorenagar	19
16	Athamallik	Angul	80
17	Athamallik	Cuttack	200

This is decreasing prey base in the area besides loss of connectivity and fragmentation of the habitat. This has resulted in even increased man-animal conflicts. Hence protection measures shall be strengthened in these areas.

3.7.1.5 Other Factors

The fauna are also facing threat to their habitat due to increasing incidence of encroachment; increasing demand for firewood, timber and NTFPs for the ever-rising population.The developmental activities like construction of roads, buildings and canals etc. has led to large-scale deforestation and fragmentation to the wild life habitats of the division. The disturbance caused by this has led to animals stray in to the human habitations causing damage to the both life and properties and get killed in retaliation. The large-scale pure plantations raised in the inside forest area has not only caused the shrinkage of natural habitats of wild life but also changed the environments of the localities. There is also lack of awareness among the local public on the importance of wild life in present eco-system.

3.7.2 Man-Animal Conflict – Human-Wildlife Conflict is the interaction between humans and wildlife where negative consequences,whether perceived or real, exists for one or both the parties when action of one has an adverse effect on the other party. With increase in Human Population, the pressure on natural systems increase leading to augmented magnitude of such negative incidences. Overgrazing by livestock in the wildlife habitats results in decline or local extinction of wild herbivore populations while a disproportionate presence of wild and domestic ungulates amplifies cases of livestock depredation by wild predators. Besides livestock depredation, crop damage is another form of human-wildlife conflict.Agricultural crops and fruit orchards are often raided by wild ungulates, primates and granivores and frugivores birds which cause damage to both food crops and young shoots of other crops and planations. The attacks on human and livestock and incidences of crop raiding have significant consequences for people's food security and livelihood and psychosocial wellbeing. Among all the crop-raider ungulates, Elephant is known to cause large scale damage to crops and human lives in the division.Elephants,as they require large areas of natural range than other mammalian species, are one of the main animal to suffer the consequences of developmental activies.Earlier elephants used to visit only forest fringe villages, attracted by standing crops. Nowdays elephants are coming frequently into the human habitation and crop fields located even more than five kilometers from forest boundary. There are several reports of killings and injury of the human beings, damage to the crops in the division. Often it leads to law and order problems in the district. The man-animal conflict is mainly due to degradation of habitat of Wild elephants, encroachments etc as a result of which they enter human habitation causing damage to life and properties of local inhabitants.

3.7.2.1 Human Injury/Kill -The Available census data shows that the elephant population in the division is high and is on the increasing trend. Every year there are several incidences of heavy crop damage, human killings and injury to human beings. The details of killing by the elephant is given in the **Table 3.17**. The human casualties are on the increasing trend, this may be due to decrease in the habitat for the wild animals and of late, the documentation awareness is increasing and hence more and more cases are being brought to limelight. Another probable reason may be the elephants consume fermented mahua flowers that are being fermented in pits with the help of big black polypots to prepare country liquor. Mostly this liquor is made illegally near water source. When elephants come near the water source, they consume the liquor and get intoxicated and become wild to cause the human casualty. Many steps are required to be taken to tackle the problem of man – animal conflict. The details of these steps are discussed in Wild Life Overlapping Working Circle.

TABLE -3.17 KILLING BY WILD ANIMALS (ELEPHANTS)		
Year	Human kill (in No)	Compassionate amount paid (in Rs)
2006-07	----	----
2007-08	1	1,00,000/-
2008-09	1	1,00,000/-
2009-10	1	1,00,000/-
2010-11	1	2,00,000/-
2011-12	1	2,00,000/-
2012-13	4	8,00,000/-
2013-14	6	12,00,000/-
2014-15	3	06,00,000/-
2015-16	2	50,000/-(Advance Payment)
2016-17	5	15,00.000/-
2017-18	4	14,00.000/-
2018-19	1	4,00.000/-
2019-20	5	20,00.000/-
Source: Divisional Forest Officer, Athmallik		

During the period from 1991-92 to 2004-05; killing of human beings by wild elephants was 07 only which has significantly increased to 20 nos during the period from 2006-07 to 2019-20.

3.7.2.2 Crop Damage

A study on human – elephant conflict was conducted during 1992-98 by Asian Elephant Research and Conservation Centre, Bangalore and their report was published in October 1999. Their report reveals many interesting observations regarding crop damage. It is generally observed that the crop damage is maximum in Athamallik Range. The most vulnerable crop is paddy in 95% cases, the other crops attacked are Jack fruit, Sugarcane, banana etc. In the division there are four seasonal types of paddy are grown, Sarada (Nov-Dec), Taila (Sep-Oct), Mal (Oct-Nov) and Dalua (April-May). The period of maximum depredation is November- December for winter paddy (Sarada), September – October for autumn paddy (Taila), October – November for short duration winter paddy (Mal), April – May for summer paddy (Dalua), January – March for Sugar cane and throughout the year for Banana. The stored grains are also subjected to attack, the vulnerability is more in the villages inside the forest, followed by the villages present in the adjoining areas. Apart from elephant, the crops are also damaged by the Wild pigs, Deer and Bear.. It is felt that the damage caused to the crops may be more than the reported figure because nearly 30 % of the affected people are not aware of the compensation payment and the payments are mostly done for paddy crop.

The extent of crop damage and compensation paid during the period from 1992-93 to 2004-05; is furnished in **Table No. 3.18** as follows.

Table:3.18 EXTENT OF CROP DAMAGE BY WILD ELEPHANTS			
Sl. No.	Year	Damage in	Relief Amount Paid (Rs.)
1	1992-93	13.5	6750
2	1993-94	15.23	7615
3	1994-95	43.3	21650
4	1995-96	21.85	10925
5	1996-97	109.11	54555
6	1997-98	46.75	9550
7	2001-02	78.56	39280
8	2002-03	119.95	59975
9	2003-04	163.6	17650
10	2004-05	206.45	
	TOTAL	818.3	2,27,950.00

The details of the crop damage in the division of the period from 2006-07 to 2020-21 are given in the **Table 3.19** as follows.

TABLE -3.19. Crop damage by Wild Elephant and Payment Of Compensation				
Year	Crop damage		House Damaged	
	Area damaged (in Acr.)	Compensation paid (in Rs.)	No. of House	Compensation paid (in Rs.)
2006-07	----	----	2	1000/-
2007-08	34.66	34,660/-	-	-
2008-09	46.79	46,790/-	-	-
2009-10	----	----	-	-
2010-11	173.58	1,73,580/-	-	-
2011-12	249.75	14,25,300/-	-	-
2012-13	89.876	8,43,440/-	----	----
2013-14	97.7645	9,88,205/-	17	50,000/-
2014-15	256.3024	25,94,624/-	---	----
2015-16	497.9373	50,31,970/-	----	-----
2016-17	558.31	56,290/-	19	46,000/-
2017-18	800.11	83,31.160/-	9	18,000/-
2018-19	296.02	30,50.160	2	12,000/-
2019-20	239.977	24,41.480	18	36,000/-
2020-21	160.216 Ha.	Rs.16,61,540/-	12 nos.	Rs.24,000/-
TOTAL	**3501.29902**	**26,67,79,199**	**79**	**1,87,079/-**
Source: Divisional Forest Officer, Athmallik				

On comparison; it is observed that there is significant increase in crop dadage during the period from 2006-07 to 2020-21 than that of the period from 1992-93 to 2004-05.

A study was made to ascertain the villages affected during crop damage. The name of the villages affected are cited as below.

Year	Crop damage area in Ac.	Name of the villages affected.
2006-07	---	-------
2007-08	34.66	Bhartapur,Bhagbanpur,Hatanali, Khairamunda,Gurjang,Bhagamunda,Tentelapani,Bramhanipali,
		Gadadharpur,Kalabeda.
2008-09	46.79	Phasipal,Rangmatia,Kutulsingha,Nakchi,Basudevpur,Jamunali,Bhoipada,Kuajhri,Manarbeda,Gudugudi,Khajurijharan.Kandhapada,Naikpada,Singarimunda,Ghodagadi,Nuapada,Ghanpur
2009-10	---	------
2010-11	173.58	Arampur,Arsama,Parbatipur,Bajpur,Burakhal,Bhojpur,Naikpada,Bharatpur,Athmallik,Gudgudi,Balugahara,Bandhupali,Balataila,Dhuliapada,Kandhapada,Hatanali,Bhanbanpur,Tentuloi,Hemamura,Kalamati,Aida,Antapali,Kutugaon,Sargipali,Badabandha,Titigaon,Kaintragarh,Jirad,Gopalpur,Mahendrapur,Rajing,Khambeswaripali,Rangpur,Kamalpur,Hariharpur,Antarsinga,Kutarthapur,Kundapur,Batrakhol,Hemamura.
2011-12	249.75	Sangobindapur,Jhilimunda,Tentuloi,Parbatipur,Hemamura,Laxmipur,Jamunali,Bijipur,Chandrapur,Patrapada,Ghodagadi,Bhojpur,Mundapada,Belataila,Sorispank,Hatanali,Khajurijhran,Buraghat,Kiakata,Basudevpur,Beherapada,Kadapada,Santipur,Subarnapur,Tasarbead,Gadadharpur,Dekrud,Jurikata,Polamahula,Helei,Nuapada,Sankhamal,Hatuapada,Kurab,Paiksahi,Jhatikibahal.
2012-13	89.876	Kamalpur,SanDudhianali, Hingmandal,Mahendrapur,Mantri,Kaintragarh, Nuamantri,Mushapur,Kuspur,Malipadar, Gopalpur,Rajing,Haripur,Hariharpur,Haridanali,Kuteswar, Nuagaon, Kundapur,Jadpur,Tangianisha,Bahali,Kutarthapur,Khambeswaripali,Kairighanti,Nuagarh,Katasingha,Phasipal, Bhangamunda,Bramhanipali, Bahalbeda,Bairagipali,Khandahata,Dakuamunda,Tentelapani,Patrapada,Gudgudi,Goratopa,Bhagabanpur, Nimtiri,Damdar,Bankapalsa,Bhoipada,Bhojpur,Kadapada,Raniakata,Subarnapur,Helei,Khajurijharan,Polamahula,Dhuliapada.

2013-14	97.7645	Sanrohila,Katasinga,Sahajbahali,Tulsipur,Dakuamunda,Handapa,Phasipal,Bijamaliha,Bajpur,Tusar,Kalabeda,Bhangamunda,Bamur,Hemamura,Rainali,Batrakhol,Tentuloi,Kanteikulia,Prtappur,Badahula,Laxmipur,Gobindpur,Baisina,Gunduri munda,Purunamantri,Rajing,Hingmandal,Bargaon,Khambeswaripali,Mahendrapur,Nuagarh,Rangapur,Sidhpur,Bahali,Kutarthapur,Hariharpur,Nuagaon,Sorispank,Madhapur,Gadhadharpur,Kadapada,Sankhamal,Belataila,Goratopa,Bhagbanpur,Bharatpur,Kadapada,Duliapada,Tasarbeda,Helei,Jhuriakata,Kiakata,Manarbeda,Kairighanti,Malipadar,Odasinga,Deulbeda,Rathipur,Antapali,Badabandha,Lehdi,Bidising.
2014-15	256.3024	Bidising,Chakundamunda,Luhamund,Handapa,Nuabalikhaman,Saluni,Hinjrida,Tentuloi,Dhundi,Batrakhol,Hemamura,Laxmipur,Boinda,Nunukapasi,Baliamba,Gaonainda,Hatuapada,Santipur,Ghodagadi,Mundapada,Bhojpur,Sankhamal,Basudevpur,Kadapada,Kumbhia,Bareni,Bijpur,Chandrapur,Gautampur,Jhurikata,Buraghat,Hatasimili,Sargiseni,Kandhapada,Gudugudi,Sankhamal,Himtira,Ghosar,Chudakhai,Jairat,Bramahanipali,Dhaurapali,Khairikani,Dohali,Kasturibahal,Jamunali,Kadalimunda,Sanarohila,Bahalbeda,Kusuni,Madapada,Baerpadar,Dalpaka,Mayurkancheni,Dhadarpal,Gadhramuda,Telnoi,Kundapur,Rangpur,Mahendrapur,Khambswaripali,Jirad,Malipadar,Kairighanti,Hingmandal,Hariharpur,Jadpur,Nuagarh,Bargaon,Mantripitabaligoruda,Kurumtap,Angpada,Phuljhri.

2015-16	497.9373	Sidhapur,Dudhianali,Tangianisa,Nuagaon,Kuteswar,Khambeswaripali,Gopalpur,Nuagarh,Mahendrapur,Hingmandal,Rajing,Nua Manitri,Manitri,Deulbeda,Kutugaon,Kalamati,Antapali,Badabandha,Kendupati,Dalaki,Pataka,Naleswar,Kutulsingha,Limbadiha,Tentulipadar,Luhasingha,Bharatpur,Bhagbanpur,Sanjamura,Dekrud,Nimitri,Bankapalsa,Hatanali,Balarampadar,Ghosarakhol,Raniakata,Raibahal,Kumursinga,Goratopa,Taldar,Damdar,Madhapur,Patrapada,Rautpada,Gudugudi,Gadadharpur,Sorispank,Madanpur,Sargiseni,Bijpur,Chandrapur,Pitabaspur,Bhagamunda,Beherapada,Gautampur,Daulatpur,Mundapada,Bhoipada,Buraghat,Ghodagadi,Khajhurijharan,Subarnapur,Orda,Kadapada,Basudevpur,Kumbhia,Bankapl sa,Santipur,Mangalpur,Tasarabeda,Kiakata,Dhuliapada,Thatimunda,Helei,Tasarbeda,Sankhamal,Papsara,Katrang,Bidising,Pratappur,Ichhapur,Madhupur,Anlaberani,Krushnapur,Nakchi,Kuajhari,Kurumtap,Gadeimunda,Ambamunda,Tileswar,Jamujhari,Ghanpur,Pitabaligorada,Serenda,Takaba,Balikhman,Kholakundali,Charkhaman,Gundurijharan,Laxmipriyapur,Baliamba,Baraham,Gobindpur,Khadagbahal,Bileimali,Barpali,Dhundi,Sangobindpur,Badhula,Boinda,Tentuloi,Batrakhol,Rainali,Laxmipur,Hemamura,Saluni,Himitira,Sandhapal,Jhinkibahal,Dadarpali,Sanrohila,Kusuni,Tulasipur,Tentalapani,Bhimpur,Budiabahal,Saleigoth,Bahalbeda,Barpadar,Badarahila,Kadalimunda,Bajpur,Bijamaliha,Bhandarimunda,Jhudungamal,Orda,Tusar,Banapur,Bamur,Dangapal,Bairagipalli,Kalabeda,Haripur,Phasipal,Kutasinga,Bhangamunda,Sahajbahali,Rangamatia,Susab,Dahimal,
		Phuljhari,Turuda,Tentulikhol,Sargipalli,Gurjang,Purunapani,Hatasimili,Dhandatopa,Amasama,Arampur,Basudevpur,Adeswar,Talamaliha,Girida,Mamurijharan,Bhuasuninali,Chintamanipur,Jhatikibahal,Korab,Bipradiha,Kantapada,Kenchuanali,Raida

2016-17	558.31 Ac.	Duhliapada, Goutampur, Buraghat, Doulatpur, Muchhapur, Kadapada, Singarimunda, Bhagabanpur, Subarnapur, Basudevpur, Bareni, Jhurikata, Belataila, Bhoipada, Ghodagadi, Mundapada, Santipur, Tasarabeda, Hatuapada, Baradakata, Naikpada, Kiakata, Gudugudi, Sorishapank, Kandhapada, Bijipur, Nilakanthapada, Chandrapur, Nuagaon, Madanpur, Manarabeda, Titirikata, Gadadharpur, Sargiseni, Patrapada, Routpada, Sianberuni, Saradhapur, Naktideul, Basudebapur, Kumbhia, Beherapada, Helei, Sankhamal, Shankhamal,Mangalpur, Khajurijharan, Bhojpur, Subarnapur, Santipur, Nuapada, Tusar, Bankapal, Polamahul, Sidheswarpur, Kandhara, Thatimunda, Bahalabeda, Angapada, Angapada, Tipamunda,Tipamunda, Sanarohila, Kadalimunda, Orada, Mayurakachheni, Sandhapal, Sanrohila, Raniakata, Bhimpur, Kusuni, Phulajhari, Dangapal, Barapadar, Tentulikhol, Kutarthapur, Bahali, Sidhapur, Kundapur, Kuteswar, Lehedi, Kamalpur, Hariharpur, Rangapur, Nagaon, Tangianisha, Dudhianali (San), Dudhianali, Rugudisahi, Kaintragarh, Lipiloi, Telanai, Jadupur, Malipadar, Gopalpur, Mahendrapur, Baragaon, Odisinga, Jirad, Nuagarh, Gopalpur, Khambeswaripali, Kairighanti, Haridanali, Nuamanatri, Rajing, Hingamandal, Deulabeda, Handapa, Kataranga, Luhamunda, Batrakhol, Mandarbahal, Badahula, Saluni, Laxmipur, Tentuloi, Khadaramunda, Parbatipur, Jhampuli, Nimitiri, Himitira, Damdar, Bankapalasa, Taladar, Hatanali, Dekrud, Balarampadar, Ghosarakhol, Kumbharamunda, Bharthapur, Raibahal, Goratopa, Kutasinga, Phasipal, Garuda, Hemamura, Badagobindapur, Kurumtap, Bileinali, Pedipathar, Sanjamura, Kumursinga, Gambharimaliha, Bhagamunda, Kandhapada, Jirad, Kundapur, Malipadar, Barham, Sanagobindapur, Rainali, Badabahal, Boinda, Dhundi, Kholaregeda, Hinjirida, Rajanpal, Laxmipriyapur, Baliamba, Gundurijharan, Kanteikulia, Raida, Satyabadipur, Sishukata, Bantul, Sapaghara, Khamar, Ambanali, Kalapatnali, Talabahali, Tapdhol, Banamalipur, Kasinathpur, Ghanajodi, Bipradiha, Pitabalibahal, Taranda, Maimura, Dhatukibahal, Hatasimili, Gopapur, Alekhapur, Sadanandapur, Kutulusinga,
2017-18	800.11 Ac.	Garuda, Badagobindapur, Bileinali, Kanteikulia, Jamujhari, Jambubania, Tileswar, Serenda, Urukula, Ghanapur, Gahnapur, Dhundi, Tentuloi, Laxmipur, Batrakhol, Turuda, Angapada, Jharabandhuli, Tulasipur, Baghuamunda, Khairamunda, Gurujang, Sanrohila, Banarnali, Banranali, Sanarohila, Kusuni, Bairagipali, Bamur, Phulajhari, Gatikrushnapur, Rangamatia, Natada, Tentulikhol, Kadalimunda, Tentelapani, Banpur, Sandhapal, Bhimpur, Kutasinga, Budiabahal, Gargadbahal, Saleigoth, Dadarpali, Bahalabeda, Barpadar, Jhinkibahal, Phasipal, Bijamaliha, Bhandarimunda, Bajpur, Badarohila, Baniadohali, Jhudungamal,Orada, Tusar, Himitira, Luhapanka, Dhaurapali, Khambeswaripali, Mahendrapur, Hingamandal, Rajing, Sidhapur, Dudhianali(San), Nagaon, Gopalpur, Nuagarh, Nuamanatri, Deulabeda, Telanai, Tangianisha, Taranda, Bipradiha, Korab, Mahidharpur, Patharkhumpa, Bhogra, Nisanipathar, Hatasimili, Dhatukibahal, Alekhapur, Bandhagaon, Sadanandapur, Chintamanipur, Satyabadipur, Kantapada, Girida, Bantul, Talabahali, Mindol, Tapdhol, Sapaghara, Rainali, Loharapada, Paikasahi, Ptahrkhumpha, Taladar, Bankapalasa, Nimitiri, Naikpada, Kumbhia, Bijipur, Goutampur, Sargiseni, Beherapada, Kadapada, Buraghat, Dekrud, Bharthapur, Bhagabanpur, Chandrapur, Kiakata, Helei, Bhojpur, Ghodagadi, Bhoipada, Khajurijharan, Doulatpur, Routpada, Bareni, Sankhamal, Hatuapada, Jhurikata, Thatimunda, Subarnapur, Belataila, Manarabeda, Tasarabeda, Duhliapada, Gadadharpur, Sorishapank, Gudugudi, Patrapada, Madanpur, Madhapur, Mundapada, Basudevpur, Singarimunda, Sianberuni, Mangalpur, Naktideul, Hemamura, GaonBoinda, Saluni, Barham, Jhilimunda, Parbatipur, Badahula, Pitabaligoruda, Khamar, Nakchi, Nuabhuin, Gadeimunda, Pratapapur, Chakundamunda, Handapa, Kataranga, Luhamunda, Raniakata, Damdar, Goratopa, Sanjamura, Sidheswarpur, Kumursinga, Shantipur, Santipur, Bankapal, Kandhara, Shankhamal, Balarampadar, Raibahal, Hatanali, Ghosarakhol, Bhagamunda, Digipadar, Baradakata, Beladula, Mhakhudpali, Nuagaon, Kanheiberuni, Baluaghara, Dudum,

2018-19	29602 Ac.	Jamujhari, Ghanapur, Khoradangiani, Takaba, Ambamunda, Kujhari, Pitabaligruda, Balikhaman, Tileswar, Kuruntap, Angapada, Raghunathpur, Jambubania, Uttkula, Badadangiari, Gobardharpur, Purushmal, Nabhuin, Madhupur, Khalapal, Mandamba, Idhapur, Bodsing Basina, Golasar, Pratappur, Kataranga, Goruda, Tentuloi, Badagobindapur, Hemamura, Barham, Govindpur, JharBorida, Batrakhol, Rainali, GaonBorida, Laxmipur, Badgovindpur, Gobindapur, Bileinali, Borida, Dhundi, Jhilimunda, Patapathar, Saluni, Khadaramunda, Achyutapur, Badahula, Kandhapada, Dudum, Kanhaibaruni, Kumarsinga, Sorishapark, Manarabeda, Chandapur, Kandhapali, Bhangamunda, Karhapur, Nuagon, Bhagamunda, Siarberuni, Tulunkata, Bijipur, Kunthia, Kadapada, Kakata, Goratopa, Barthapur, Naikpada, Sankhanal, Sargiseni, Patrapada, Thatimunda, Ranikata, Barkapalasa, Nimitiri, Goutampur, Khajurijharan, Napada, Shantipur, Chodagad, Basudevpur, Mundapada, Bipradha, Naktidul, Buraghat, Bhojpada, Bhagabanpur, Baherapada, Dhliapada, Bhojpur, Bhoga, Mahidharpur, Pathakhumpa, Rajing, Chintamanipur, Hatasimli, Dhadkhol, Gatikrushnapur, Gurujang, Baghamunda, Khairamunda, Phulajhari, Turuda, Jogipathar, Handapa, Chakundamunda, Badbahal, Khodaregada, Hinjirida, Gindurijharan, Rajanpal, Barapata, Baliamba, Charkhaman, Laxmipriyapur, Bankapal, Hatupada,
2019-20	239.97 Ac.	Ranikata, Bhojpada, Kadapada, Chodagad, Goutampur, Buraghat Baradkata, Siarberuni, Bijipur, Singarimunda, Madhapur, Baherapada, Bareri, Mundapada, Sankhanal, Naikpada, Santipur Kakata, Dihliapada, Bahalabeda, Phasipal, Handapa Pratapapur, Basina, Hinjirida, Basudevpur, Kunthia, Bhojpur, Narayanpur Bilatala Jhunkata Mangalpur, Matkhudpali, Kenchundi Bhangamunda Baghamunda, Gurujang Lanchi Kutasinga Chakundamunda Laxmipriyapur Madhapur Papasara Arampur Basudebapur, Hatasimli, Raida Tapdhol Kusumadhara Satyabadipur, Paikashi Korab Bamanalipur Sargiseni Khajurijharan Thatimunda Bankapal Hatupada Doulatpur Tasarabeda, Barkapalasa, Sanjamura Kumbharamunda Namanati, Patrapada Chandapur Madanpur Sorishapark Saradhapur Manarabeda Digapadar Kandhapada Nuagon Goratopa Madanchowki Helei Khambeswaripali Mahendrapur Nuagah Puchanda Baragaon Harihapur Naleswar Rathipur Dalaki NuaKendupati Kutugaon Jhartanali Natada Dakumunda Phulajhari Ambakhol Tentulikhol Tulasipur Tentelapani Kadalimunda Tusar Shantipur Jagannathpur Badarchila Jhudungamal Bhejidha Bhandarimunda Dadapali Gargadahal Jairat Badbahal Chatianal Dibadhipada Jhirkibahal Bajpur Ambamunda Rajing Adeswar Manmjharan Bipradha Kalapatnali Baradhipa Bantul Pokanda Sadanandapur Anasama
2020-21	160.216 Ha.	Tapdhol, Gargadahal, Dalimura, Bamhanipali, Baija, Gokapali, Jagannathpur, Bahalabeda, Hinditira, Bamhanipali, Dibadhipada, Bhanganadha, Matkhudpali, Bhojpada, Singarimunda, Baradakata, Chodagad, Sanjamura, Goutampur, Kadapada, Sankhanal, Bhojpur, Bankapal, Khajurijharan, Naikpada, Doulatpur, Kandhapada, Siarberuni, Bandupali, Kujhari, Kushmpur, Nakchi, Gadamunda, Ambamunda, Madhupur, Kataranga, Bilelinali, Borida, Batrakhol, JharBorida, Khadaramunda, Achyutapur, Badhahula, Garuda, Saluni, Badahula, Samagobindapur, Dhundi, Hemamura, Kanteikudia, Beladiha, Narayanpur, Patrapada, Naleswar, Rathipur, Hinjirida, Charkhaman, Pratappur, Routpada, Jhudungamal, Rajing Kuteswar, Baliamba, Laxmipriyapur, Uchabali, Rajanpal, Gindurijharan, Khodaregada, Purunapani, Golasar, Badadadar, Baherapada, Khola, Bodsing Jamujhari, Chuliapur, Khalapal, Bijipur, Sargiseri, Digapadar, Idhapur, Jogipathar, Kunthia, Bhojpur, Takaba, Ambaruni, Papasara, Handapa, Hatasimli, Bhusunimali, Dhabandhpur, Arampur, Lunbadha, Manmjharan, Podapadar, Korab, Chintamanipur, Bipradha, Ludamunda, Tentuloi, Basina, Dehali, Phasipal, Bairagipali, Bamur, Kadalimunda, Bijamaliha, Polamahul, Saleigoth, Chatianal, Barapashi, Sahajabahali, Dakumunda, Gurujang, Madanchowki, Sankhanal, Dihliapada, Helei, Tasarabeda, Thatimunda, Kakata, Mundapada, Bareri, Hatupada, Buraghat, Basudevpur, Haripur, Barkapalasa, Ghasarakhol, Bhagabanpur, Nuagon, Laxmipur, Badabandha, Kutugaon, Rangapur, Sidhapur, Hinganandal, Namanati, Malipadar, Gopalpur, Mahendrapur, Jirad, Khambeswaripali, Nuagah, Kanakpur, Kusumkhuri, Dahinal, Pataka, Dalaki, Ramamunda, Odatha, Bankual, Kalanati, Harihapur, Kundapur, Dauripali, Dadapali, Balijeeng Kusuri, Gindurikadar, Gurpada, Rajamunda, Badbahal, Bhimpur, Nabaghanapada, Bhangamunda, Batipurunapani, Gatikrushnapur, Garud, Parbatipur, Rainali, Jamunali, Baisina, Chkundamunda, Bhejidha, Jhudungamal, Orach, Tentelapani, Bijipur, Kishoripur, Banapur, Bhandarimunda, Dhankhala, Bhejidli, Bahmanipali, Sahajabahali, Jhirkibahal, Kansarkud, Baniadhali, Gatikrushnpur, Barakhol, Lanchi, Kutasinga, Susab, Phuljhari, Dhauragoth, Tusar, Jairat, Nimitiri, Bhadapur, Madanchwoki&Sankhanal, Jhunkata, Khajurijarana, Bhagabanpur, Tushar, Mangalpur, Daulatpur, Sibanapur, Bardakata, Barhama, Jhilimunda, Bilelinali, Badagobindapur, Nuakhodaregada, Fakirpur, Tentuloi Khandhota, Bahalabeda, Hinganandal, Pathanatanga, Telmai.
Total	**3419.836 2**	

On analysis; it is observed that with the advancement in years, more and more villages are affected by crop damage.

3.7.3 Common injury to the Wild Life:

The wild animals, birds and reptiles are being used as means of earning of livelihoods by some professional people like snake charmers, tribes etc. Bears and other wild animals are being trained by the circus parties and exhibits different feats. Wild animals are also very often kept in captivity for the shake of pleasure and status. The wild life traders engage local tribals to kill the wild life for different parts like horns, hides, fur, feathers, skin, claws and teeth, trophies, bones etc. The medicinal value of these wild life parts has multiplied the reason for speedy depletion of it.There are regular incidents of poaching of wild animals in the Division. Poaching of fauna for meat, horn, fur, feather, hides, claws, bones etc. have direct effect on the decline in population of the wildlife. The incidence of poaching is more in Hatidhara RF and Northern RF. But the detection and conviction of wild life crime is limited. The offence cases are mainly limited to elephant poaching.The detail of elephant death cases is furnished in **Table.No. 3.20** as below,

TABLE -3.20 ELEPHANT DEATH DUE TO DIFFERENT REASONS

YEAR	Draught	Railway Accident	Electrocaution	Poaching	Disease	Other	Total
2006-07	-	-	-	1	1	1	3
2007-08	-	-	-	-	---	1	1
2008-09	-	-	-	-	---	----	---
2009-10	-	-	-	----	---	---	---
2010-11	-	-	1	-	1	---	2
2011-12	-	---	---	1	1	---	2
2012-13	-	-	---	-	---	1	1
2013-14	-	-	-	-	1	3	4
2014-15	---	---	---	---	---	---	---
2015-16	---	---	---	---	---	---	---
2016-17					2		2
2017-18					3		3
2018-19			2				2
2019-20			1		1		2
2016-17	-	-	-	-	2 nos.	-	2 nos.
2017-18	-	-	-	-	3 nos.	-	3 nos.
2018-19	-	-	2 nos.	-	-	-	2 nos.
2019-20	-	-	1 no.	-	1 no.	-	2 nos.
2020-21	-	-	-	-	1 no.		01 no.
Total			**7**	**2**	**17**	**6**	**32**

Source: Divisional Forest Officer, Athmallik

However, during the period from 1984-85 to 2003-04; death of elephants due to poaching was 73 which has reduced to 02 only during the period from 2005-06 to 2020-21.

3.8 Protection and management of fauna

3.8.1 Wild Life Rules

3.8.1.1 In the past, the management of forest was timber oriented. The preservation of wild life could not find its place in the Forest Policy of 1894, though there existed already the Wild Birds (Protection) Act of 1887. It was only in 1912 that the **Wild Birds and Animals (Protection) Act (Central legislature Act VIII of 1912)** was promulgated, which was more or less a repetition of the Wild bird (Protection) Act of 1887. This Act prescribed for observance of 'close time', besides penalties and confiscation in respect of some birds and animals. Birds included in the schedule are; Bustard, Duck, Jungle fowl, Partridge, Peafowl, Pheasant, Pigeon, Quail, Sand grouse, Painted snipe, Spur fowl, Heron, Woodcock, Egret, Rollers and King fisher. The animals covered under the Act were Antelope, Ass, Bison, Buffalo, Deer, Gazelle, Goat, Hare, Ox, Rhinoceros and Sheep.

3.8.1.2 Rules relating to wild life in force in the early days were as follows:

1) The Bihar and Orissa Government Reserved Forest shooting Rules, 1930 (as per clause I and j of subject 1 of section 26 of IFA 1927 (XVI of 1927).

2) Rules to regulate hunting, shooting, fishing etc. in Protected Forests of Angul and Puri districts (as per clause j of section 32 of IFA 1927).

3) Rules regulating the grant of license to capture elephants in Angul (framed under section 6 of the Elephant Preservation Act of 1879 (Act VI of 1879).

Though the above Rules and Acts were a good beginning, it was far from satisfactory so far as conservation was concerned. A good number of animals continued to get killed legally and illegally

3.8.1.3 The All India Conference on Wild Life, 1935 felt that further steps are necessary for preservation of wild life in various provinces. Accordingly, when the forest policy of 1952 was formulated, emphasis was laid on the protection of wild animal, particularly the rare species, which were fast disappearing. It also prescribed for regulating the wild life by special law and to set up National Parks and Sanctuaries. For the purpose, a Central Board on Wild Life was constituted in 1952.

3.8.1.4 After independence, there was a growing realization to provide better protection to fauna in general and rare and endangered species in particular. It was also recognized that wildlife could not be effectively protected unless state's stakes were clearly defined and legal status of these forests was comprehensively articulated. The All India Silviculture Conference recommended, *inter alia*, that "whereas wild life is an integral part of our forests and its preservation is admitted to be an urgent necessity, suitable forest of adequate extent be set apart in each State for preservation and perpetuation of wild life". Moreover, in 1969, the IUCN, at New Delhi conference, emphasized for an urgent need for a uniform law in India.

With such initiatives, a comprehensive legislation was brought about in 1972, when **the Wild Life (Protection) Act 1972** was promulgated.

3.8.1.5 A no of Acts and Rules have been framed by the Government from time to time such as Wild Life Protection Act 1972, Wildlife (Stock Declaration) Rule 1974, Wild Life Transaction and Taxidermy Rule 1974 by Government of India. The Govt. of Orissa also framed the Orissa Forest Shooting Rule, 1973 under section 82 of the Forest Act, 1972 and The Wild Life (Protection) Rules, 1974. These Acts and Rules were amended as the Wild Life (protection) Amendment Act, 2002. The Wild Life-Stock Rules, 2003 has come up with detail procedure to be adopted by the individuals and the communities in possession of wild animals.

3.8.1.6 In addition, the Government of Orissa has prescribed the following procedures.

1) Procedures for compassionate payment on account of human killings by tigers, panthers, elephant, Bear etc has been ammended. in 2014 *vide* Forest Dept. Notification No. 13505/8F (WL) 6/2014 F&E dated 22nd july 2014. As per the amendment, the amount of compensation for human killing is increased to Rs.3, 00,000/-. The compensation for permanent injury is increased to Rs.1,00,000/- and for temporary injury there would be free medical treatment in the government hospital with compensation of Rs.2000/-.

As per Notification No. 6380/8F(WL)1/12 F & E dated 11th April 2012; in case of crop damage by wild animals specified in rule 45-AA as well as by Deer and Antelope compassionate payment of Rs 10,000/ only per acre for crop like paddy and cereals shall be made and in case of damage of vegetables, cash crops like Banana, Sugarcane, Mango, the compassionate amount of Rs 12,000/ only per acre shall be paid to the victim.

2) Procedures for regulation of fishing inside sanctuary in 1976 *vide* Orissa Gazette part III No. 41 dated 08.10.76.

3) Trade or commerce in wild animal articles and trophies in 1978 *vide* Orissa Gazette part II No. 38 dated 14.07.78.

4) Rewards for destruction of wild animals etc in 1978 *vide* SRO No. 1309/78, Orissa Gazette part III No. 45 dated 10.11.78.

3.8.2 Other Measures taken.

3.8.2.1 The Division has also tried to create awareness among the villagers through VSS Meetings, celebration of Wildlife Weeks, Environment Days and publicity through newsletters, signboards, hoardings etc.

3.8.2.2 The Division has also taken up the construction of Elephant Proof Trench over 6 Kms and Solar fencing over 2Kms around the Elephant area to control the movement. To prevent destruction of elephant habitat one permanent elephant corridor namely Nuagaon-Baruni has been notified. The Elephant corridors have been maintained. Signages have been posted along the Elephant passage area to avoid man-animal conflict.Also Antidepredation squard has been deployed for taking of the movement of Elephant and to prevent Elephant depredation.

3.8.2.3 Creation of Waterbodies:

The division has a no of existing natural water sources in shape of perennial streams; rivers, reservoirs, water holes and other water bodies and salt licks. The major rivers and tributaries such as, Mahanadi, Karandijhor, Lanchi,Aunlinadi,Badjhor, Mulijhor, Nekudiajhor, Badrijhor,Chanagudijhor,chanagorhi nallah,Dhandatopa nallah etc are the main water sources, which are being used by the wild animals. Besides no of water bodies/ WHS are being constructed under different scheme by the Department in interior pocket of the forest to meet the water scarcity of the wild animals.

A good number of waterbodies has been created for use of human habitation as well as wild life as detailed below in **TABLE -3.21**

TABLE -3.21 LIST OF WATER BODIES

Year	Scheme	No. of water body created	Range	Place
1	2	3	4	5
2006-07	DRDA (SGRY Special component)	2	1-Handapa	1- Gundurijharan
2007-08	2406-CSP (Integrated Forest Protection)	1	1-Athmallik	1-Jharjhari
2009-10	a- 2406-State Plan (Elephant management Project)	1	1-Handapa	1-Northern R.F Compt. 11
	b- CAMPA (WL)	1	1-Madhapur	1-Ketakijharan
2010-11	a- 2406-Central Plan (Elephant management Project)	1	1-Madhapur	1-West Bareni
	b- 2406-State Plan under 13th F.C grant	1	1-Handapa	1-Udal
2011-12	a- CAMPA (WL)	1	1-Madhapur	1-Kiakata K.F
	b- CAMPA (General)	4	1-Madhapur	1-Madhapur
	CAMPA (General)	10	1-Athmallik 2-Handapa 3-Bamur 4-Madhapur	**1**- Mahendrapur-1 Nos. **2**- Ichhapur-1 Nos. **3**-Northern R.F-Khola 1 Nos. **4**-Northern R.F-Udol- 1 Nos. **5**- Northern R.F Compt. No.14- 1 Nos. **6**-West Baruni R.F- Compt. No. 6- 1 Nos. **7**- ~Do~ Compt. No. 3- 1 Nos. **8**- ~Do~Compt. No. 1 - 1 Nos. **9**- Taleipathar Compt. No. 8- 1 Nos . **Total- 9 Nos.**

2013-14	CAMPA (General)	27	1-Athmallik	.1-Titigaon K.F- 1 No. 2-Pataka K.F- 1 Nos. 3-TaleipatharR.F Compt. No. 16- 1 No. 4-Mahendrapur R.F Compt. No. 1- 1 No. 5-Taleipathar R.F Compt. No. 1- 1 No. 6-Taleipathar R.F Compt. No. 4- 1 No. 7-Ghodagadi K.F- 1 No. 8-Muchhapur K.F- 1 No. 9-Nuagaon R.F Compt. No. 2- 1 No. 10-West Bareni R.F Compt. No. 2- 2 Nos. 11-Northern R.F Compt. No. 39- 2 No. 12-Northern R.F Compt. No. 27- 2 No. 13-Handapa Compt. No. 5- 2 nos. 14- Northern R.F Compt. No. 36- 1 No. 15-Northern R.F Compt. No. 2- 1 No. 16-Northern R.F
			2-Madhapur	
			3-Dhandatopa	
			4-Handapa	

	CAMPA (WL)	4	1-Dhandatopa 2-Handapa	1- Northern R.F Compt. No. 29-1 No. 2-Northern R.F Compt. No. 34-1 No. 3-Northern R.F Compt. No. 23-1 No . **Total- 3 nos.**
2014-15	2726-Elephant Corridor area	1	1-Madhapur	1-East Bareni R.F- 1 no.
2015-16	2726-Elephant Corridor area	2	1-Madhapur	1-Manorbeda- 2 Nos.
2017-18	CAMPA General APO 2017-18	1	Handapa	Northern RF Compt. No. 34
		1	Bamur	Northern RF Compt. No. 13
2018-19	Budget (Elephant Corridor)	1	Athmallik	Mahendrapur R.F
2019-20	CAMPA Wildlife APO 2019-20	1	Madhapur	East Baruni R.F Compt. 3
	CAMPA Wildlife APO 2019-20	1		Taleipathar R.F Compt. 6
2020-21	CAMPA (WL) APO 2020-21	1	Athmallik	Hatidhara Compt. No. 44
		1		Hatidhara Compt. No. 44
		1		Kubera DPF
		1		Kusumkuhuri RF Compt. No. 1
		1		Hatidhara RF Compt. No. 28
		1	Madhapur	Nugaon RF Compt. No. 1
		1		Nugaon RF Compt. No. 4
		1		Taleipathar RF Compt. No. 12
		1	Dhandatopa	Ambasaramunda
		1		Northern RF Compt.No.33
		1		Northern RF Compt.No.23
		1		Handapa RF Compt.No.7
Total		**65**		

3.8.2.4 Protection measures:

Forest protection squads are engaged to ensure protection and prevention of poaching of wild animals. A list of detail squad engaged for protection under various scheme of the period from 2006-07 to 2020-21 is furnished in **ANNEXURE-XVI**

Information on wildlife offence cases for the year from 2007-08 to 2020-21 is furnished in

3.8.2.5: Declaration of Satkosia Gorge Sanctuary:

The entire Hatidhara R.F have been declared as Satkosia Gorge Sanctuary vide Notification No 8F (WL) 15/2018 by 28865 dt 14.12.2018 of F&E Department Govt. of Odisha. An area of 14923.78Ha.is excluded from Athmallik and Dhandatopa Range from the outgoing plan. As shown in TABLE No. 3.22.

TABLE No. 3.22 AREA EXCLUDED AND MERGED IN SATKOSIA GORGE SANCTUARY

SL NO.	Name of the Range	RF	AREA_Ha	AREA_SqKM
1	Athmallik	ARA RESERVEI	5938.81	5.9388
2	Dhandatopa	ARA RESERVEI	8984.97	8.985
TOTAL AREA			14923.78	14.9238

3.8.2.6 Proposed Tiger Corridor Area

It is proposed to bring 4378.801Ha of Forest area under Tiger Corridor Area; the details of which is furnished in **TABLE No. 3.23.**

TABLE No.3.23 Proposed Tiger corridor area of Athmallik Forest Division.

SL NO.	COMPTT NO.	FOREST_NAME	AREA_Ha	AREA_SqKM
1	5	DANTARIKHOL RESERV	5.525	0.055
2	1	HANDAPA RESERVED F	300.402	3.004
3	2	HANDAPA RESERVED F	16.283	0.163
4	2	HANDAPA RESERVED F	60.519	0.605
5	3	HANDAPA RESERVED F	148.213	1.482
6	5	HANDAPA RESERVED F	61.417	0.614
7	6	HANDAPA RESERVED F	118.309	1.183
8	7	HANDAPA RESERVED F	234.958	2.35
9	1	KADALIMUNDA RESER	204.069	2.041
10	24	NORTHERN RESERVED	196.946	1.969
11	27	NORTHERN RESERVED	73.733	0.737
12	28	NORTHERN RESERVED	118.117	1.181
13	29	NORTHERN RESERVED	358.598	3.586
14	30	NORTHERN RESERVED	477.005	4.77
15	31	NORTHERN RESERVED	130.039	1.3
16	32	NORTHERN RESERVED	111.343	1.113
17	33	NORTHERN RESERVED	91.958	0.92
18	34	NORTHERN RESERVED	541.818	5.418
19	35	NORTHERN RESERVED	262.638	2.626
20	36	NORTHERN RESERVED	3.062	0.031
21	37	NORTHERN RESERVED	255.684	2.557
22	39	NORTHERN RESERVED	12.182	0.122
23	41	NORTHERN RESERVED	268.346	2.683
24	42	NORTHERN RESERVED	327.637	3.276
TOTAL AREA			**4378.801**	**43.788**

3.8.2.6.1.1 Introduction to the area:

Wildlife corridors have been broadly defined as landscape elements linking historically connected habitats in order to facilitate movement and offset possible long term negative impacts of inbreeding and genetic isolation. Studies during the last few years have indicated that wildlife corridors have emerged as a critical conservation strategy that can help minimize genetic isolation, offset fragmentation problems, improve animal dispersal, restore ecological processes and reduce of man animal conflict. Corridors will also help facilitate the re-establishment of populations that have been reduced or eliminated due to random events. This will potentially moderate some of the worst effects of habitat fragmentation. Wildlife corridors are important for large species requiring significant sized ranges; however, they are also vital as connection corridors for smaller animals and plants as well as ecological connectors to provide a rescue effect.

3.8.2.6.1.2 Delineation of Corridors (Macro level & Micro level)

Macro level delineation of corridors connecting Satkosia Tiger Reserve to Similipal Tiger Reserve and other major wildlife habitats have been done based on the report on country level assessment of tigers done in 2010 by NTCA which has identified potential tiger corridors as well as the connectivity lying in adjoining areas..

3.8.2.6.1.3 Geo coordinates of Corridor boundaries

Segment – I Satkosia to Northern RF, (Satkosia – Similipal) Corridor

SL. NO	LONGITUDE	LATITUDE
1	84°51'07.0"	20°45'23.2"
2	84°49'27.8"	20°47'05.9"
3	84°50'23.3"	20°50'56.9"
4	84°48'15.3"	20°50'52.9"
5	84°47'28.1"	20°55'40.3"
6	84°46'03.5"	20°55'05.0"
7	84°46'34.6"	20°58'17.7"
8	84°45'24.7"	20°57'08.8"
9	84°39'11.1"	21°02'40.3"
10	84°37'38.4"	21°01'51.7"
11	84°38'44.6"	21°05'01.1"
12	84°37'17.4"	21°04'45.5"

3.8.2.6.1.4 Major land use classification in the area.

Major Land use	Segment - I
Dense forest	21.924
Dense mixed forest	19.953
Fairly dense forest	47.561
Fairly dense scrub	0.826
Open forest	0.053
Open mixed forest	13.68
Teak plantation	2.173
Open Scrub	0
Village	21.28
Total area	127.45

Details of Forest areas coming under different beats, ranges and Divisions are furnished i

Table No. 3.24 as below.

Table No. 3.24 Juridiction of the proposed Tiger Corridor(segment -1)

	DIVISION	RANGE	BEAT	RF/PF
	ANGUL FOREST	DURGAPUR RANGE	AMITULIA-I	ANTULIA RF
				PARA RF
Segment- I			AMITULIA-II	TABADA RF
			JARAPADA	KATARA RF
				PARHA RF
			KANDHAKOIL	
			(NEW)	TABADA RF
			KATADA-II	KATARA RF
			LEMBUTOLI-I	TABADA RF
			LEMBUTOLI-I	ANTULIA RF
				PARHA RF
			PARHA	KATARA RF
				ANTULIA RF
				PARHA RF
			RODASINGA	ANTULIA RF
				PARHA RF
	ATHAMALLIK F	HANDAPA		HANDAPA RF
			HANDAPA	NORTHERN RF
			HINJIRIDA	HANDAPA RF
				NORTHERN RF
				HANDAPA RF
			ICHHAPUR	NORTHERN RF
				NORTHERN RF
				KADALIMUNDA R
			KADALIMUND	NORTHERN RF
			LAXMIPUR	NORTHERN RF
			TAKABA	NORTHERN RF

3.8.2.6.1.5 Quality of Habitat

The vegetation types are same as that of the core area. However, occurrence of dry deciduous forest type is more marked in the north-western edges of the reserve; the percentage of moist deciduous and semi-evergreen forests is correspondingly lower in the adjoining area. The canopy is also more open here with the forests subject to increased biotic pressure mainly illicit felling and grazing. In the Segment – I from Satkosia to Northern RF (Satkosia – Similipal) corridor, Sal is the predominant species.

3.8.2.6.1.6 Statement of significance.

The need for ensuring ecologically compatible land uses in tiger reserves (buffer/peripheral areas) and corridors have been provided in sections 380(g) and 38V(3)(b) of the Wildlife (Protection) Act, 1972. Further, under section 38V(3)(c) of the said Act, a provision has also been made to ensure that 'the forestry operations of regular forest divisions and those adjoining tiger reserves are not incompatible with the needs of tiger conservation'. In general, the managerial approach of buffer is applicable to tiger corridor areas as well. Intensive form of land uses like commercial mining, setting up of industries causing pollution and establishment of major hydro electric projects, and discharge of effluence / solid wastes in natural water bodies etc. needs to be avoided in such areas.

3.8.2.6.1.7 General principles of management:

1. Co-occurrence agenda (Wildlife and People).
2. A 'no-go area' for industrial development (but retrofitting safeguards required if such infrastructure already exists).
3. The wildlife status of buffer should not be elevated to that of the core and managerial interventions should be restricted to allow tiger / wildlife gene permeability and low density occupancy while facilitating the meta-population dynamics of tiger in productive patches.
4. Factoring in the landscape context and reducing resource dependency of local people on forests through sectoral integration resulting in ecologically sustainable livelihood option.
5. Using the impact of natural / managerial interventions in the core areas a guide for dealing with forestry practices and wildlife management in the buffer.
6. Identifying zones of influence vis-à-vis the various land uses operating in the area.

1. Overarching focus on habitat restoration / productivity, reduction of forest resource dependency, providing ecologically sustainable livelihood options to local people, permitting ecologically sustainable land uses, avoiding intensive forms of land uses like mining or heavily used infrastructure and actively addressing human –wildlife interface. In case such land uses are present or permitted appropriate mitigation measures need to be enforced so as not to compromise on the conservation objectives of the buffer,.
2. Convergence of ongoing district level schemes is important to provide ecologically sustainable livelihood options for local people. This would reduce their dependency on forest resources while eliciting the much needed public support. A sizeable portion of tourism gate receipts should be recycled and earmarked to eco-development committees for village specific interventions as per the participator micro plan, with reciprocal commitments to protect wildlife and their habitat on quid-pro-quo basis.

This corridor is very important for wild animal migration which needs to be protected from further degradation by human interferences. Tigers, Elephants, Leopards, Sloth Bear and big herbivores such as Indian Bison, Mouse deer, Chitals and Wild Boar are often found in the adjoining areas of Satkosia TR and are believed to be using the corridors. This is a potential dispersal routes for the animals mentioned above.

3.8.2.6.1.8 Vegetation types:

The forests of corridor are mainly dense Sal forest, open Sal forest, dense mixed forests and degraded/scrub forest. Main associates of Sal are Piasal, Sisoo, Bandhan, Asan, Dhaura, Kuruma, Kusum, Jamu, Mai etc. The proportion of Rai, Mai & Sidha increases on slopes where moisture content is less. The canopy density varies from 0.4 to 0.6 due to heavy biotic interference. The regeneration is adequate throughout the area and profuse mostly in valleys. The Medicinal shrubs like, *Banahaldi, Patalagaruda, Asoka, Amla* etc. are available sporadically. Some Sal indicators plants like, *Flemingia, Combretum, Karada* etc are found in these areas. These Reserve Forests have been worked under selection working circle, till this revised Tiger Conservation Plan is written in 2015. Regarding the forest type pertaining to area other than reserve forest, the vegetation is bushy in nature having sporadic distribution of mother trees like Sal, *Kusum, Mahul, Dhaura, Asan, Char, Kaim* etc. The forest which is found in a bushy form are miscellaneous in nature having preponderance of *Chara, Asan, Dhaura, Karada,*

Mahula, Jamu, Atundi, Muturi, Siali and intrusion of weeds species like Eupatorium & Lantana are found in patches and also some phoenix species are available.
The various forest types met with in this landscape is given below.

- *Northern Tropical Dry Deciduous Forests (5B/C1).*
- *Dry Peninsular Sal Forest(5B/C1c)*

  The species found under this forest type depending upon the soil and micro climatic conditions are as follows:-

  Two types of Northern Tropical Dry Deciduous forests are found in Angul Division. The climax forest formation comes under Northern Dry Mixed Deciduous forest and degradational/ successional formation is under Dry Deciduous Scrub in Level IV Classification of Champion & Seth's System. In Northern dry mixed deciduous forests *Cleistanthus collinus* and *Anogeissus latifolia*, constitute a unique representation. In these forests the proportion of Sal is less as compared with North Indian Moist Deciduous forests.

- ***Northern Dry Mixed Deciduous Forest:*** In these forest type, *Cleistanthus collinus* is the predominant species. The other co – dominant species are *Anogeissus latifolia, Lannea coromondelica, Lagerstroemia parviflora, Diospyros melanoxylon, Terminalia tomentosa, Aegle marmelos* and *Pterocarpus marsupium.*

3.8.2.6.1.9 Fauna & habitats.

Many wild animals including some endangered ones like tiger, Leopard, elephant, gaur and four horned antelope etc. are found in different levels of abundance. Ratel, pangolin, giant squirrel, flying squirrel, sambar and chital are among the other few worth mentioning. The presence of the big cats in the corridors is reported from time to time.

3.8.2.6.1.10 Major changes in the landscape(settlement & other infrastructures)

The landscape is being affected at certain places due to infrastructural developments over the years. . The Segment – I Corridor is getting affected due to NH – 55 (Cuttack to Sambalpur) and East Coast Railway (Bhubaneswar to Sambalpur) crossing near Boinda at Kadalimunda RF respectively. . Road expansion, extension of new railway lines, release of water in irrigation canals are on the anvil, which will create further changes in the landscape.

3.8.2.6.1.11 ADMINISTRATION AND ORGANIZATION.

The administrative set up is coming under territorial jurisdiction of Angul Circle under administrative control of Field Director, Satkosia Tiger Reserve cum Regional Chief conservator of Forests, Angul.

3.8.2.6.1.12 Distribution and Abundance Status with type of use by the tiger and co-predators.

In the last sign survey conducted during May 2015 as many as 30 no. monitoring units (Beats) are covered in Angul Division and 19 no. monitoring units (Beats) are covered in Athmallik Division during the sign survey. In adjoining areas which are part of Satkosia Tiger Landscape.

Name of the Division	No. of Unit	Distance Covered in Km	Total nos. of Carnivores' Sign	Encountered Rate	Sign of Leopard	Sign of Tiger
Angul	30	450	37	0.082222	2	Nil
Athamallik	19	285	46	0.161404	46	Nil

Most nos. of Leopard signs were recorded in Athmallik Division.

3.8.2.6.1.13 Prey-Predator Relationships.

The available prey base in the adjoining areas is much less when compared to the core area. Large prey favoured by the Tiger, like Sambar remains confined to a few pockets. However, Wild Boar is distributed widely. During the last sign survey in May 2015, as many as 30 no. transect lines are covered in Angul, 19 no. in Athmallik Division.

Name of Division	Nos. of Unit	Total Distance covered in km	Nos. of herbivore sighting	Encountered Rate
Angul	30	180	467	2.594444
Athamallik	19	114	41	0.359649

3.8.2.6.1.14 Assessment of Threats.

- Subsistence hunting of wild animals by the local tribals for the rituals is present in this area.
- Poaching for the purpose of selling is occasional and confined to the forest fringes.
- Targeted poaching for ivory by people coming from outside, with the help of local people.
- Gradual loss of habitat by way of illicit felling of trees.
- Grazing of cattle inside the corridor area, especially around villages.
- The incidence of fire during summer.
- Human settlements and consequent biotic pressure inside the corridor zone

CHAPTER-4

4. Maintenance and Enhancement of forest Health and Vitality

4.1 Status of Regeneration

During the preparation of previous working plan regeneration survey has been conducted extensively, compartment wise in Talaipathar, Hatidhara, Northern and Handapa Reserved Forest blocks. In other blocks it has been done block wise. The regeneration survey was done along a randomly selected grid line of length 100 mt. 25 quadrants each of four square mt area was laid down on either side of the grid line. The regenerated plants were classified into established, woody, whippy and recruit and were enumerated and scored. The presence of either established or woody is sufficient for scoring in any quadrant. The established seedling was given the numeric value of 5 and that of woody, whippy, and recruit was 4, 2 and 0.5 respectively. The value of all the fifty quadrants was totalled to determine the status of regeneration as per **Table No: 4.1**

Table 4.1 STATUS OF REGENERATION

S.No.	Score	Status
1	0-50	Deficient
2	51-100	Fair
3	101-150	Moderate
4	151-200	Good
5	201-250	Established

4.1.2 The above survey revealed many interesting observations regarding the regeneration of various species.

Hatidhara: In this block the regeneration of Sal is moderate to deficient in most of the compartments and it is excellent in few compartments like Hatidhara 6,7,9,11,14, etc. Regeneration of P.Sal, Sisso, Bandhan, Gambhar, Kusum, Mundi, Kasi, Siris is generally poor or even totally absent. Some amount of regeneration is seen in Asan, Dhaura, Kendu, Chara, Amla, Karada etc.

Talaipathar: In this block the regeneration of Sal is mostly moderate to excellent. Regeneration of other species like P.Sal, Asan, Dhaura, Kendu, Amla, Karada, Kasi, Mahula, Chara is also found to be fair to good. Regeneration of other species like Sisso, Bandhan, Gambhar, Kusum, Mundi, Kasi, Siris, Harida, Bahada, Mango, Bel, etc. is very poor.

Northern RF: In this block, the regeneration of Sal is good to excellent. The regeneration of Asan, Kendu is good compared to the other blocks. Another interesting observation is that the Jamun, P.Sal, Amla regeneration is also found in many compartments like 11,12,15,17, 19, etc. The regeneration of Dhaura is poor compared to other blocks. Generally in Sissoo, Bandhan, Gambhar, Kasi, Kurum, Mundi, Harida, Bahada, Bel, Mango, Sidha the regeneration status is poor.

Handapa: In this block the regeneration phenomenon resembles to that of Northern RF. The difference is that the regeneration of P.Sal, Jamun, and Amla is generally poor.

Other Blocks: In other blocks Sal regeneration is generally observed to be moderate to excellent. In few blocks like Kutulsingha, Kadalimunda, Kishoreban Sal regeneration is poor. The regeneration of other species like Asan, Dhaura, Kendu, Karada, Chara, Mahuala is found in all the blocks except few areas like Asan regeneration is deficient in Kusumkuhuri, Kadalimunda, Dhaura regeneration is poor in Kusumkuhuri, Kutulsingha etc. Some amount of regeneration of Kusum is observed in Dantarikhol and Kishoreban blocks.

Protected Forests: The status of regenerations is studied in all the 19 blocks, the Sal regeneration is found to be good only in few blocks like Thakurgarh, Purnapani, Muchhapur A & B, Bhangamunda, Gundurijharan, etc. The status of regeneration is fair to moderate in most of the blocks for Kendu, Dhaura, Mahula, Amla, Asan and Chara. Some amount of P.Sal regeneration is found in Purunapani, Thakurgarh, Bhangamunda and Tileswar blocks. The regeneration for the rest of the species is generally deficient barring one or two blocks.

4.1.3 : ASSESSMENT OF REGENERATION STATUS:

In the current working plan, assessment of regeneration status has been done as per the prescription of the National Working Plan Code, 2014. Accordingly, young plants of tree species up to 10 cm diameter are taken into consideration for assessment of regeneration status of a particular species as practiced in National Forest Inventory by FSI. Data collected from the square plots of 3x3m for saplings/adults and from the square plots of 1x1m for seedlings will be used to assess the regeneration status of species in the management unit. Based on the phytosociological data from plot level enumeration, the regeneration status of the sampled species will be assessed in the following categories.

(a) Good regeneration: If seedlings are more in numbers than the saplings and likewise saplings are more than that of adults.

(b) Fair regeneration: If seedlings are more in numbers than the saplings but the saplings are equal or less than that of adults.

(c) Poor regeneration: If a species survives in only sapling stage,but not as seedlings(though sapling may be less, more or equal to adults).

(d) No regeneration : If a species is absent both in sapling and seedling stage,but present as adult.

(e) New regeneration: If a species has no adults but only sapling and/or seedlings.

To categorise the seedlings, saplings and adults; the following criteria is followed.

Sl. No	CATEGORY	SPECIFICATION
1	Seedlings	< 2cm collar dia
2	Saplings	2-5cm collar dia/dbh
3	Adults	5-9.9cmcollar dia/dbh

The lower categories of regeneration such as established, un-established (whippy and sub-whippy), recruits, etc. giving value to each category and calculating total regenerative percentage may be required, in case, above classifications are absent or insufficient to indicate regeneration status. The description of such category of regeneration is furnished as below.

Sl. No.	**Category of regeneration.**	**Description**
1	Established	Height should be 2.5mt or more and d.b.h 10 cm
2	Woody shoot	It is un established but large and vigorous, which can be established early. Its height varies from 1.0mt to<2.5mt.
3	Whippy	Its height varies from 50 cm to <1.0mt
4	Sub-whippy	Its height is less than 50cm
5	Recruit	Current year seedling

Basing on the above criteria; the regeneration status of the Forest Blocks are assessed; the details of which are furnished as below.

Status of Regeneration of Northern RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Remarks
1	71	1	11	3	3	Fair
2	72	1	18	9	1	Good
3	68	1	10	13	1	Good
4	69	1	8	12	1	Good
5	70	1	10	10	0	New
6	107	2	4	4	0	New
7	106	2	7	7	2	Good
8	22	3	4	8	0	New
9	75	3	4	8	0	New
10	76	3	5	7	1	Fair
11	77	3	4	9	0	New
12	44	4	9	8	0	New
13	42	4	10	9	2	Good
14	45	4	11	8	0	New
15	46	4	9	7	1	Good
16	43	4	9	5	1	Good
17	55	5	6	10	0	New
18	59	5	5	9	0	New
19	53	5	5	6	2	Deficient
20	58	5	7	7	0	New
21	57	5	7	5	0	New
22	56	5	6	5	1	Good
23	54	5	8	5	0	New
24	49	6	7	6	1	Good
25	48	6	7	4	1	Good
26	51	6	11	4	0	New
27	50	6	7	6	0	New
28	52	6	9	7	2	Good
29	41	7	6	5	2	Good
30	1	7	5	5	2	Good
31	79	8	8	6	0	New
32	25	8	20	6	2	Good
33	78	8	19		1	Fair
34	157	9	13	12	0	New
35	156	9	13	6	1	Good
36	158	9	8	6	2	Good

37	155	9	11	11	0	New
38	105	10	11	5	2	Good
39	104	10	8	6	1	Good
40	103	10	10	6	1	Good
41	102	10	11	7	1	Good
42	101	10	10	9	1	Good
43	170	11	6	6	2	Deficient
44	169	11	10	3	3	Fair
45	168	11	9	4	2	Good
46	172	11	8	6	2	Good
47	173	11	8	8	2	Deficient
48	195	12	7	8	2	Deficient
49	191	12	13	12	1	Good
50	194	12	8	9	1	Deficient
51	192	12	12	2	0	New
52	193	12	20	1	3	Fair
53	214	13	13	7	1	Good
54	33	13	5	8	2	Deficient
55	31	13	8	7	0	New
56	215	13	21	3	1	Good
57	217	13	5	3	0	New
58	216	13	21	7	0	New
59	240	14	14	4	8	Fair
60	238	14	15	4	10	Fair
61	241	14	15	4	8	Fair
62	236	15	15	6	4	Good
63	232	15	13	2	10	Fair
64	233	15	9	4	6	Fair
65	234	15	9	8	1	Good
66	235	15	13	8	2	Good
67	237	15	11	6	4	Good
68	203	16	9	6	0	New
69	204	16	14	8	0	New
70	201	16	7	8	1	Deficient
71	205	16	6	6	0	New
72	150	17	9	9	0	New
73	149	17	7	11	0	New
74	152	17	9	10	0	New
75	148	17	7	7	0	New
76	151	17	5	1	0	New
77	110	18	12	12	0	New
78	109	18	8	8	1	Deficient
79	8	18	8	7	1	Good
80	111	18	15	4	1	Good
81	180	19	16	4	1	Good
82	182	19	11	1	0	New
83	179	19	11	2	1	Good
84	181	19	10	6	1	Good
85	183	19	29	0	3	Fair
86	190	20	11	2	2	Fair

87	188	20	12	1	4	Fair
88	187	20	15	0	4	Fair
89	184	20	11	1	6	Fair
90	185	20	12	3	4	Fair
91	267	21	10	1	3	Fair
92	268	21	5	9	1	Deficient
93	245	22	10	3	2	Good
94	248	22	15	0	4	Fair
95	244	22	11	1	3	Fair
96	247	22	9	1	4	Fair
97	246	22	12	0	3	Fair
98	243	22	13	0	4	Fair
99	127	23	8	5	0	New
100	278	23	3	6	3	Deficient
101	276	23	10	3	2	Good
102	270	23	11	12	0	New
103	272	23	10	4	2	Good
104	273	23	11	4	1	Good
105	274	23	12	3	0	New
106	271	23	14	2	1	Good
107	206	24	9	2	4	Fair
108	212	24	12	1	1	Fair
109	207	24	14	11	4	Good
110	208	24	7	6	1	Good
111	209	24	10	3	1	Good
112	211	24	10	2	2	Fair
113	26	24	7	2	2	Fair
114	210	24	6	2	0	New
115	135	25	13	2	4	Fair
116	136	25	10	3	0	New
117	133	25	13	1	1	Fair
118	84	26	15	3	4	Fair
119	82	26	13	3	4	Fair
120	83	26	10	5	3	Good
121	85	26	7	5	2	Good
122	81	26	9	7	3	Good
123	80	26	6	8	2	Deficient
124	67	27	5	3	3	Fair
125	66	27	3	5	4	Deficient
126	65	27	4	6	2	Deficient
127	113	28	9	4	1	Good
128	114	28	21	4	0	New
129	116	28	6	2	1	Good
130	117	28	7	3	0	New
131	119	28	10	3	3	Fair
132	120	28	9	3	1	Good
133	131	29	13	7	6	Good
134	129	29	12	0	4	Fair
135	128	29	13	6	1	Good
136	60	30	4	4	4	Deficient

137	61	30	5	2	4	Fair
138	63	30	4	4	4	Deficient
139	62	30	4	2	5	Fair
140	16	30	4	2	6	Fair
141	74	31	3	5	4	Deficient
142	73	31	4	7	1	Fair
143	98	32	4	0	7	Fair
144	95	32	3	0	6	Fair
145	96	32	4	0	4	Fair
146	97	32	3	0	6	Fair
147	122	33	7	10	0	New
148	123	33	5	0	9	Fair
149	121	33	12	9	1	Good
150	126	33	7	9	1	Deficient
151	196	34	14	1	0	New
152	197	34	7	3	1	Good
153	198	34	4	0	2	Fair
154	199	34	7	3	1	Good
155	200	34	16	3	1	Good
156	159	35	9	1	9	Fair
157	160	35	16	2	7	Fair
158	161	35	11	5	1	Good
159	258	35	20	5	0	New
160	254	36	13	1	2	Fair
161	255	36	20	4	1	Good
162	253	36	4	2	8	Fair
163	256	36	10	12	0	New
164	252	36	8	3	3	Fair
165	221	37	5	5	4	Deficient
166	220	37	5	11	1	Fair
167	139	38	5	10	1	Deficient
168	137	38	5	5	5	Good
169	138	38	4	5	2	Fair
170	166	39	3	1	1	Fair

171	164	39	4	2	5	Fair
172	142	40	4	2	4	Fair
173	147	40	4	2	8	Fair
174	143	40	3	1	7	Fair
175	145	40	4	2	4	Fair
176	141	40	4	2	3	Fair
177	250	41	4	2	8	Fair
178	251	41	8	8	1	Deficient
179	263	42	22	2	0	New
180	262	42	21	8	0	New
181	265	42	4	0	7	Fair
182	264	42	11	10	0	New
183	224	43	4	0	7	Fair
184	225	43	4	0	5	Fair
185	223	43	4	2	5	Fair
186	222	43	4	0	9	Fair
187	175	44	6	0	5	Fair
188	174	44	2	1	4	Fair
189	176	44	5	1	9	Fair
190	177	44	3	0	6	Fair
191	159	45	6	0	6	Fair
192	161	45	3	0	3	Fair
193	162	45	3	0	5	Fair
194	92	46	3	0	7	Fair
195	91	46	4	0	5	Fair
196	93	46	5	2	3	Fair
197	90	46	4	2	4	Fair
198	88	46	5	0	7	Fair
199	37	46	4	1	6	Fair
200	89	46	4	0	7	Fair
201	160	46	4	0	4	Fair
202	86	47	4	0	6	Fair
203	34	47	4	0	7	Fair
204	87	47	3	0	7	Fair
Total			**1800**	**900**	**524**	**GOOD**

The overall regeneration status of Northern RF is GOOD.

Status of Regeneration of Taleipathar RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	421	1	7	14	0	New
2	6	1	23	3	2	Good
3	420	1	7	7	7	Fair
4	419	1	7	1	9	Fair
5	407	2	4	7	4	Good
6	408	2	5	9	4	Good
7	406	2	7	6	5	Good
8	390	3	14	15	3	Fair
9	375	4	9	9	4	Good
10	376	4	15	5	7	Fair
11	17	4	10	3	4	Fair
12	374	4	13	4	14	Fair
13	368	5	12	8	4	Good
14	367	5	11	6	4	Good
15	369	5	6	2	6	Fair
16	369	5	9	5	7	Fair
17	13	5	12	10	4	Good
18	357	6	3	1	2	Fair
19	5	6	4	6	0	New
20	9	7	8	7	0	New
21	360	7	16	11	0	New
22	358	7	13	8	0	New
23	359	7	17	11	0	New
24	362	8	15	8	0	New
25	364	8	19	17	0	New
26	365	8	12	9	0	New
27	363	8	34	19	0	New
28	355	9	9	5	0	New
29	395	9	8	1	11	Fair
30	401	9	5	5	4	Deficient
31	400	9	8	0	13	Fair
32	405	10	5	3	7	Fair
33	398	11	1	2	0	New
34	399	11	13	4	8	Fair
35	397	11	9	2	10	Fair
36	423	12	10	4	9	Fair
37	412	13	5	0	10	Fair
38	414	13	4	0	7	Fair
39	413	13	5	6	5	Good
40	410	13	5	0	10	Fair

41	411	13	8	14	2	Good
42	415	13	4	0	9	Fair
43	381	14	8	2	6	Fair
44	378	14	6	1	10	Fair
45	382	14	13	14	2	Fair
46	379	14	12	11	0	New
47	380	14	17	5	9	Fair
48	377	14	8	6	6	Fair
49	384	15	13	11	5	Good
50	386	15	15	10	6	Good
51	385	15	6		10	Fair
52	428	16	9	13	3	Fair
53	425	16	8	8	0	New
54	426	16	11	8	0	New
55	429	17	8	7	1	Good
56	430	17	8	6	1	Good
57	444	18	11	11	2	Good
58	443	18	3	2	2	Fair
59	446	19	12	10	2	Good
60	445	19	10	9	2	Good
61	350	19	12	11	3	Good
62	448	19	12	13	5	Fair
63	449	19	14	13	2	Good
64	447	19	17	12	2	Good
65	457	20	35	14	3	Good
66	456	20	9	4	2	Good
67	458	20	9	5	6	Fair
68	431	21	12	15	2	Fair
69	432	21	2	1	0	New
70	416	22	15	10	6	Good
71	417	22	15	10	6	Good
72	418	22	12	4	6	Fair
73	435	23	5	4	10	Fair
74	436	23	16	4	9	Fair
75	434	23	10	10	4	Fair
76	440	24	1	0	9	Fair
77	442	24	7	12	0	New
Total			**792**	**533**	**337**	**GOOD**

The overall regeneration status of Taleipathar RF is GOOD.

Status of Regeneration of Handapa RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	279	1	9	7	1	Good
2	30	1	0	0	0	No
3	276	2	30	2	2	Fair
4	277	2	15	4	4	Fair
5	35	3	10	9	1	Good
6	36	3	6	7	1	Deficient
7	281	3	13	8	0	New
8	278	1	0	0	0	No
9	283	4	28	2	5	Fair
10	284	4	23	7	8	Fair
11	285	4	11	10	0	New
12	286	4	12	6	1	Good
13	292	5	13	2	4	Fair
14	293	5	11	7	0	New
15	295	5	9	7	1	Good
16	296	6	4	4	6	Deficient
17	297	6	8	6	2	Good
18	298	6	3	4	3	Deficient
19	288	7	9	6	1	Good
20	289	7	9	5	1	Good
21	290	7	13	8	1	Good
22	291	7	10	7	1	Good
		TOTAL	**246**	**118**	**43**	**GOOD**

The overall regeneration status of Handapa RF is GOOD.

Status of Regeneration of Guja RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	10	---	9	6	5	Good
2	302	---	10	8	5	Good
3	303	---	11	8	5	Good
4	305	---	10	9	1	Good
		TOTAL	**40**	**31**	**16**	**Good**

Status of Regeneration of Bijamaliha RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	308	----	3	6	0	New
2	309	----	5	6	0	New
3	310	----	5	3	3	Fair
		TOTAL	**13**	**15**	**3**	**FAIR**

The overall regeneration status of Guja RF is GOOD

The overall regeneration status of Bijamaliha RF is FAIR.

Status of Regeneration of Kholadangiani RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	299	1	4	2	4	**FAIR**
Status of Regeneration of Kadalimunda RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	11	----	5	3	5	Fair
2	306	----	6	4	4	Fair
		TOTAL	**11**	**7**	**9**	**FAIR**

The overall regeneration status of Kadalimunda RF is FAIR.

Status of Regeneration of Bindhyabasini RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	39	----	8	7	1	Good
2	207	----	6	11	3	Fair
3	228	----	5	6	5	Fair
4	229	----	8	7	3	Good
5	230	----	8	11	2	Fair
		TOTAL	**35**	**42**	**14**	**Deficient**

The overall regeneration status of Bindhyabasini RF is Deficient.

Status of Regeneration of West Baruni RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	311	1	1	0	3	Fair
2	312	2	4	5	1	Deficient
3	313	2	4	9	1	Deficient
4	314	2	9	8	0	New
5	319	3	8	9	2	Fair
6	320	3	12	13	1	Fair
		TOTAL	**38**	**44**	**8**	**Deficient**

The overall regeneration status of West Baruni RF is Deficient.

The overall regeneration status of East Baruni RF is GOOD.

Status of Regeneration of East Baruni RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	2	2	7	6	0	New
2	21	6	35	6	4	Good
3	29	4	33	4	3	Good
4	40	2	9	2	7	Fair
5	316	7	21	2	5	Fair
6	317	7	30	1	4	Fair
7	322	5	23	4	6	Fair
8	326	6	30	4	4	Fair
9	332	4	27	1	4	Fair
10	335	3	7	5	1	Good
11	336	3	9	3	2	Good
12	337	3	7	4	1	Good
13	339	3	21	2	3	Fair
14	347	1	16	6	3	Good
15	348	1	8	5	3	Good
16	349	1	4	5	0	New
17	351	1	10	5	2	Good
18	352	2	8	5	2	Good
		TOTAL	**305**	**70**	**54**	**GOOD**

Status of Regeneration of Kutulsingha RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	511	1	13	5	5	Fair
2	12	2	13	8	5	Good
3	24	3	13	4	5	Fair
4	451	3	18	4	6	Fair
5	468	3	25	4	6	Fair
6	452	4	30	7	5	Good
7	28	4	43	6	6	Fair
8	454	4	23	3	7	Fair
9	332	4	2	0	0	Fair
11	438	6	0	10	0	Poor
12	439	6	0	6	0	Poor
13	38	7	0	8	0	Poor
		TOTAL	**180**	**65**	**45**	**GOOD**

The overall regeneration status of Kutulsingha RF is GOOD

Status of Regeneration of Bankimundi RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	327	1	3	2	2	Fair
2	19	2	10	10	1	Fair
3	342	3	10	7	3	Good
		TOTAL	**23**	**19**	**6**	**GOOD**

The overall regeneration status of Bankimundi RF is GOOD.

Status of Regeneration of Kusumkhuri RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	639	2	15	6	6	Fair
2	640	2	9	3	6	Fair
		TOTAL	**24**	**9**	**12**	**FAIR**

The overall regeneration status of Kusumkhuri RF is FAIR.

Status of Regeneration of Mahendrapur RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	479	1	13	9	5	Good
2	481	1	18	5	8	Fair
3	483		6	7	5	Fair
		TOTAL	**37**	**21**	**18**	**GOOD**

The overall regeneration status of Mahendrapur RF is GOOD.

Status of Regeneration of Ghosar RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	3	2	0	0	0	No
2	7	2	7	8	0	New
3	300	3	0	0	0	No
4	301	1	4	9	0	New
		TOTAL	**11**	**17**	**0**	**New**

The overall regeneration status of Ghosar RF is NEW.

Status of Regeneration of Nuagaon RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	395	1	5	6	3	Deficient
2	32	1	4	7	1	Deficient
3	392	1	7	3	0	New
4	393	1	7	1	3	Fair
5	394	1	4	4	1	Deficient
6	402	2	4	3	3	Fair
7	403	2	4	4	3	Deficient
8	404	2	6	5	2	Good
9	378	3	5	7	1	Deficient
10	388	3	3	4	1	Deficient
11	389	3	5	8	6	Fair
12	366	5	6	3	1	Good
13	370	4	5	3	2	Good
14	372	4	6	5	3	Good
15	371	4	5	4	1	Good
TOTAL			76	67	31	GOOD

The overall regeneration status of Nuagaon RF is GOOD.

Status of Regeneration of Dantarikhol RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	343	2	0	8	2	Poor
2	344	2	6	6	4	Deficient
3	345	2	7	8	7	Fair
4	348	2	6	6	6	Fair
5	333	3	0	6	2	Poor
6	334	3	0	6	3	Poor
7	23	4	6	6	4	Deficient
8	455	5	14	2	7	Fair
9	329	6	7	4	4	Fair
10	330	6	4	6	4	Deficient
11	323	7	7	10	5	Fair
12	324	7	6	8	5	Fair
13	325	7	7	7	4	Fair
14	328	8	6	9	3	Fair
		TOTAL	**76**	**92**	**60**	**Deficient**

The overall regeneration status of Dantarikhol RF is DEFICIENT

4.2 Area affected by forest fire

4.2.1 Ground fire is most commonly observed in most of the forest blocks. Every year the forest floor is burnt two to three times during February to May. It is the greatest threat to the forest of this division. The forest floor is filled with thick dry leaf litter in summer and it becomes inflammable. Mainly forest fire is induced by man and restricted to the ground surface. The worst fire affected blocks are Talaipathar, East Baruni and West Baruni, Kuber Hills, Mangalpur, Susab, Batipuranapani, etc. Based on the information collected locally and the field observations the forest blocks are divided into three categories on the basis of intensity of fire, as High, Moderate and Fair. The details are given in **Table No: 4.2**

Table: 4.2 Extent of Forest Fire in different Forest Blocks

S.No.	Forest Block	Degree of Fire		
		High	Moderate	Fair
Reserved Forest Blocks				
1	Kusum kuhuri			?
2	Talaipathar	?		
3	Mahendrapur		?	
4	Kutulsingha		?	
5	Dantarikhol			?
6	East Baruni	?		
7	West Baruni	?		
8	Nuagan		?	
9	Northern		?	
10	Handapa		?	
11	Dandarugudi			?
12	Kholdangiani			?
13	Kadalim unda			?
14	Bankimundi			?
15	Bindhyabasini			?
16	Kishoreban		?	
17	Ghosar			?
18	Guja		?	
19	Bijam alhia			?
Protected Forest Blocks				
20	Kuber Hill	?		
21	Thakurgarh			?
22	Pitabalibahal			?
23	Rampur			?
24	Purunapani		?	
25	Muchhapur 'A'		?	
26	Muchhapur 'B'		?	
27	Mangalpur	?		
28	Gundurijharan		?	
29	Kuturukani		?	
30	Solanda			?
31	Berham		?	
32	Susaba	?		
33	Bhangam unda		?	
34	Digi			?
35	Batipurunapani	?		
36	Tileswar			?
37	Tulusipur			?
38	Bajpur		?	

4.2.2 Causes of Forest Fire

Major causes of fire in this division are:

(1)Collectors of Kendu leaf set fire to increase the quality of leaves.

(2)Collectors of Sal seed, Mahua flower set fire to clear the ground for collection.

(3) People of adjoining villages set fire to prevent the movement of elephant into the villages.

(4) Graziers put fire to induce the growth of new grass.

(5) Fire is also resorted to when encroachments are made

(6) Sometimes it is set unintentionally through bidi and cigarette stubs by the people while walking in the forest.

(7) Some people set fire to get ashes to their crop field through run off water.

During the preparation of current working plan :an assessment of fire incidences has been conducted. Accordingly, three categories of fire prone areas are identified; the details of which is furnished in**Table No. 4.3.** as below.

Table No. 4.3 List of Fire Prone Areas

Sl. No.	Name of the Range	Highly Fire Prone area	Moderately Fire Prone area	Less Fire Porne area
1		a) Taleipathar RF	a)Taleipathar RF	a)Taleipathar RF
		Compartment no 18 & 19.	Compartment No	Compartment No
		b) Kuber DPF.	16,17 &20.	21
			b)Mahendrapur RF comp.no. 1	b)Kusumkhuri RF, comp no.1 & 3.
			c)Kusumkhuri RF comp.no.2	c) Mahendrapur K.F
			d)Titigaon KF	d)Jadupur KF
			e) Sugripali KF	e) Sidhapur KF
			f) Pataka KF	
			g) Rangapur KF	
2	Dhandatopa	a) Taleipathar RF	a)Taleipathar RF	Rampur DPF,
	Range	Compartment no 1,22,23.	Compartment No	Dhandatopa,Sadanandapur,Hatasimili,Gopalpur,Siarimaliha,Mamurijharan,Bandhagaon,Ghanajodi,Tumurisingha KF
		b) Kutulsingha RF	2 & 3..	
		comp . no. 1,2,3 & 4	b)Pitabalibahal DPF	
		Dantarikhol RF	Kantapada KF,Bhaliadhara KF,Somnathpur KF,Pokunda KF,Talabahali,Jaypur, Khamar, Bhagamunda KFs	
		Comp. no. 3 & 4..		

3	Madhapur	a) Taleipathar RF	a)Nuagaon RF	Nuagaon KF
	Range	Compartment no 5,6,7,8,9,10 & 12.	CompartmentNo.	Chandrapur KF
		b) Nuagaon RF	3 & 4.	Sankhamal KF
		Compartment no 1,2 & 5.	b) East Baruni RF	Dekrud KF
		c) East Baruni RF	comp no 2 & 3.	Raniakata KF
		comp no 4,5,6 & 7.	c) Wast Baruni RF	Manarbeda KF
		Mangalpur& Muchhapur DPF.	comp no 1,2 & 3.	Digipadar KF
			d) Purunapani DPF	
			Patrapada,Bijipur, Nimitri,Bhoipada &	
			Kiakata KF.	
			Kantapada KF,Bhaliadhara KF,Somnathpur KF,Pokunda KF,Talabahali,Jaypur, Khamar, Bhagamunda KFs	

4	Handapa	a) Handapa RF	a)NorthernRF	Solanda DPF
	Range	Compartment no 1,2,3,4,5,6 &7.	CompartmentNo.	Batipurunapani DPF
		b) NorthernRF	28,29,30,31,32	Chakundamunda KF
		Compartment no 15,18,19,20,21,22,23,24,25,26,27,34,35,36 ,39,40,41,42,43,44,45, 46,47	b) Kuturikani DPF	Banapat KF
		c) Bankimundi RF	c)Kholadangiani RF	Batrakhol KF
		comp no 1,2,3.	d) Berham DPF	
		d) Dantarikhol RF	e) Tileswar DPF	
		Comp. No. 1,2,4,5,6,7,8,	Bidisingh, Ichhapur, Kundadar,Kundali,Hinjirida,Charkhaman,Gundurijharan,Rajanpal,Berham,Rainali,Hemamura & Garuda KFs.	
		e)Kadalimunda RF		
		f) Dandarugudi RF		
		g)Gundurijharan DPF		
		Baliamba & Handapa KF.		
5	Bamur	a) NorthernRF	a)NorthernRF	Northern RF comp no. 12.
	Range	Compartment no 14	CompartmentNo.	Ghosar RF
		b) Bijamaliha RF	1,2,3,4,5,6,7,8,9,10,11, 13,16 & 17.	Tulasipur DPF
		c) Kishoreban RF	b) East Baruni RF	Bajpur DPF
		d)Susab DPF	comp. no. 1 & 4.	Digi DPF
			c)Guja RF	Phuljhari DPF
			d)Bindhyabasini RF	Bhangamunda DPF

Areas affected with fire during the period of 2006 to 2014 is furnished in **Table. No. 4.4** as below.

Table: 4.4 AREA AFFECTED BY FOREST FIRE

Year / Session	Number of beat / compartment affected	Frequency of fires (no. of fire incidences in a season / year)	Total Forest area affected (Ha.)	Fire sensitive blocks	Trend to the last assessment year / season
1	2	3	4	5	6
2006	2 nos Beat / 4 Compt.	4	2.5	Handapa Northern RF Kishorbana	Moderate
2007	3 nos Beat / 3 Compt.	3	2	Handapa Northern RF Taleipathra Kishorbana	Moderate
2008	1 no Beat / 2 Compt.	2	1.5	Taleipathar Northern RF Handapa	Moderate
2009	1 no Beat / 2 Compt.	2	1	Handapa Northern RF Kishorbana	Moderate
2010	Nil	0	0	Nil	Nil
2011	1 no Beat / 1 Compt.	1	0.5	Hatidhara RF Taleipathra	Moderate
2012	10 nos Beat / 12 Compt.	12	10.5	Hatidhara RF Taleipathra Northern RF Bankimundi	Moderate
2013	8 nos Beat / 11 Compt.	11	8.5	Northern RF East Bareni	Moderate
2014	18 nos Beat / 30 Compt.	30	20.5	Hatidhra Taleipathara Nuagoan Northern RF	Moderate
2015	2 nos beat / 4 Compt.	4	3.25	Handapa Northern RF Kishoreban	Moderate
2016	30 nos beat / 35 Compt.	32	185.4	Hatidhara RF Kumumkuhuri RF Datarikhol RF Kutulisinga RF Taleipathar RF East Baruni RF West Baruni RF Northern RF	Moderate
2017	41 nos beat / 45 Compt.	461	82.38	Hatidhara RF Kumumkuhuri RF Datarikhol RF Kutulisinga RF Taleipathar RF East Baruni RF West Baruni RF Northern RF	Moderate
2018	45 nos beat / 88 Compt.	652	160.11	Hatidhara RF Kumumkuhuri RF Mahendrapur RF Datarikhol RF Kutulisinga RF Taleipathar RF East Baruni RF West Baruni RF Northern RF	Moderate
2019	45 nos beat / 94 Compt.	170	26	Hatidhara RF Kumumkuhuri RF	Moderate

4.2.3 Damages caused by Fire

The consequences of forest fire are disastrous. It adversely affects the regeneration of seedlings. The effect is more on Sal because of dying back phenomenon of Sal. The fire results in degradation of forests, loss of soil fertility and accelerates soil erosion. The timber quality is also affected, with the repeated fires the timber develops hollowness and gets deteriorated. Such fire, if spreads to bamboo forests devastates the clumps. Fire destroys the organic elements and micro fauna in the soil and impoverishes its nutrient content. Repeated fire in the Dry Deciduous Forests causes retrogression of the vegetation towards a more xerophytic condition. It causes imbalance in the entire ecosystem. Some adverse effects of forest fire are listed below:

(1) Loss of Regeneration

(2) Loss of Water content and productivity of soil

(3) Increases Soil Erosion

(4) It affects microflora and fauna adversely.

(5) It reduces the nutrient content of the soil

(6) It affects the seed capacity

(7) It has an adverse effect on insects, amphibians and reptiles.

(8) It effects the migration, nesting behaviour, habitat shrinkage of birds. Also effects the pollination and dispersal done by the birds.

(9) It effects the movement of animals, also effect the corridors, habitat for the bigger animals.

(10) Fire results in entry of intrusive species like Lantana, Eupatorium etc.

4.2.4 Tackling Forest Fire

In the past the amount spent on fire protection is very meager, on an average Rs.25, 000/- is spent annually and it is the not possible to mitigate the forest fire with this kind of low investments. In some cases the areas are inaccessible and timely mitigation steps could not be taken up. It is a gigantic task to educate the people of the surrounding villages and seek their help in kindling the forest fires. At present the allotment has increased manifold and Govt. has taken intensive attention to control the forest fire. Fire lines are maintained every year. For the purpose fire fighting squads are being deployed from January to June every year with provision of vehicle for mobility with one squad in each Range. Awareness programme are organized in & around forest ares, VSS/EDCs are motivated for control of the fire. There is also provision made by the govt. for payment of incentives to the VSS/EDc and forest fringe villagers for control of fire. Control room is operated round the clock during summer season in the Division and Range level for monitoring and immediate action to tackle it. The adequate allotment along with existing interventions need to be continued to curb the fire incidences.

4.3 Area damaged by natural calamities

The division is not much susceptible to flood, frost or erosion. Drought is also not a serious problem. Neverthe less, it has an effect on the forest. It results in top drying of the trees in many forests like Nuagan, East & West baruni, etc. However, as per records, the great famine had occurred in the division in1899 – 1900 and after that famine was not seen. Minor floods was a common phenomenon in the riverian tract especially in Mahanadi, the major floods has become rare after the construction of Hirakud Dam. However most of the streams remain in spate throughout the rains. The floods cause severe impact on the forests. Of late, major floods occurred in July 2001 and in these floods many trees were uprooted. In Hatidhara RF nearly 2261 trees were uprooted, timber to the tune of 241.6 cu mt and 485 stacks of firewood were salvaged from this RF. In Talaipathar RF 2630 trees were uprooted and 96.07 cu mt timber and 296 stacks of firewood were salvaged. Apart from uprooting of trees, lot of soil erosion along the slopes occurred leaving the pebbles, boulders and rocks exposed. The Division was affected with cyclone during the year 2012 & 2013.

TABLE NO, 4.5 The extent of cyclone damage during 2012 & 2013				
Range	**No. of Trees**	**Timber (cum)**	**Poles (no)**	**Firewood (cft)**
Madhpur	57	-----		18
Bamur	1587	474.789	196	216
Athmallik	2209	143.3208		36
Dhandatopa	341	97.85		46
Handapa				
Total	**5256**	**1069.4208**	196	**422**

4.4 Area protected from grazing

4.4.1 Grazing effect:

Severe damage is caused to the forest area due to uncontrolled grazing by domestic animals. Like human population, the population of the domestic animals has also increased over the years causing pressure on the forest. It is observed that large herds of cattle, buffallows, goats and sheep are kept by the villagers for their domestic requirements. The uncontrolled grazing and browsing in the forest area causes severe damage to the forest vegetation. Excessive grazing is also one of the factors affecting adversely natural regeneration and establishment of seedlings of Sal and others species. In some of the forest areas adjacent to the human habitations, uncontrolled and excessive grazing has led to the replacement of mesophytic flora by relatively more xerophytic, dry and thorny types of vegetation. In some places it has exposed forest floor and made it prone to soil erosion. The herbivores are unable to get sufficient food in forest. Grazing also causes irreparable harm to the young seedlings. The goat causes harm by eating even the unpalatable and thorny species. The ground becomes hard because of trampling and is detrimental to the regeneration of forest species. Grazing increases the rate of degradation of the forests. In Athmallik division the grazing in the division is a problem to the forests adjoining to the villages and also more on Northern RF. In rest of the blocks it is not a serious problem. There are vegetations outside the forest blocks which is having palatable species. They also meet the grazing requirements to a large extent. Beside that, there are palatable species found in the govt land and crop land which are used by the livestocks for grazing. The survey conducted during socio-economic assessment is furnished in a separate chapter named" Socio-economic assessment" In view of the above, the regulation of the grazing is not warrated.

4.4.2 Live stock population: The domestic animals (cattle, buffalo, sheep and goat) population of Athmallik sub-division of Angul district is 2, 17,949. The damage done by the domestic animals is far more than wild animals. There is no concept of stall-feeding and the usual practice followed is mass grazing. The silvipasture plantation attempts made by various plantation agencies have not succeeded. The details of Livestock population is furnished in **TABLE 4.6.**

TABLE.4.6 Domestic population of Athmallik Sub-Division			
CATEGORY	**Athamallik Block**	**Kishorenagar Block**	**Total**
Cattle(Indigenous)	60697	55812	116509
Cattle(breed)	2796	1285	4081
Buffaloes	4319	2458	6777
Goat	36853	23568	60421
Sheep	18306	11855	30161
Sources – CHIEF DISTRICT VETERINARY OFFICER,ANGUL			

4.5 Lopping practices.

Lopping practices for collection of fodder is not practiced in this division area. However there are practices of lopping for collection NTFP like Tamarind, Tulo (Mahul seed), Char, Kendu, Sal seeds, Harida, Bahada, Anla etc. This is not in large scale as these are not collected for commercial purposes.

4.6 Area infested by Climbers and invasive weed species in forests

4.6.1 The most common climbers found in the forests of this division are *Combretum decandrum* (Atundi), *Milletia extensa* (Arkala), *Bauhinia vahlii* (Siali), *Butea superba* (Noipalas), *Butea parviflora* (Lata Palas), etc. The climbers are mostly seen in Bindhyabasini, Northern RF Compartment No.12. In Talaipathar Siali fibre is commonly seen.

4.6.2 Weeds compete for food and light and chokes valuable plants particularly the young ones. *Eupatorium* and *Lantana* are the common weeds in the forests. Nevertheless, it is not a serious problem in this division.

4.7 Incidences of pest and diseases

4.7.1 Diseases caused by Fungus and Parasites

Many fungi and parasites have been found to affect adversely the forest crop. Some of them are:

(i) *Loranthus scurrula*

It mainly attacks Sal poles, it does not cause the mortality in Sal but is believed to be responsible for the unsoundness of the host trees. It is also seen in Chara and Mahula trees.

(ii) *Fomes fastuosus*

It causes heart rot of Sal in the butt region. In the early stages the heartwood shows dark brown strains in patches that develop into small pockets. In the advanced stages these pockets are filled up with white decayed fiber that disintegrates in the later stages when these pockets appear empty and brown. Generally it infects the trees through injury principally caused by fire and coppicing. It also attacks associates of Sal.

(iii) *Fomes caryophylli*

It causes heart rot of Sal. In the early stages it Staines slightly dark to brown. In the advanced stages the decayed wood becomes spongy and the fungus moves through the sound sapwood in to the bark in the form of pink knots. The bark is gradually shed off in the form of an eye. It is commonly known as 'Sambar Akhie' or Ganji because pink knots look like the eyes of Samar/ Deer. It is commonly seen in Northern and Talaipathar RF.

4.7.2 Insects

The damage due to borers, defoliators and termites is quite wide spread, but it is not of serious magnitude. The extent of damage is not quantified. Some of the harmful insects are:

(i) *Hoplocerambyx spinicornis*

This Sal heartwood borer attacks unbarked logs of Sal particularly during rains. It also attacks Sal trees in poor dry type of forests.

(ii) *Hapalia machaeralis (Teak skeletoniser)*

This causes damage to the teak leaves. They attack more in the months of September and October.

(iii) Hyblea pleura (Teak defoliator)

It causes damage to the teak leaves in natural teak and plantation.

(iv) The other insect attacks are of Batocera rufomaculata, seen sporadically damages young Semal (Bombax ceiba) by tunneling and destroying the growing shoots. Termites are a menace in plantations - especially Eucalyptus plantations - and in the timber depots. In addition, Bamboo weevil Cytotrachelus longipes and Estigueno chinensis damages new bamboo culms by tunneling the nodes.

4.8 Forest degradation and its drivers

4.8.1 Grazing

Grazing increases the rate of degradation of the forests. In Athmallik division the grazing in the division is a problem to the forests adjoining to the villages and also more on Northern RF. In rest of the blocks it is not a serious problem.

4.8.2 Mining & Industry.

In this division there is almost no mining activity at all. Similarly no industry is there in the area excepting few cottage industries like bamboo basket making, small furniture which has hardly any effect on the forest.

4.8.3 Encroachments

4.8.3.1 This is not a very serious problem in this division barring few blocks. Some of the encroachments were done long back i.e. before 1980 and some are done after 1980. Mostly encroachments are either for homestead or agriculture purposes. Problem of podu cultivation is not acute in the division. There are small patches of Khesra Forests also encroached, many offence cases have been initiated against the encroachers and the cases are pending in court of law.

4.8.3.2 In the process of reconnaissance survey of the different forest blocks, the approximate extent of area encroached is assessed and this assessment is purely occular, needs to be correlated by proper demarcation in the field. This has already been reflected in Chapter 2.4.

4.8.3.3 There are 19 scheduled caste families occupying an area of 0.3078 ha of Khesra forest in the Pullerwar village and they are identified as eligible encroachments for settlement by Government of Orissa and a proposal under Forest (Conservation) Act, 1980 has been sent to Government of India in the year 2000. The details of Pre-80 and post 80 encroachments furnished by the D.F.O Athamallik are given in **TABLE NO. 4.7 & 4.8** respectively. Before 1980, nearly 152 families encroached an area of 39.5452 ha of forest and after 1980 nearly 223 families encroached an area of 32.3422 ha of forest in different Reserved and Khesra Forest blocks. For eviction of encroachments, 38 cases are filed in the court and the final judgment has not come even in one case.

Table: 4.7 DETAILS OF PRE-80 ENCROACHMENTS					
Range	**Name of Forest**	**Name of Village**	**No. Of Families**	**Purpose**	**Area in Ha**
Athamallik	Puleswar KF	Puleswar	28	Homestead	0.4536
Madhapur	Gadadharpur KF	Gadadharpur	8	-do-	0.1296
	Hatuapada KF	Hatuapada	21	-do-	0.3411
Dhandatopa	Kutulsingha RF	Kutulsingha	8	-do-	11.7968
Bamur	Ghosar RF	Ghosar	23	-do-	25.4957
	Chelikhai KF	Chelikhai	4	-do-	0.0648
	Badabahal RF	Badabahal	2	-do-	0.324
	Brahmanipal KF	Brahmanipal	14	-do-	0.2268
	Kamalkata KF	Kamalkata	1	-do-	0.0162
Handapa	Ichhapur KF	Ichhapur	5	-do-	0.081
	Kundali KF	Kundali	7	-do-	0.1134
	Nuakholruguda KF	Nuakholruguda	6	-do-	0.0972
	Cherkhaman KF	Cherkhaman	11	-do-	0.1782
	Arjundham KF	Arjundham	5	-do-	0.081
	Nua Balikhaman KF	Nua Balikhaman	3	-do-	0.0486
	Chandrabahal KF	Chandrabahal	5	-do-	0.081
	Karadabahali KF	Karadabahali	1	-do-	0.0162
Total			152		**39.5452**
Source: DFO, Athamallik					

Table: 4.8 DETAILS OF POST- 80 ENCROACHMENTS			
Range	**Name of Forest**	**No. of Families**	**Area in Ha**
Athamallik	Kusumkuhuri R	40	2.6912
Madhapur	Talaipathar RF	1	0.5099
	Ghosrakhola KF	20	1.6027
Dhandatopa	Kutulsingha RF	34	13.7596
	Hinjagola KF	13	0.1993
	Aida KF	25	1.6023
	Girida KF	16	0.4012
	Adeswar KF	19	2.0197
	Chintamanipur I	27	2.4757
	Bhuasuninali KI	9	0.4049
Handapa	Northern RF	3	0.5997
	Handapa R.F	2	0.314
Bamur	Ghosar R.F	14	5.762
Total		**223**	**32.3422**
Source: DFO, Athamallik			

4.8.4 Illicit felling

4.8.4.1 Exploring human population is the main cause of degradation of forest resources. The decennial growth rate (1991 - 01) of population of Angul District is 18.55% and the density of the population is 179 persons per square km. The decennial growth rate (2001-11) of population of Angul District is 13.33% and the density of the population is 198 persons per square km. Human being is responsible for the illicit felling, encroachment, fire and even soil erosion. Increasing industrialization in Angul district has its effect on the forest of Athamallik division. As such the demands of the local people for their bonafide requirement is met from the forest. However, with the coming up of industries like NALCO, MCL, Jindal Steels and other companies, there is an increase in population and urbanization. This has resulted in lot of demand for timber. Since Athamallik division has good forest and the adjoining divisions forests have depleted, more pressure is on the forests of the division. Also there is lot of demand for firewood, small timber from people of Boudh. The people come in hundreds everyday and cut the trees from East and West Baruni, Muchhapur 'A' and 'B', Guja blocks etc. This has degraded once 'selection forests' to an 'open forest'. It is not that the action of human agency is always deliberate. The demand for firewood is the compelling need of the local population in absence of other alternative sources of energy. The supply of firewood by the OFDC is very meager as compared to the demand of the population. This large gap is met from the forest. Rural poor, most particularly, womenfolk earn their livelihood by selling the firewood fetched from forests. This has resulted in the removal of even pole crops from the degraded forests and sound trees from the good forests. The agriculture is providing livelihood only for 4-5 months in a year and in the rest of the time there are no livelihood activities and hence cutting of the forest to meet the day to day requirement has become a common feature. This result in unscientific exploitation of forests rendering the forests degraded. Major illicit felling occurs in teak plantation areas Talaipathar 1, 7,8,24 etc. The details of intensity of illicit felling are furnished in **Table No.4.9.**

TABLE NO 4.9 INTENSITY OF ILLICIT FELLING IN VARIOUS BLOCKS		
Sl No.	**Intensity of Felling**	**Forest Block**
Reserved Forest		
1	High	Talaipathar Compartment No. 7 & 8
2		West Baruni
3	Moderate	Taleipathar Compt. No.9,10 & 12
4		East Baruni
5		Nuagaon
6		Bijamaliha
7		Dantarikhol
8		Hatidhara 32,34,38,43,48,49 & 50
9		Mahendrapur
10	Low	Kutulisinga
11		Northern R.F
12		Kishorebandh
13		Bindhyabasini
14		Guja
15		Ghosar
16		Handapa
17		Dandarugudi
18		Bankimundi
19		Kholadangiani
20		Kadalimunda
21		Kusumkuhuri
22		Taleipathar
P.F Blocks		
23	Moderate	Batipurunapani D.P.F
24		Mucchapur-A
25		Mucchapur-B
26		Mangalapur
27		Kubera hill
28	Low	Gundurijharana
29		Kuturukani
30		Solanda
31		Berham
32		Tileswar
33		Tulasipur
34		Susab
35		Bhangamunda
36		Digi
37		Bajpur
38		Purunapani
39		Thakurgarh
40		Pitabalibahal
41		Rampur

4.8.4.2 The division administration makes all efforts to control illicit felling. Huge number of forest offence cases has been initiated against the culprits. The vehicles involved in the commission of forest offences are also being seized in a large number. In the year 2002-03, 21 motorized vehicles have been seized and this has a great impact in reducing atleast the movement of timber through vehicles. The details of forest offence cases registered are given in **Table No. 4.10 & 4.11.**

TABLE NO. 4.10 OFFENCE CASES BOOKED IN ATHAMALLIK DIVISION

Year	OR cases	UD cases	Timber seized	Persons arrested	Total
1	**2**	**3**	**4**	**5**	**6**
2006-07	1182	399	75.2741 Cum.	47	
2007-08	1384	242	141.0039 Cum	33	
2008-09	1487	330	195.2198 Cum	100	
2009-10	1270	109	255.0445 Cum	47	
2010-11	1672	258	354.8243 Cum	40	
2011-12	1432	260	395.538 Cum.	51	
2012-13	1308	220	440.332 Cum.	20	
2013-14	1372	142	448.457 Cum.	15	
2014-15	1501	113	89.906Cum.	28	
2015-16	1590	190	99.4715Cum.	71	
2016-17	1170	160	717,999	75	
2017-18	1090	111	385,133	76	
2018-19	774	116	766,569	79	
2019-20	806	75	356,692	40	
2020-21	777	93	60.74627 Cum	104	
Total-	**14975**	**2356**	**2555.81737 Cu**	**556**	

Source: DFO, Athamallik

TABLE NO. 4.11 CASES BOOKED AND DISPOSED U/S 56 OF OFA, 1972

Year	No of Cases booked	No of cases disposed off	Balance for disposal
2006-07	16	14	2
2007-08	12	7	5
2008-09	16	5	11
2009-10	15	2	13
2010-11	16	4	12
2011-12	4	1	3
2012-13	14	3	11
2013-14	13	3	10
2014-15	17	1	16
2015-16	11	0	11
2016-17	13	7	6
2017-18	20	9	11
2018-19	10	2	8
2019-20	11		11
2020-21	9	-	9
Total	**197**	**197**	**139**

Source: DFO, Athamallik

4.8.4.3 The forest staff of the division are fighting with the timber smugglers to control the illicit felling.. The details of the assault cases are given in **Table No: 4.12.**

Table: 4.12 DETAILS OF ASSAULT CASES ON FOREST STAFF

Year	Name of staff assau	Name of staff killed
1	**2**	**3**
2006-07	-	Trilochan Pradhan, Forester (Killed by wild elephant)
2007-08	-	-
2008-09	-	-
2009-10	-	-
2010-11	-	-
2013-14		
2011-12	-	-
2012-13	Narendra Ku. Nayak, F.G	-
2016-17	Nil	Nil
2017-18	Nil	Nil
2018-19	Nil	Nil
2019-20	Nil	Nil
2020-21	Nil	Nil

4.8.4.4 Though there are seizures and the staff are fighting against smugglers, the illicit felling is going on. This was not a problem in this division twenty years back. That is why this problem was not given emphasis in the earlier Working Plans. The efforts on protection front needs to be strengthened. For this there are many constraints like lack of infrastructural facilities, lot of vacancies in the base level posts, lack of motivation to the staff, lack of coordination between different departments, lack of fear to the offenders etc. High population pressure, industrialization, lack of alternate livelihood options and lack of substitutes to the wood also contribute for the high rate of illicit felling. Above all, the forest is loosing its valuable trees and there is an ecological imbalance.

4.9 Pollution control and protection of environment

The division is free from any industry, mining activities excepting few cottage industries. Hence the extent of forest degration due to pollution (soil, water & air) is negligible or almost nil.

CHAPTER-5

5.Conservation and maintenance of soil and water resources

5.1 Area treated under Soil and water conservation measures.

5.1.1 Water Resource Management

Water is the most critical limiting factor for many aspects of life, such as economic growth, environmental stability, bio-diversity conservation, food security and health care. Thus, there is a constant need for conservation and management of water throughout the year.Soil is a natural resource with which the existence of the human being is closely associated. It is mantle on the land surface that act as a medium for plant growth. Soil may be defined as a sub aerial natural object at dynamic equilibrium with its environment. Soils are formed by many complex processes of padogenic factors viz climate, relief, organisms, parent materials and time.Since different climatic zones have different characteristics, soils in different regions rejoins interims of regions colors, textures, depth, water reserves and nutrient supplying capacity. Since crop productions depends on the soil characteristics, it becomes mandatory to know about soils in a greater detail. The aim of soil conservation measures is to minimize soil loses for sustainable productivity. Soil loss or soil erosion occurs due to washing or blowing away of the top layer of soil by wind and water.

The loss of soil and water under natural vegetation is the lowest. But lands must be cultivated and grown with crops to produce food. This can be done without much harm to the soil if proper soil and water conservation methods are followed. Such methods aim at encouraging water to filtrate into the soil, reduce its velocity and check runoff losses.

The most common soil and water conservation methods are:

A) Management practice viz.	B) Mechanical Practices such as
a. Strip cropping	a. Bunding
b.Mulching	b. Terracing
c. Crop rotation	c. Gully or nallah control
d. Contour cultivation	d. Control of stream and river banks
e. Planting of grasses for stabilizing bunds	
f. Planting of trees and afforestation	

5.1.2 Soil and water conservation measures.

5,1.2.1 Soil erosion vulnerability assessment:

The entire rehabilitation working circle is being treated for Soil & Moisture Conservation Measures. Extensive area is treated with SMC measures in rehabilitation working circle. In fact all working circle areas are treated under Soil and water conservation measures. This working circle consists of forest areas degraded and eroded in varying degrees. In the outgoing working plan, these areas have been classified into the following two categories.

Category I

It includes the areas where the forest has moderate to good regeneration of many species like Sal, Asan, Chara and Mahula etc. and good rootstock. The hills have gentle or moderate slope and they have considerable extent of plain areas like **Ghosar, Mahendrapur,Bindhyabasini and Bijamalhia,** etc. These areas will generally require some soil and moisture conservation measures.

Category II

It includes those areas where forest growth exists, but the regeneration status of many species is comparatively deficient to fair. They have steep slopes and the extent of hilly area is more in comparison to plain area like in **Kusumkuhuri, Kutulsingha,Dantarikhol , Kadalimunda,East Baruni,West Baruni,** etc. In many places the hills are exposed, and the vegetation is present in the lower contours. These areas often have gaps. Site degradation is more than that of in Category I. These areas shall require intensive soil and moisture conservation measures. The soil nutrient status is generally poor in these areas.Appropriate soil and water conservation measures need to be taken up to reduce the velocity of water flow and to retain the top soil. Accordingly measures like gully plugging, check dams, contour bunds, nallah bunding and vegetation bunds were prescribed.

In Selection WC, area is treated with SMC measures during subsidiary silvicultural operation. There is SMC measures along with plantation work in the Plantation WC. The Protection WC area susceptible to soil erosion is treated with soil & warter conservation measures. The soil & moisture conservation measures adopted in the division are contour

The detail soil and water conservation measures taken in the division during outgoing plan period is furnished in the **Annexure-VII**

5.2 Duration of water flow in the selected seasonal streams

5.2.1 Mahanadi is the major river of this division. There are numerous streams like Karandijhor, Manojhor, Dhandatopa nallah, Chanagorhi nallah. These streams flow towards south and join Mahanadi. Some streams raise in Talaipathar and Hatidhara of which some flow towards Mahanadi and others in Aunli nadi**,** Karandijhor, Manojhor, Dhandatopa nallah, Chanagorhi nallah carry considerable volume of water during the rainy season, but the current is much reduced after winter. In summer most of the nallahs dry up.

5.2.2 Aunli nadi raises in Sureswari parbata in the Northern block drains portions of Rairakhol and Athamallik divisions. It carries greatest flow of water through out the year and caters to the needs of the people in a big way. No periodic monitoring of river flow pattern with reference to annual rainfall is done to show the status of improvements. However the duration of water flow in the selected seasonal streams of the Division present in different forest blocks is given in **Table No: 5.1.**

Table: 5.1 Duration of water flow in the selected seasonal streams				
Name of the Block	**Name of Stream**	**Original from**	**Passes through**	**Duration of water flow**
Kusum Kuhari RF	1) Rathipur nallah	Ridge of Kusum-Kuhuri RF	Kusum Kuhuri RF & Private land	Up to Dec
	2) Gangapani Nallah	Ridge of Hatidhara RF	Kusum Kuhuri RF & Private land	Up to Dec
Mahendrapur RF	1) Kadakia Nallah	Ridge of Talaipathar RF	Mahendrapur RF	Up to Dec
Talaipathar RF	1) Purnapani Nallah	Ridge of Talaipathar RF	Forest of Talaipathar RF and cultivated land of Bharatapur	Up to Dec
	2) Dhandatopa Nallah	Ridge of Hatidhara Talaipathar, Kutulsingha & Thakurgarh D.P.F	It forms the estern natural boundary of Taleipather RF and Western boundary of Hatidhara	Up to Feb.
	3) Ketaki jharan nallah	Ridge of Talaipathar RF	Taleipathar RF and cultivated land of village Bijipur, Kondha pali	Up to Feb.
	4) Kukuda darah nallah	Ridge of Taleipathar RF	Taleipathar RF -20	Perennial
	5) Kuakhol Nallah	Ridge of Taleipathar RF	do	
	6) Tapakhol Nallah		Taleipathar Comp-1	Up to March
	7) Raja basa Nallah		Taleipathar Comp-2	Up to March
	8)Chintamanipur Nallah		Taleipathar Comp-2	Perennial
	9)Rajing Jharan-1		Taleipathar Comp-3	Perennial
	10)Rajing Jharan-2		Taleipathar Comp-3	Up to Dec
	11)Mamurijharan Nallah		Taleipathar Comp-3	Up to Dec
	12)Adeswar Nallah 1 & 2		Taleipathar Comp-3	Up to Dec
	13) Grida Nallah		Taleipathar Comp-4	Up to Dec
	14) Taleipathar Nallah		Taleipathar Comp-22	Perennial
	15) Pathan taila Nallah-1		Taleipathar Comp-23	Up to Dec
	16) Pathan taila Nallah-2		Taleipathar Comp-24	Perennial

	17)Karadabania Nallah		Taleipathar Comp-20 & 21	Up to Apl
	18) Makarchua Nallah		Taleipathar Comp-19	Up to Oct
	19)Maharmunda Nallah		Taleipathar Comp-19	Dried
	20) Khambeswari khol Nala		Taleipathar Comp-19	Up to May
	21) Kaliadara Nallah		Taleipathar Comp-17	Up to Feb
	22) Kukurpita Nallah		Taleipathar Comp-16	Up to Dec
	23) Charbati Nallah		Taleipathar Comp-5	Up to Sept
	24) Bhuasuni Nallah		Taleipathar Comp-5	Up to Aug
	25) Gardari Nallah		Taleipathar Comp-6	Perennial
	26) Chandrabasa Nallah		Taleipathar Comp-6	Up to Sept
	27)Purunapani Nallah		Taleipathar Comp-6	Perennial
	28) Kankarakhai Nallah		Taleipathar Comp-7	Up to Aug
	29) Karadabania Nallah		Taleipathar Comp=7	Up to Sept
	30)Chhachina Nallah		Taleipathar Comp-8	Up to Sept
	31)Kuakhol Nallah		Taleipathar Comp-8	Up to Sept
	32) Ketaki jharan Nallah		Taleipathar Comp-10 &12	Up to Nov
Dantarikhol RF	1) Makarkenda Nallah	Ridge of DantariKhol RF	Dantarikhol RF	Up to Dec.
	2) Pita Khol Nallah	do	do	Up to Dec
	3) Baghumunda Nallah	do	do	Up to Dec
	4) Bada nallah	do	do	Up to Dec
	5) Kumbhatua khol Nallah	do	do	Up to Dec
	6) Katranga Khol nallah	do	do	Up to Dec
	7) Bada Nallah	do	do	Up to Dec
	8) Swain Nallah	do	do	Up to Dec
	9) Majhurbeka Nallah	do	do	Up to Dec
	10) Amba Khol Nallah	do	Dantarikhol Comp-3	Up to Dec
	11) Dengeai Nallah	do and Katada RF of Angul Division	Dantarikhol RF	
	12) Bantul Nallah		Dantarikhol Comp-2	Up to Dec
	13) Jhilimunda Nallah		Dantarikhol RF-4	Perennial

	14) Sanhulla Nallah		Dantarikhol RF-4	Up to Dec
	15) Laxmipur Nallah		Dantarikhol RF-5	Up to Dec
	!6) Batrakhol Nallah		Dantarikhol RF-5	Up to Dec
Kutulsinga RF	1) Jogibandha Nallah	Ridge of Kutulsinga RF	Kutulsinga RF	Up to Dec
	2) Nabing Nallah	do	do	Up to Dec
	3) Somanathpur Nallah	do	do	Up to Dec
	4) Ghanajori Nallah	do	Kutulsingha RF-1,2&7	Up to Dec
	5) Barabankia Nallah	do	do	Up to Dec
	6) Mahantapal Nallah		Kutulsingha RF-3 & 4	Perennial
	7) Jaypur Nallah		Kutulsingha RF-5	Up to Dec
	8) Taleipathar Nallah		Kutulsingha RF-6	Up to Dec
	9) Kutulsingha Nallah		Kutulsingha RF-6	Perennial
Northern RF	1) Sureswari Nallah	Ridge of (Nothern RF)	Bhangamunda D.P.F and adjoining villages	Perennial
	2) Susab Nallah	Ridge of (Northern RF	Northern RF Rangamatia KF and Susab D.P.F	Perennial
	3) Gurujang Nallah	Ridge of (Northern RF	Gurujang KF	Perennial
	4) Jharjhri Nallah	Ridge of Northern RF)	Northern RF Purunapani D.P.F and Nakchi K.F	Perennial
	5) Bada Nallah	Ridge of Northern RF	Northern RF	Perennial
	6) Mochikhol Nallah	Ridge of Northern RF	Do-44 and Gundurijharana K.F	Up to Feb
	7) Takaba Nallah		Northern RF-23	Perennial
	8) Nuabhuin Nallah		Northern RF-15& 22	Perennial
	9) Nakchi Nallah		Northern RF-22&23	Perennial
	10) Khola Nallah		Northern RF-39,40&41	Perennial
	11) Samki Nallah		Northern RF- 41	Up to Feb
	12) Chingudikhai Nallah		Northern RF-42	Up to Feb
	13) Aldra Nallah		Northern RF-42	Up to Feb
			Northern RF-42	
	14) Khandichapa Nallah			Up to Dec

	15) Dehury Nallah	Ridge of Northern RF	Northern RF- Comp No 5,10,11	Perennial
			Northern RF-Comp No	
	16)Aunli Nallah	Ridge of Northern RF	7,8,18,27,30,38.	Perennial
			Northern RF-19 &20	
	17) Udol Nala	.	Northern RF-34.	Perennial
	18) Tatala pani Nala		Northen RF-36	Perennial
	19) Bhanda Nala		Northern RF-47	Up to Oct.
	20) Madlia jhor			Perennial
Handapa RF	1)Jogi bandha Nallah	Northern RF	Handapa RF	Up to Oct
	2) Jharana Nallah		Handapa RF-01	Perennial
	3)Badapola Nallah		Handapa RF	Up to Oct
	4)Bhatkhia Nallah		Handapa RF-02	Perennial
	5)Badpal Nallah		Handapa RF-06	Perennial
	6)Madlia Jora		Handapa RF	Perennial
	7)Kundali Nallah		Handapa RF 44	Up to Sept
	8)Hinjirida-Ghatitala Nallah		Handapa RF-2	Up to Sept
Kholadangiani RF	1) Bada Nallah	Ridge of Khola dangiani RF and adjoining village	Kholadangiani RF	Up to Oct.
	2) Padianali Nallah	do	Budulimunda village	Up to Oct.
	3) Kurum Tapa Nallah	do	Kurum tapa village	Up to October
	4) Kholamunda Nallah	do	Madhapur village	Up to Oct.
Kadalimunda RF	Jamukhol Nallah	Ridge of Kadalimunda RF	Kadalimunda RF and Kadalimunda village	Up to Oct.
Bankimundi RF	Khadal Khola Nallah	Ridge of Bankimundi RF	Bankimundi RF Darabahal village	Up to Oct.
	Jamujhari Nallah		Bankimunda RF	Up to October
	Tentulipathar Nallah		Bankimunda RF	Perennial
Bindyabasini RF	1) Goja khol Nallah	Ridge of Bindyabasini	Bindyabasini RF and cultivated land of Sahajabahali	Up to Oct.
Gundurijharan	1) Tipei Jharana Nallah		Gundurijharan	Up to Oct
DPF	2) Badrikhol Nallah		DPF	Up to Oct
	2) Jamiri Nallah	do	do	Up to Oct.

Kishoreban RF	1) Pendera Khol Nallah	Ridge of Kishoreban RF	Kishoreban RF	Up to Oct.
Guja RF	1) Guapada Nallah	Ridge of Guja	Guja RF	Up to Oct.
	2) Orada Nallah	do	do	Up to Oct.
	3) Banapur Nallah	do	do	Up to Oct.
East Baruni RF	1) Daulatpur Nallah	Ridge of East Baruni RF	Comp No 2	Up to Oct
	2) Digdar Nallah	do	do	Up to Oct.
	3) Mangalpur Nallah	do	Comp No 5	Up to Dec
	4) Patukhol Nallah		Comp No 3 &4	Up to Dec
	5) Rajamunda Nallah		Comp No 3 &4	Up to Dec
	6) Kathabenta Nallah		Comp No 3	Up to Oct
	7) Bandhakata Nallah		Comp No 3	Up to Jan
	8) Jharananali Nallah		Comp No 2	Up to Feb
	9) Batrakhol Nallah		Comp No 5	Up to Oct
	10) Giridikhol Nallah			Up to Oct
	11) Bada Nallah			Up to Oct
	12) Banadurga Nallah			Up to Oct
	13) Rajamatu Nallah		Comp No 7	Up to Feb
	14) Tangrijharan Nallah			Up to Jan
	15) Gilirimundia Nallah			Up to Dec
	16) Bagdulikhol Nallah			Up to Feb
	17) Purunapani Nallah			Up to Apl
	18) Gayapathar Nallah			Up to Dec
	19) Tingachhia Nallah			Up to Dec
	20) Patakhol Nallah			Up to Dec
	21) Bhaktagharkhol Nallah			Up to Dec

West Baruni RF	1)Sankamal Nallah	Ridge of W. Baruni	West Baruni RF Comp No 1	Up to Jan
	2) Madhaiakhol Nallah		Comp No. 1	Up to Dec
	3) Pathanakupa Nallah			Up to Dec
	4) Kanakagada Nallah			Up to Dec
	5)Jhankei Nallah			Up to Mar
	6) Kahirakupa Nallah			Up to Jan
	7)Kankadamaliha Nallah			Up to Feb
	8)Matukhol Nallah		Comp No. 3	Up to Jan
	9) Betera Nallah			Up to Jan
	10)Kusumakhol Nallah			Up to Jan
Nuagaon RF	Lenkeda chhida Nallah	Ridge of Talipathar RF	Taleipathar RF & Nuagaon	Up to Oct.
	Goripaka Nallah		Comp No. 2 &3	Up to Nov
	Laxmanpur Nallah		Comp No 2	Up to Nov
	Sukhakani Nallah		Comp No 1	Up to Nov
	Chandrapur Nallah		Comp No.1	Up to Nov
Kuturukani DPF	Kakarapani Nallah		Kuturukani DPF	Perennial
Patrapada KF	Patrapada Nallah		Patrapada KF	Up to Nov
Manarbeda KF	Manarbeda Nallah		Manarbeda KF	Up to Nov
Kuajhari KF	Urkula Nala		Kuajhari KF	Up to Oct.
Ichhapur KF	Lubamunda Nala		Ichhapur KF	Up to Feb.
	Salonda Nala			Up to Feb.
Madhupur KF			Madhupur KF	Up to Dec.

5.3 Wetlands in Foredst Areas Map

5.3.1 Watersheds:

The river systems of the Division constitute number of watersheds and mini watersheds. The map of Manjore Irrigation project enclosed. The details of watersheds covering different forest blocks is furnished in **Table No: 5.2.** as below.

Table No: 5.2 List of Miniwater sheds covering Forest Areas of Athmallik Forest Division					
MWS CODE	TYPE	AREA IN HA	DISTRICT	BLOCK NAME	MWS AREA IN HA
407010203170101	FOREST	690.66	ANUGUL	ATHAMALLIK	690.66
407010203170102	FOREST	716.94	ANUGUL	ATHAMALLIK	742.14
407010203170103	FOREST	502.14	ANUGUL	ATHAMALLIK	654.03
407010203170201	HILL	26.55	ANUGUL	ATHAMALLIK	689.85
407010203170201	FOREST	94.59	ANUGUL	ATHAMALLIK	689.85
407010203170202	HILL	328.95	ANUGUL	ATHAMALLIK	728.6
407010203170202	FOREST	120.2	ANUGUL	ATHAMALLIK	728.6
407010203180101	FOREST	411.18	ANUGUL	ATHAMALLIK	522.57
407010203180102	FOREST	89.45	ANUGUL	ATHAMALLIK	424.95
407010203180201	FOREST	365.84	ANUGUL	ATHAMALLIK	402.77
407010203180202	FOREST	329.56	ANUGUL	ATHAMALLIK	844.3
407010203180203	FOREST	716.24	ANUGUL	ATHAMALLIK	791.19
407010203190101	FOREST	110.22	ANUGUL	ATHAMALLIK	823.86
407010203190102	FOREST	258.2	ANUGUL	ATHAMALLIK	951.94
407010203190202	FOREST	471.37	ANUGUL	ATHAMALLIK	630.84
407010203190203	FOREST	88.91	ANUGUL	ATHAMALLIK	899.07
407010203200101	FOREST	622.46	ANUGUL	ATHAMALLIK	622.46
407010203200102	FOREST	663.48	ANUGUL	ATHAMALLIK	665.39
407010203200201	FOREST	206.74	ANUGUL	ATHAMALLIK	618.91
407010203210101	FOREST	616.64	ANUGUL	ATHAMALLIK	651.41
407010203210102	FOREST	674.96	ANUGUL	ATHAMALLIK	821.73
407010203210103	FOREST	79.89	ANUGUL	ATHAMALLIK	847.1
407010203210201	FOREST	239.9	ANUGUL	ATHAMALLIK	599.34
407010203210202	FOREST	111.98	ANUGUL	ATHAMALLIK	657.72
407010203220101	FOREST	506.87	ANUGUL	ATHAMALLIK	692.03
407010203130102	FOREST	490.77	ANUGUL	ATHAMALLIK	1144.44
407010203160202	FOREST	630.75	ANUGUL	ATHAMALLIK	730.69
407010203220201	FOREST	238.18	ANUGUL	ATHAMALLIK	1074.07
408010204240203	FOREST	1050.48	ANUGUL	KOSHORENAGAR	1062.17
408010204250101	FOREST	577.1	ANUGUL	KOSHORENAGAR	577.1
407010203230101	FOREST	804.14	ANUGUL	ATHAMALLIK	804.14
407010203230102	FOREST	653.24	ANUGUL	ATHAMALLIK	705.21
407010203230103	FOREST	475.1	ANUGUL	ATHAMALLIK	602.69
408010204250102	FOREST	308.96	ANUGUL	KOSHORENAGAR	331.34
407010203230201	FOREST	406.77	ANUGUL	ATHAMALLIK	766.37
408010204250202	FOREST	586.07	ANUGUL	KOSHORENAGAR	628.15
407010203240101	FOREST	643.03	ANUGUL	ATHAMALLIK	991.78
407010203240102	FOREST	398.42	ANUGUL	ATHAMALLIK	745.91
408010202100203	FOREST	137.88	ANUGUL	ATHAMALLIK	760.47

408010202110202	FOREST	0	ANUGUL	ATHAMALLIK	373.59
407010203240201	FOREST	181	ANUGUL	ATHAMALLIK	805.25
408010204250203	FOREST	541.93	ANUGUL	KOSHORENAGAR	541.93
407010203250101	FOREST	395.64	ANUGUL	ATHAMALLIK	1028.22
407010203250102	FOREST	174.93	ANUGUL	ATHAMALLIK	755.75
407010203250103	FOREST	577.45	ANUGUL	ATHAMALLIK	985.94
407010203250201	FOREST	7.39	ANUGUL	ATHAMALLIK	951.31
407010203260101	FOREST	676.58	ANUGUL	ATHAMALLIK	1136.41
407010203260102	FOREST	101.01	ANUGUL	ATHAMALLIK	475.46
407010203270101	FOREST	729.19	ANUGUL	ATHAMALLIK	729.18
407010203270102	FOREST	811.33	ANUGUL	ATHAMALLIK	811.33
407010203270103	FOREST	575.22	ANUGUL	ATHAMALLIK	579.09
407010203270201	FOREST	583.33	ANUGUL	ATHAMALLIK	1144.08
407010203270202	FOREST	362.48	ANUGUL	ATHAMALLIK	961
407010203270203	FOREST	537.9	ANUGUL	ATHAMALLIK	873.53
407010203280101	FOREST	94.24	ANUGUL	ATHAMALLIK	890.61
407010203280203	FOREST	205.46	ANUGUL	ATHAMALLIK	616.03
407010203280204	FOREST	10.82	ANUGUL	ATHAMALLIK	573.4
407010203290101	FOREST	135.35	ANUGUL	ATHAMALLIK	702.11
407010203300201	FOREST	8.39	ANUGUL	ATHAMALLIK	441.59
407010203300202	FOREST	335.8	ANUGUL	ATHAMALLIK	635.2
407010203300203	FOREST	993.83	ANUGUL	ATHAMALLIK	1302.73
407010203310101	FOREST	214.68	ANUGUL	ATHAMALLIK	821.31
407010203310102	FOREST	481.87	ANUGUL	ATHAMALLIK	809.44
407010203310103	FOREST	89.02	ANUGUL	ATHAMALLIK	985.86
407010203310201	FOREST	1006.49	ANUGUL	ATHAMALLIK	1020.15
407010203310202	FOREST	348.4	ANUGUL	ATHAMALLIK	881.78
407010203320101	FOREST	600.77	ANUGUL	ATHAMALLIK	1114.73
407010203320102	FOREST	320.92	ANUGUL	ATHAMALLIK	672.16
407010203320201	FOREST	207.69	ANUGUL	ATHAMALLIK	796.4
407010203330101	FOREST	500.59	ANUGUL	ANGUL	855.44
407010203330102	FOREST	62.93	ANUGUL	ANGUL	512.95
407010203330201	FOREST	17.31	ANUGUL	ATHAMALLIK	1082.57
407010203340101	FOREST	236.94	ANUGUL	ATHAMALLIK	951.04
407010203350101	FOREST	424.74	ANUGUL	ATHAMALLIK	952.6
407010203350102	FOREST	83.3	ANUGUL	ATHAMALLIK	653.24
407010203350201	FOREST	493.31	ANUGUL	ATHAMALLIK	621.79
407010203350202	FOREST	74.78	ANUGUL	KOSHORENAGAR	897.96
407010203350203	FOREST	243.59	ANUGUL	ATHAMALLIK	618.42
407010203360102	FOREST	47.46	ANUGUL	KOSHORENAGAR	653.39
407010203370101	FOREST	45.19	ANUGUL	KOSHORENAGAR	984.04
407010203370102	FOREST	28.73	ANUGUL	KOSHORENAGAR	925.32
407010203380101	FOREST	175.11	ANUGUL	KOSHORENAGAR	525.39
407010203380102	FOREST	469.52	ANUGUL	KOSHORENAGAR	714.66
407010204110101	FOREST	142.09	ANUGUL	ATHAMALLIK	1098.4
407010204110102	FOREST	209.34	ANUGUL	ATHAMALLIK	713.24
407010204110201	FOREST	1.78	ANUGUL	ATHAMALLIK	801.69

407010204110202	FOREST	202.58	ANUGUL	ATHAMALLIK	854.46
407010204120101	FOREST	35.29	ANUGUL	ATHAMALLIK	1024.74
407010204120102	FOREST	278.25	ANUGUL	ATHAMALLIK	754.92
407010204120103	FOREST	145.27	ANUGUL	ATHAMALLIK	634.21
407010204120202	FOREST	114.59	ANUGUL	ATHAMALLIK	720.13
407010204130102	FOREST	135.63	ANUGUL	ATHAMALLIK	820.48
407010204130201	FOREST	149.39	ANUGUL	ATHAMALLIK	840.89
407010204130202	FOREST	195.35	ANUGUL	ATHAMALLIK	809.64
407010204130203	FOREST	175.53	ANUGUL	ATHAMALLIK	1052.86
407010204140101	FOREST	147.95	ANUGUL	ATHAMALLIK	613.85
407010204140102	FOREST	81.12	ANUGUL	ATHAMALLIK	643.31
407010204140201	FOREST	42.82	ANUGUL	ATHAMALLIK	570.18
407010204140202	FOREST	92.8	ANUGUL	KOSHORENAGAR	1186.57
407010204150101	FOREST	40.29	ANUGUL	KOSHORENAGAR	721.65
407010204150202	FOREST	258.23	ANUGUL	KOSHORENAGAR	560.26
407010204160102	FOREST	2.92	ANUGUL	KOSHORENAGAR	875.89
407010204160201	FOREST	242.89	ANUGUL	KOSHORENAGAR	813.03
407010204160202	FOREST	32.57	ANUGUL	KOSHORENAGAR	657.38
407010204160203	FOREST	477.39	ANUGUL	KOSHORENAGAR	582.41
407010204170101	FOREST	1252.69	ANUGUL	KOSHORENAGAR	1268.2
407010204170102	FOREST	1121.24	ANUGUL	KOSHORENAGAR	1182.83
407010204170201	FOREST	210.99	ANUGUL	KOSHORENAGAR	965.43
407010204170202	FOREST	17.21	ANUGUL	KOSHORENAGAR	763.74
407010204180202	FOREST	8.55	ANUGUL	KOSHORENAGAR	813.34
407010204190101	FOREST	43.46	ANUGUL	KOSHORENAGAR	899.94
407010204190202	FOREST	119.82	ANUGUL	KOSHORENAGAR	803.3
407010204200101	FOREST	167.14	ANUGUL	KOSHORENAGAR	915.49
407010204200202	FOREST	32.09	ANUGUL	ATHAMALLIK	445.82
407010204210201	FOREST	35.54	ANUGUL	ATHAMALLIK	695.05
407010204210202	FOREST	398.12	ANUGUL	KOSHORENAGAR	474.63
407010204210203	FOREST	558.3	ANUGUL	KOSHORENAGAR	677.61
407010204220101	FOREST	3.27	ANUGUL	KOSHORENAGAR	743.28
407010204220102	FOREST	451.28	ANUGUL	ATHAMALLIK	720.5
407010204230101	FOREST	250.4	ANUGUL	KOSHORENAGAR	539.22
407010204230102	FOREST	583.6	ANUGUL	ATHAMALLIK	957.54
407010204230203	FOREST	95.46	ANUGUL	KOSHORENAGAR	785.53
407010204240201	RESERVOIR	103.62	ANUGUL	KOSHORENAGAR	603.56
407010204240202	RESERVOIR	23.53	ANUGUL	KOSHORENAGAR	517.49
407010204250103	FOREST	43.7	ANUGUL	KOSHORENAGAR	677.24
407010204250201	FOREST	62.92	ANUGUL	KOSHORENAGAR	1024.27
407010204250202	FOREST	42.98	ANUGUL	KOSHORENAGAR	591.21
407010204260202	FOREST	78.78	ANUGUL	KOSHORENAGAR	728.43

407010204270101	FOREST	63.31	ANUGUL	KOSHORENAGAR	711
407010204270102	FOREST	63.16	ANUGUL	KOSHORENAGAR	503.42
407010204270201	FOREST	227.37	ANUGUL	KOSHORENAGAR	785.09
407010204270202	FOREST	454.23	ANUGUL	KOSHORENAGAR	848.92
407010204270203	FOREST	512.22	ANUGUL	KOSHORENAGAR	649.72
407010204270204	FOREST	43.31	ANUGUL	KOSHORENAGAR	574.64
407010204280101	FOREST	57.65	ANUGUL	KOSHORENAGAR	751.56
407010204280101	RESERVOIR	3.86	ANUGUL	KOSHORENAGAR	751.56
407010204280102	RESERVOIR	114.56	ANUGUL	KOSHORENAGAR	436.76
407010204280201	RESERVOIR	181.01	ANUGUL	KOSHORENAGAR	806.38
407010204280202	RESERVOIR	297.01	ANUGUL	KOSHORENAGAR	720.19
407010204290201	FOREST	511.36	ANUGUL	KOSHORENAGAR	917.9
407010204290202	FOREST	957.56	ANUGUL	KOSHORENAGAR	957.56
407010204300102	FOREST	29.48	ANUGUL	KOSHORENAGAR	740.12
407010204300202	FOREST	361.63	ANUGUL	KOSHORENAGAR	726.45
407010204310101	FOREST	724.17	ANUGUL	KOSHORENAGAR	724.17
407010204310102	FOREST	540.47	ANUGUL	KOSHORENAGAR	657.67
407010204310201	FOREST	674.6	ANUGUL	KOSHORENAGAR	682.17
407010204310202	FOREST	29.88	ANUGUL	KOSHORENAGAR	561.2
407010204310203	RESERVOIR	47.2	ANUGUL	KOSHORENAGAR	567.72
408010202010102	FOREST	314.74	ANUGUL	KOSHORENAGAR	603.09
408010202010103	FOREST	109.17	ANUGUL	KOSHORENAGAR	410.41
408010202010104	FOREST	130.7	ANUGUL	KOSHORENAGAR	524.95
408010203010201	FOREST	37.74	ANUGUL	KOSHORENAGAR	321.99
408010203010203	FOREST	144.22	ANUGUL	KOSHORENAGAR	844.09
408010204160101	FOREST	16.54	ANUGUL	KOSHORENAGAR	460.26
408010204160102	FOREST	11.02	ANUGUL	KOSHORENAGAR	608.77
408010204160201	FOREST	533.54	ANUGUL	KOSHORENAGAR	759.52
408010204160202	FOREST	93.35	ANUGUL	KOSHORENAGAR	417.13
408010204170101	FOREST	570.92	ANUGUL	KOSHORENAGAR	1209.89
408010204170102	FOREST	386.12	ANUGUL	KOSHORENAGAR	937.5
408010204170201	FOREST	131.31	ANUGUL	KOSHORENAGAR	363.55
408010204170202	FOREST	823.91	ANUGUL	KOSHORENAGAR	844.5
408010204170203	FOREST	380.2	ANUGUL	KOSHORENAGAR	517.2
408010204180101	FOREST	89.3	ANUGUL	KOSHORENAGAR	659.35
408010204190201	FOREST	729.72	ANUGUL	KOSHORENAGAR	729.7
408010204190202	FOREST	400.87	ANUGUL	KOSHORENAGAR	400.87
408010204220201	FOREST	491.29	ANUGUL	KOSHORENAGAR	491.29
408010204220202	FOREST	619.43	ANUGUL	KOSHORENAGAR	619.43
408010204230101	FOREST	75.41	ANUGUL	KOSHORENAGAR	512.08
408010204230102	FOREST	357.09	ANUGUL	KOSHORENAGAR	684.82
408010204230201	FOREST	609.58	ANUGUL	KOSHORENAGAR	609.58
408010204230202	FOREST	463.55	ANUGUL	KOSHORENAGAR	463.57
408010204230203	FOREST	380.55	ANUGUL	KOSHORENAGAR	380.54
408010204240101	FOREST	818.56	ANUGUL	KOSHORENAGAR	831.12
408010204240102	FOREST	465.16	ANUGUL	KOSHORENAGAR	470.45
408010204240201	FOREST	732.38	ANUGUL	KOSHORENAGAR	732.76
408010204240202	FOREST	738.65	ANUGUL	KOSHORENAGAR	741.42

5.3.2 Addition of new wetlands and water bodies:

The list of rivers,streams and nallahs have already been furnished previously. The list of existing wetlands and water bodies in Athmallik civil Sub-Division area is furnished in **Table No. 5.3 as below.**

Table: 5.3 Existing wet land & Water bodies in Athmallik civil Sub-Division

Sl.No	Location of the wet land	Sl.No	Location of the wet land	Sl.No	Location of the wet land
1	Kaintaragarh	21	Dhaurapali	41	Luhamunda
2	Athmallik NAC	22	Karmulakata	42	Ichhapur
3	Kathapanthsahi	23	Bhuinpada	43	Karadabali
4	Lipilai	24	Rangamatiya	44	Solanda
5	Hariharpur	25	Rodsigha	45	Papsara
6	Kamalpur	26	Paikasahi	46	Mandmba
7	Oskapali	27	Balasahi	47	Badirinan
8	Manjore reservoir	28	Sapaghar	48	Ambepal
9	Ramchandrapur	29	Tapdhol	49	Jharaberni
10	Jharbandhal	30	Khandabar	50	Sarbhanguni
11	Baja	31	Kulipatanali	51	Kuajhari
12	Balijaranga	32	Kutulasingha	52	Tatkapashisahi
13	Chatiamal	33	Thakurgarh	53	Urukula
14	Talpadar	34	Khajaridhoda	54	Pipalbahal
15	Badihalan	35	Piramaliasahi	55	Kheti
16	Salegoth	36	Kuradabahal	56	Banarnali
17	Bajpur	37	Saibonasal	57	Brahmanidal
18	Kadalimunda	38	Saradharmunda	58	Phuljhari
19	Manpur	39	Debrapali	59	Raghunathpur
20	Ranjakata	40	Handapa	60	Dalpaka

The list of new wetlands and water bodies created is furnished in **Table No. 5.4**

Table No :5.4 New Wetland And Water Bodies Created Is Furnished In Table No 5.4			
Year of construction	Name of the Scheme	Location	Name of Range
2	**3**	**4**	**6**
2006-07	DRDA (SGRY special component	Gundrijharana	Handapa
2007-08	2406-C.S.P (Intigrated forest protection)	1 No. Jharajhari	Handapa
2008-09	-	-	-
2009-10	2406-S.P(Elephant Management project)	1 No. N.R.F Compt. No.11	Bamur
-do-	CAMPA W.L	1 No. Ketakijharana	Madhapur
2010-11	2406-Central Plan (Elephant Management project)	1 No.West Baruni	Madhapur
-do-	2406-S.P under 13th F.C grant	1 No. Udal	Handapa
2011-12	CAMPA A.P.O-2011-12	East Baruni R.F	Madhapur
-do-	-do-	West Baruni R.F	Madhapur
-do-	-do-	Takaba K.F	Handapa
-do-	-do-	Northern R.F	Bamur
-do-	CAMPA 2011-12 W.L	Kiakata K.F	Madhapur
2012-13	CAMPA General	Hatidhara R.F	Athmallik
-do-	-do-	Taleipathar R.F	Athmallik
-do-	-do-	Muchhapur K.F	Handapa
-do-	-do-	Northern R.F Compt. No.3	Handapa
-do-	-do-	Northern R.F Compt. No.3	Handapa
-do-	-do-	East Baruni R.F	Madhapur
-do-	-do-	West Baruni R.F	Madhapur
-do-	-do-	West Baruni R.F	Madhapur
-do-	-do-	Kiakata K.F	Madhapur
-do-	-do-	Northern R.F	Bamur
-do-	CAMPA W.L	Taleipathar R.F	Dhandatopa
-do-	-do-	Taleipathar R.F	Dhandatopa
-do-	-do-	Handapa R.F	Handapa
-do-	-do-	Northern R.F	Handapa

2013-14	CAMPA General	1-Titigaon K.F- 1 No.	1-Athmallik
			2-Madhapur
			3-Dhandatopa
			4-Handapa
	CAMPA W.L	1-Northern R.F Compt. No. 29-1 No. 2-Northern R.F Compt. No. 34-1 No. 3-Northern R.F Compt. No. 23-1 No .	Dhandatopa
			Handapa
2014-15	2726-Elephant Corridor area	1-East Bareni R.F- 1 no.	Madhapur
2015-16	2726-Elephant Corridor area	1-Manorbeda- 2 Nos.	Madhapur
2017-18	CAMPA General APO 2017-18	Northern RF Compt. No. 34	Handapa
		Northern RF Compt. No. 13	Bamur
		Norther RF Compt. No. 24	Handapa
2018-19	Budget	Mahendrapur R.F	Athmallik
	(Elephant Corridor)		
2019-20	CAMPA Wildlife APO 2019-20	East Baruni R.F Compt. 3	Madhapur
		Taleipathar R.F Compt. 6	
2020-21	CAMPA (WL) APO 2020-21	Hatidhara Compt. No. 44	Athmallik
		Hatidhara Compt. No. 44	
		Kubera DPF	
		Kusumkuhuri RF Compt. No. 1	
		Hatidhara RF Compt.	
		No. 28	
		Nugaon RF Compt. No. 1	Madhapur
		Nugaon RF Compt. No. 4	
		Taleipathar RF Compt. No. 12	
		Ambasaramunda	Dhandatopa
		Northern RF Compt.No.33	
		Northern RF Compt.No.23	
		Handapa RF Compt.No.7	

5.4 Water level in the wells in the vicinity (up to 5Km) of forest area

In this division no periodic monitoring of water level with respect to annual rain fall has been conducted in the past. However the uptodate ground water level data from the Central Ground Water Board, Bhubaneswar and the Metrological data on annual rainfall from district has been collected from which status of ground water has been assessed.

5.4.1 Ground Water: The ground water level increases in rainy season and the depth of water goes down to the maximum in April. The ground water level is recorded at 5 different places in the division; Athamallik, Thakurgarh, Boinda, Bamur ,Handapa and Tileswar. It is interesting to note that in Boinda and Thakurgarh the ground water level goes down to 6-7 mt in April whereas in Athmallik, Bamur , Handapa and Tileswar it goes down to 4-5 mt. The information collected from the Central Ground Water Board, Bhubaneswar and depth of water level (In Mtr.) during summer is furnished in the following **Table No.5.5**

TABLE NO- 5.5 DEPTH OF GROUND WATER TABLE IN METERS

Sl .No	Block Headqurter	2001				2002				2003			
		Jan	Apr	Aug	Nov	Jan	April	Aug	Nov	Jan	Apr	Aug	Nov
1	Thakurgaih	3.67	5.09	1.74	1.05	1.74	4.11	0.59	1.99	3.46	4.75	0.18	0.97
2	Bamur	1.97	3.86	1.36	2.35	2.88	3.19	1.71	5.8	6.07	3.02	1.15	3.16
3	Handapa	4.68	6.62	0.57	2.02	4.19	6.5	2.54	2.94	5.1	6.44	0.57	0.98
4	Boinda	5.55	7.35	0.81	3.9	5.57	7.27	1.3	3.07	5.93	7.06	0.38	1.98
		2004				2005				2006			
		Jan	April	Aug	Nov	Jan	Apr	Aug	Nov	Jan	Apr	Aug	Nov
1	Thakurgaih	3.42	4.59	NA	1.04	3.38	3.78	0.19	NA	3.67	NA	NA	NA
2	Bamur	6.04	2.58	1.7	3.54	3.69	4.41	1.76	2.56	1.95	4.06	0.56	2.26
3	Handapa	5.4	6.8	0.99	2.12	4.27	5.67	0.82	2.22	4.68	5.62	0.62	2.02
4	Boinda	5.97	7.27	1.91	4.01	5.6	7.12	0.65	3.85	5.55	6.35	0.55	2.75
		2007				2008				2009			
		Jan	April	Aug	Nov	Jan	April	Aug	Nov	Jan	April	Aug	Nov
1	Thakurgaih	NA	3.87	6.15	4.51	5.57	5.68	0.42	4.27	3.39	4.37	0.24	1.62
2	Bamur	3.76	5.62	1.86	4.98	5.52	NA	1.36	3.72	5.7	5.98	1.08	3.58
3	Handapa	3.52	5.5	2.99	1.85	3.48	NA	0.59	2.12	5.57	6.07	0.67	3.07
4	Boinda	5.35	7.07	1.45	3.73	5.31	6.55	1.03	3.93	6.13	7.4	0.76	4.08
		2010				2011				2012			
		Jan	April	Aug	Nov	Jan	Apr	Aug	Nov	Jan	Apr	Aug	Nov
1	Thakurgaih	2.34	5.4	2.65	2.47	3.78	5.57	0.97	3.07	3.35	5.29	1.4	1.4
2	Bamur	4.1	5.96	4.12	3	4.66	5.98	2.15	3.61	NA	4.86	0.81	3.15
3	Handapa	4.31	6.02	4.47	3.53	4.54	6.18	2.96	3.17	3.57	5.48	0.95	1.5
4	Boinda	5.43	7.74	5.28	3.84	6.17	8.21	0.85	4.3	4.75	6.75	1.1	2.15
	BLOCK	2013				2014				2015			
		Jan	April	Aug	Nov	Jan	Apr	Aug	Nov	Jan	Apr	Aug	Nov
1	Thakurgaih	2.72	5.44	2.32	3.09	4.65	5.9	2.37	2.7	3.83	5.74	3.1	4.07
2	Bamur	4.54	6.21	2.21	2.01	5.31	6.25	2.2	3.75	3.9	4.8	2.26	4.32
3	Handapa	4.54	5.62	1.05	1.98	2.72	4.82	0.81	2.05	3.59	5.2	3.3	4.3
4	Boinda	5.15	7	1.2	3.08	3.38	1.75	6.93	2.4	5.27	6.83	2.35	4.13
5	Athamallik									3.34	4.1	1.45	2.3
6	Tileswar									3.56	4.87	2.55	3.5

On comparison of water table of the stations recorded during the Month of April in the year 2001 with the year 2015; it is revealed that the water table has gone up in Handapa and Boinda area while it has gone down in Thakurgarh & Bamur area.lages in the division, of which 308 villages are in Athamallik block and 229 villages in Kishorenagar block. All the villages have some source of drinking water. In 1994-95 there were only 595 tube wells and this number was increased to 3204 in 2020-21. All the villages have tube wells. But the pipe water facility is present only in 65 villages. The block wise details of drinking water facilities are given below in **Table No. 5.6**

5.4.2 Availability of Drinking water facilities: There are 537 inhabited villages in the division, of which 308 villages are in Athamallik block and 229 villages in Kishorenagar block. All the villages have some source of drinking water. In 1994-95 there were only 595 tube wells and this number was increased to 3204 in 2020-21. All the villages have tube wells. But the pipe water facility is present only in 65 villages. The block wise details of drinking water facilities are given below in **Table No. 5.6**

Table: 5.6 Availability of Drinking water facilities in different Blocks of Athamallik Division

Year	Block	No. of inhabited villages	No. of villages having no source of drinking water	Tube wells		Sanitary wells		Piped wells	
				No. of working tube wells	No. of village covered	No. of working sanitary wells	No. of village covered	No. of Pipe water covered	No. of village covered
1994-95	Athamallik	308	7	306	56	-	-	-	-
1994-95	Kishorenagar	228	6	289	52	-	-	-	-
1995-96	Athamallik	308	5	398	103	-	-	-	-
1995-96	Kishorenagar	228	3	326	97	-	-	-	-
1996-97	Athamallik	308	1	422	134	-	-	-	-
1996-97	Kishorenagar	228	3	361	132	-	-	-	-
1997-98	Athamallik	308		457	168	-	-	-	-
1997-98	Kishorenagar	228	1	408	153	-	-	-	-
1998-99	Athamallik	308	-	539	196	-	-	-	-
1998-99	Kishorenagar	228	-	531	192	-	-	-	-
1999-00	Athamallik	308	-	604	226	-	-	-	-
1999-00	Kishorenagar	228	-	601	198	-	-	-	-
2000-01	Athamallik	308	-	746	253	4	4	-	-
2000-01	Kishorenagar	228	-	646	203	2	2	-	-
2001-02	Athamallik	308	-	765	278	4	4	2	8
2001-02	Kishorenagar	228	-	656	214	5	5		
2002-03	Athamallik	308	-	802	297	4	4	2	8
2002-03	Kishorenagar	228	-	684	220	6	6	1	3
2003-04	Athamallik	308	-	851	308	4	4	2	8
2003-04	Kishorenagar	229	-	711	229	7	7	1	3
2010-11	Athamallik	308	--	1245	308	38		17	
2010-11	Kishorenagar	229	--	1094	229	31		18	
2015-16	Athamallik	308	---	1642	308	42		19	27
2015-16	Kishorenagar	229	---	1562	229	36		24	38
2016-17	Athmallik	293	nil	1750	193	35		21	21
2017-18	Athmallik	293	nil	1802	193	39		23	25
2018-19	Athmallik	293	nil	1901	193	44		28	30
2019-20	Athmallik	293	nil	1914	193	44		35	37
2020-21	Athmallik	293	nil	1919	193	44		46	56
Total		**7900**	**25**	**25932**	**5748**	**389**	**39994**	**237**	**234**

Source: S.D.O., P.H.D., Angul

5.5 Status of aquifers:

The details of aquifers are given below in **Table No. 5.7.**

Table: 5.8 List of aquifers

Name of the Block	Name of Stream	Original from
Kusum Kuhari RF	1) Rathipur nallah	Ridge of Kusum- Kuhuri RF
	2) Gangapani Nallah	Ridge of Hatidhara RF
Mahendrapur RF	1) Kadakia Nallah	Ridge of Talaipathar RF
Talaipathar RF	1) Purnapani Nallah	Ridge of Talaipathar RF
	2) Dhandatopa Nallah	Ridge of Talaipathar, Kutulsingha & Thakurgarh D.P.F
	3) Ketaki jharan nallah	Ridge of Talaipathar RF
	4) Kukuda darah nallah	Ridge of Taleipathar RF
	5) Kuakhol Nallah	Ridge of Taleipathar RF
Dantarikhol RF	1) Makarkenda Nallah	Ridge of DantariKhol RF
	2) Pita Khol Nallah	do
	3) Baghumunda Nallah	do
	4) Bada nallah	do
	5) Kumbhatua khol Nallah	do
	6) Katranga Khol nallah	do
	7) Bada Nallah	do
	8) Swain Nallah	do
	9) Majhurbeka Nallah	do
	10) Amba Khol Nallah	do
	11) Dengeai Nallah	do and Katada RF of Angul Division
Kutulsinga RF	1) Jogibandha Nallah	Ridge of Kutulsinga RF
	2) Nabing Nallah	do
	3) Somanathpur Nallah	do
	4) Ghanajori Nallah	do
	5) Barabankia Nallah	do
Northern RF	1) Sureswari Nallah	Ridge of (Nothern RF)
	2) Susab Nallah	Ridge of (Northern RF
	3) Gurujang Nallah	Ridge of (Northern RF
	4) Jharjhri Nallah	Ridge of Northern RF)
	5) Bada Nallah	Ridge of Northern RF

	6) Mochikhol Nallah	Ridge of Northern RF
Handapa RF	Jogi bandha Nallah	Northern RF
Kholadangiani RF	1) Bada Nallah	Ridge of Khola dangiani RF and adjoining village
	2) Padianali Nallah	do
	3) Kurum Tapa Nallah	do
	4) Kholamunda Nallah	do
Kadalimunda RF	Jamukhol Nallah	Ridge of Kadalimunda RF
Bankimunda RF	Khadal Khola Nallah	Ridge of Bankimundi RF
Bindyabasini RF	1) Goja khol Nallah	Ridge of Bindyabasini
	2) Jamiri Nallah	do
Kishoreban RF	1) Pendera Khol Nallah	Ridge of Kishoreban RF
Guja RF	1) Guapada Nallah	Ridge of Guja
	2) Orada Nallah	do
	3) Banapur Nallah	do
East Baruni RF	1) Daulatpur Nallah	Ridge of East Baruni RF
	2) Digdar Nallah	do
	3) Mangalpur Nallah	do
West Baruni RF	Sankamal Nallah	Ridge of W. Baruni
Nuagaon RF	Lenkeda chhida Nallah	Ridge of Talipathar RF

CHAPTER-6

6 Maintenance and Enhancement of forest resource productivity

6.1 Growing stock of wood:

Sample point enumeration of trees has been carried out in various grids provided by NRSC/ORSAC. The area of each grid was 0.1 Ha(31.62mtx31.62mt). Basing on the Number of trees available the volume of the Growing Stock of wood(Cum) has been calculated. The Growing Stock of Wood of different Forest Blocks are furnished by the NRSC in **Table No. 6.1** as follows.

Table No 6.1	VOLUME OF THE GROWING STOCK (Cum) OF EAST BARUNI R.F.						
Enumerated Area : 1606.54 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50>	Total
1	Total	26728	13886	8645	5310	7010	61579

VOLUME OF THE GROWING STOCK (Cum) OF KUSUMKUHURI.							
Enumerated Area : 612.04 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	964	1119	1319	1041	778	5221

VOLUME OF THE GROWING STOCK (Cum) OF MAHENDRAPUR							
Enumerated Area : 434.07 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50>	Total
	Total	8823	8313	9133	7513	6238	40021

VOLUME OF THE GROWING STOCK (Cum) OF BINDHYABASINI							
Enumerated Area :275.84 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	4953	5811	4970	3355	2006	21095

VOLUME OF THE GROWING STOCK (Cum) OF BANKIMUNDI							
Enumerated Area :393.07 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	4704	5764	7439	5182	2757	25847

VOLUME OF THE GROWING STOCK (Cum) OF GHOSAR							
Enumerated Area :1140.3406 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50>	Total
	Total	4314	6375	8183	8501	4338	31711

VOLUME OF THE GROWING STOCK (Cum) OF KADALIMUNDA							
Enumerated Area :297.33 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	3753	4568	5912	4077	2214	20525

VOLUME OF THE GROWING STOCK (Cum) OF WEST BARUNI							
Enumerated Area 400.21ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
1	Total	6274	5299	4089	2830	2113	20604

VOLUME OF THE GROWING STOCK (Cum) OF KUTULSINGHA							
Enumerated Area 1644.09 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
1	Total	25873	27447	32532	24377	28481	138711

VOLUME OF THE GROWING STOCK (Cum) OF KHOLADANGINI							
Enumerated Area 221.11 ha							
Volume by Species wise and DiaClass wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	2500	3049	3941	2737	1499	13726

VOLUME OF THE GROWING STOCK (Cum) OF BIJAMALIA							
Enumerated Area 216.95 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	3480	5063	6920	6407	3660	25530

VOLUME OF THE GROWING STOCK (Cum) OF TALEIPATHAR R.F.							
Enumerated Area : 7011.64 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	132365	130345	140821	96873	102060	602464

VOLUME OF THE GROWING STOCK (Cum) OF NORTHERN R.F.							
Enumerated Area : 19,174.67 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	340774	469409	631176	484686	246596	21626331

VOLUME OF THE GROWING STOCK (Cum) OF GUJA R.F.							
Enumerated Area : 346.18 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	4879	6952	9375	8437	5007	34650

VOLUME OF THE GROWING STOCK (Cum) OF DANTARIKHOL.							
Enumerated Area : 1623.64 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	19911	23262	29377	20939	13384	106874

VOLUME OF THE GROWING STOCK (Cum) OF NUAGAON.							
Enumerated Area : 1206.93 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	34922	18558	11666	7081	9159	81386

6.1.1 Trend condition in growing stock of wood:

The total growing stock of wood of individual Forest Blocks is furnished in **Table No 6.2** as follows.

Table No 6.2 Abstract of Growing stock of wood of individual Forest Blocks(Cum)							
Sl.No	Block	10<20	20<30	30<40	40<50	50>	Total
1	Northern	340774	459409	631176	484686	246596	21626331
2	Handapa	28607	36204	48118	34046	16725	163701
4	Talepathar	132365	130345	140821	96873	102060	602464
5	East Baruni	26728	13886	8645	5310	7010	61579
6	West Baruni	2274	5299	4089	2830	2113	20604
7	Nuagaon	34922	18558	11666	7081	9159	81386
8	Kadalimunda	3753	4568	5912	4077	2214	20525
9	Bindhyabasini	4953	5811	4970	3355	2006	21095
10	Kusumkhuri	964	1119	1319	1041	778	5221
11	Mahendrapur	8823	8313	9133	7513	6238	40021
12	Ghosar	4314	6375	8183	8501	4338	31711
13	Bijamaliha	3480	5063	6920	6407	3660	25530
14	Bankimundi	4704	5764	7439	5182	2757	25847
15	Kholadangiani	2500	3049	3941	2737	1499	13726
16	Kutulsingha	25873	27447	32532	24377	28481	138711
17	Dantarikhol	19911	23262	29377	20939	13384	106874
18	Guja	4879	6952	9375	8437	5007	34650

It is observed that the trend in growing stock is proportionate to the condition of fully stocked forest as per the site quality over the years.

6.2 Growing stock of bamboo:

To ascertain the status of Bamboos, enumeration of bamboos have been carried out in the sample plot of 0.1 Ha(31.62mx31.62m). The enumeration figure is furnished in **Table No. 6.2** as follows.

Table No. 6.3 ENUMERATION OF BAMBOO IN TALEIPATHARA R.F

Sl. No	Cmpt. No.	Grid no.	Species name	Local name	Collar dia in cm	Green sound culms						Green damaged/ twisted		
						Current years			One to two years			Over two years		
						a	b	c	a	b	c	a	b	c
1	5	13	D. Strictus	Salia	54	0	0	0	4	0	0	0	0	0

In case of Taleipathar RF, Bamboo clumps was noticed in compartment no. 5 only.

6.3 Increment in volume of identified timber species:

Volume of growing stock of wood calculated in respect of Northern RF, Talaipathar RF,Hatidhara RF & Handapa RF during preparation of last working plan and present working plan is furnished in **Table No. 6.3** as follows.

Table No. 6.4		Status of Mean annual increment (MAI) in volume of tree species.					
Sl.No	**Period**	**10<20**	**20<30**	**30<40**	**40<50**	**50<60**	**Total**
1	Previous Working Plan Assessment.	928512.47	1728570.86	1950691.1	1780266.2	1448064.97	6316105.6
2	Present Working Plan assessment	667107	769303	822703	727125	457923	3474161
MAI STATUS		261405.47 (decreased)	959267.86 (decreased)	1127988 (decreased)	1053141.2 (decreased)	990144.97 (decreased)	2841944.6 (decreased)

It is observed that there is a negative trend in increment of wood. However, in the previous working plan, the enumeration is conducted by strip sampling whereas in the present working plan, enumeration is conducted in the assigned sample points by ORSAC.

6.4 Efforts towards enhancement of forest productivity through quality plantation activities.

6.4.1 Plantations

Plantations have been raised in different Forest blocks and outside area by the DFO Athmallik Forest Division.. In the outgoing plan it was prescribed to cover 9149.26 ha under Rehabilitation Working Circle and 2297.21 ha under Plantation Working Circle. In the outgoing plan period a total of 5144 ha of plantations are raised, out of which 1835 ha is in the RF area (35.67%) and 3309 ha (64.33%) beyond reserved forest. The total RDF plantations taken up in the division within the rehabilitation working circle area was 1655 ha and the total block plantation done in the plan period are 175 ha within the plantation working circle area.. Year wise details of the plantations taken up in the division in the plan period under different schemes are given in the **Table 6.5.** The condition of the plantations raised recently over the last 5-6 years is better than the previous period, this is mainly due to protection given by the VSS members. There is lot of work needs to be done in documentation of these plantations like maintenance of journals, maps, indication of plantation areas on the topo maps, recording the plantation areas in the beat note books etc.

TABLE: 6.5		LIST OF PLANTATIONS TAKEN UP IN THE DIVISION					
Sl No.	Year	Name of the Range	Name of the scheme	Area covered			
				AR		ANR	
				R.F/DPF/PF	K.F	R.F/DPF/PF	K.F
1	2	3	4	5	6	7	8
1	**2006-07**	Madhapur	CATP RDF			Nuagaon C.No.4 -63 Ha.	
2		Bamur	-do-			Northern C.No.12—57 Ha.	
3		Handapa	-do-			Northern C.No.23 - 80 Ha.	
		TOTAL		**Nil**	**Nil**	**200 Ha**	**Nil**
4	**2007-08**						
5		Handapa	2406-State Plan-Silvi.research under 12th F.C		Dantarikhol K.F-45 Ha		
6		**TOTAL**		**Nil**	**45 Ha**	**350 Ha**	**Nil**
7	**2008-09**	Athmallik	NBM		Kubera Hill DPF-25 Ha.		
		TOTAL		**Nil**	**25 Ha**	**Nil**	**Nil**
8	**2009-10**	Handapa	CATP RDF			Northern R.F C.No.26 & 27- 250 Ha.	
9		Madhapur	-do-			Taleipathar C. No.7 & 8 - 150 Ha.	
10		Bamur	-do-			Northern RF Comp No-13- 242 HA	
11			CBDP	Naktidaul P.F-20 Ha			
12		Handapa	Compn. Affn.		Badagobindapur-24.73 Ha. Luhamunda-58.83 Ha. Bidisingh-14.25 Ha. Chuliapur- 12.16 Ha. Krushnapur-8.49 Ha. Jamujhari-33.64 Ha.		
		TOTAL		**20 Ha.**	**152.10 Ha.**	**642 Ha**	
13	**2010-11**	Handapa	State CAMPA		Laxmipur-36 Ha Kundali-10 Ha.		
14		Madhapur		East Baruni RF-15 Ha	Subarnapur-12 Ha. Baruni K.F-15 Ha. Khajurijharana-02 Ha.		
15		Bamur			Brahmanipali-20 Ha. Samarchila-30 Ha.		
16		Madhapur	CBDP		Singarimunda-20 Ha.		
17		-do-	NBM		Chodagadi-25 Ha.		
		TOTAL		**15 Ha**	**170 Ha**		

18	**2011-12**	Madhapur	13th F.C		Raibahal-40 Ha.		
19		Dhandatopa	-do-	Dantarikhol-20 Ha.			
20		Bamur	-do-	Northern-30 Ha.			
21		Athmallik	NBM		Kubera Hill 25 Ha.		
22		Madhapur	OBDP		Ghodagadi-20 Ha.		
		TOTAL		**50 Ha**	**85 Ha**		
23	**2012-13**	Athmallik	13th F.C	Mahendrapur-50 Ha.			
24		Bamur	-do-	Northern-50 Ha.	Gunduridadar-30 Ha. Dalapaka-10 Ha.		
25		Madhapur	OBDP		Ghodagadi-20 Ha.		
26		-do-	NBM		Ghodagadi-25 Ha. Buraghat-25 Ha.		
27		-do-	Phadi house under NBM		Singarimunda-03 Ha. Baradakata-08 Ha. Ghodagadi-1.25 Ha. Daulatpur-0.5 Ha. Naktideul-5.0 Ha. Khajurijharana-7.5 Ha.		
28		Madhapur	MGNREGS			West Baruni RF	Helei-17 Ha. Buraghat-50 Ha. Bankapal-50 Ha. Muchhapur-50 Ha. Naktideul-50 Ha. Goratopa-50 Ha.
						Comp No- 01 50 Ha.	Mangalpur-50 Ha
						Comp No-03 83 Ha.	
						Niagaon R.F	
						Comp No- 02 50 Ha.	
						Comp No- 03 50 Ha	
		TOTAL		**100 Ha**	**135.25**	**233 Ha**	**317 Ha**
29	**2013-14**	Madhapur	13th F.C		Haturapada-20 Ha. Muchhapur-20 Ha.		
30		-do-	OBDP		Naktideul-20 Ha.		
31		-do-	NBM		Naktideul-20 Ha. Kiakata-5 Ha. Titirikata-5 Ha.		
32		Athmallik	MGNREGS		Malipadar K.F-5 Ha		Pataka K.F- 10Ha
					Tambabareni K.F-20 Ha		Titigaon K.F-10 Ha
					Jagabandhupur -10 Ha		Aida K.F-100 Ha
					Mahendrapur K.F-5 Ha		Kundapur K.F-10 Ha
					Pataka -5 Ha		Niagarg K.F-20 Ha
							Mahendrapur K.F-20 Ha
							Rajing K.F-10 Ha
33		Dhandatopa	-do-		Hatasimili K.F-10 Ha		Hatasimili K.F-20 Ha
					Kutulsingha K.F-20 Ha		Kutulsingha K.F-40 Ha
					Gharjodi K.F-10 Ha		Dinabandhupur K.F-20 Ha
					Sonanathpur-20 Ha		Siarimaliha K.F-20 Ha
					Talabahali K.F-20 Ha		Muraripur K.F-40 Ha
					Pokanda K.F-10 Ha		
					Akharakata K.F-20 Ha		

34		Madhapur	-do-		Chodagadi KF-30 Ha	West Bareni RF	Khajurijharan KF-20 Ha
					Singarimunda KF-25 Ha	Comp No.2 20 Ha.	Kiakata KF-20 Ha
					Bijipur KF-20 Ha	Nuagaon RF	Belataila KF-50 Ha
					Palamahula KF-25 Ha	Comp No.2 20 Ha.	Dhuliapada KF-20 Ha
					Hatuapada KF-20 Ha	Madhapur DPF- 50 Ha	Hatuapada KF-20 Ha
					Barkapalasa KF-20 Ha		
					Patrapada KF-20 Ha		
35		Handapa	-do-		Laxmipur KF-20 Ha		Laxmipur KF-30 Ha
					Charkhamari KF-15 Ha		Nakchi KF-20 Ha
					Berham KF-25 Ha		Asurbahal KF-20 Ha
					Solanda KF-10 Ha		Anandamunda KF-20 Ha
					Banimali KF-10 Ha		Chankundamunda KF-20 Ha
					Bidising KF-40 Ha		Golasar KF-20 Ha
							Padanpur KF-20 Ha
							Madhapur KF-20 Ha
36		Bamur	-do-		Jharabereni KF-10 Ha.		Jharabereni KF-20 Ha
					Chintamanipur KF- 10 Ha.		
					Khamiakani KF-10 Ha		Khamiakani KF- 20 Ha
							Dhadapal KF- 20 Ha
							Talpadar KF- 20
							Gokapali KF- 20 Ha
							Badibahal KF- 20 Ha
							Jhinkibahal KF- 20 Ha
							Dalimura KF- 20 Ha
37		Madhapur	State Plan		Patrapada KF-10 Ha		
			Elephant Corridor				
		TOTAL		**Nil**	**565ha**	**90 Ha**	**780Ha**
38	**2014-15**	Madhapur	CBDP		Jhurikata KF-20 Ha		
39			Elephant corridor		Patrapada KF-05 Ha		
40		Athmallik	NRM		Gopalpur KF-20 Ha		
					Sugripali KF- 20 Ha		
41		Madhapur	NRM		Titrikata KF- 05 Ha		
					Jhurikata KF-10 Ha		
42		Athmallik	MGNREGS				Aida KF-20 Ha
							Behali KF-10 Ha
43		Dhandatopa	MGNREGS		Chornajodi KF-10 Ha		Arampur KF-20 Ha
					Talabahali KF-10 Ha		Kutulisingha KF-20 Ha
					Kutulisingha KF-10 Ha		Phuluribania KF-30 Ha
					Dhandatopa KF-10 Ha		

44		Handapa	MGNREGS		Barham KF-25 Ha		Kharadamunda KF-100 Ha
45		Bamur	MGNREGS				Bhangamunda KF-20 Ha
							Chatianal KF-20 Ha
46		Madhapur	MGNREGS				Titirikata KF-50 Ha
							Debachipada KF-20 Ha
		TOTAL		**Nil**	**145 Ha**	**Nil**	**310 Ha**
47	**2015-16**	Athmallik	MGNREGS		Ashrugadia KF-10 Ha		Kendupati KF-15 Ha
							Bahali KF-10 Ha
							Pataka KF-10 Ha
							Sargipali KF-15 Ha
							Tangiamisha KF-10 Ha
							Titigaon KF-10 Ha
48		Dhandatopa			Bandhagaon KF-10 Ha		Gopapur KF-20 Ha
							Anandapur KF-20 Ha
							Pitabalibahal KF-20 Ha
							Talamalina KF-20 Ha
							Mamurijharan KF-50 Ha
							Akharakata KF-20 Ha
49		Bamur		Ghosar RF-10 Ha	Champapur KF-20 Ha		
					Brahmanipali KF-10 Ha		Kishorechandrapur KF- 20 Ha
					Khaudar KF- 10 Ha		
							Gurujang KF-15 Ha
					Bhimpur KF- 20 Ha		
50		Madhapur					Bankapalasa KF-50 Ha
							Bhojpur KF-50 Ha
							Naktidul KF-50 Ha
							Balataila KF-50 Ha
							Patrapada KF-50 Ha
51		Handapa			Sarenda pahad-10 Ha		Tentuloi KF-50 Ha
							Gunduri jharan KF-50 Ha
							Charkhanan KF-50 Ha
							Garuda KF-50 Ha
							Sarenda pahad- 20 Ha
52		Madhapur	Elephant Corridor		Patrapada KF- 10 Ha		
			Fodder Plantation.				
53		Dhandatopa	CBDP		Nishanipathar KF-20 Ha		
54		Handapa	Compensatory		Nuakuajhari-60.87Ha		
			Afforestation				

57	2016-17	Athmallik	OBDP	Kusumkuhuri RF- 20 ha	-	-	-
			JVP	-	-	-	Puleswar- 25 ha.
			NBM	-	Dahimal- 20 ha.	-	-
		Dhandatopa		-	Sadanandapur- 10 ha	-	-
		Dhandatopa	CAMPA (WP)	-	-	Kutulisinga RF Compt. No. 1&2-160 ha.	-
		Handapa		-	-	Dantarikhol RF Compt. No. 4- 90 Ha.	-
		Bamur		-	-	Ghosar RF Compt. No. 5- 50 Ha.	-
		Athmallik	Comp. Affn. (Safety Zone)	-	-	Mahendrapur RF Compt. No.1- 70 Ha.	-
		Dhandatopa		-	-	Kutulisinga RF Compt. No. 6- 44.66 Ha.	-
		Madhapur	Comp. Affn.- ANR @200	-	-	East Baruni RF Compt. No. 2- 150 Ha.	-
		Madhapur	Comp. Affn.- ANR @400	-	-	West Baruni Compt. No. 2- 75 Ha.	-
			Comp. Affn.- ANR @800	-	-	West Baruni Compt. No. 3- 33.75 Ha.	-
				-	-	East Baruni Compt. No. 7- 41.25 Ha.	-
				-	-	East Baruni Compt. No. 3&4- 67.5 Ha.	-
		Dhandatopa		-	-	Kutulisinga RF Compt. No.6- 22.5 ha.	-
		Handapa		-	-	Dantarikhol RF Compt. No. 5-22.5 ha.	-
		Bamur		-	-	East Baruni RF Compt. No. 1-121.9725 ha.	-
		Madhapur		-	-	West Baruni RF Compt. No. 2- 10 ha.	-
				-	-	East Baruni RF Compt. No. 2- 20 ha.	-
				-	-	East Baruni RF Compt. No. 7- 8 ha.	-
				-	-	East Baruni RF Compt. No. 5- 20 ha.	-
		Athmallik	Comp. Affn. (Safety Zone)	Mahendrapur RF- 12.18 Ha.			
		Madhapur	Comp. Affn.	East Baruni RF Compt. No.3- 35 Ha.			
		Bamur		East Baruni RF Compt. No.1- 15 Ha.			
		Madhapur		West Baruni RF Compt. No. 3-2 Ha.			
		Athmallik	OMBADC	-	-	-	Manitri- 15 ha.
				-	-	-	Jirad- 4 ha
				-	-	-	Hingmandol- 6 h
				-	-	-	Mahendrapur- 15 ha
		Bamur		-	-	-	Gunduridadar- 5 ha
				-	-	-	Badibahal- 7 ha
				-	-	-	Dadarpali- 15 ha
				-	-	-	Dalimura- 3 ha
				-	-	-	Karmalkata- 5 ha
		Athmallik		-	-	-	Bhubunipur- 10 ha.
				-	-	-	Deulbeda- 10 ha.
				-	-	-	Hingmandol- 10 ha.
				-	-	-	Gopalpur- 10 ha.
				-	-	-	Pataka- 30 ha.
		Dhandatopa		-	Kundajhari -20 ha	-	Muraripur- 100 ha.
				-	-	-	Rampur- 100 ha.
				-	-	-	Akharakata- 20 ha
		Madhapur		-	-	-	Patrapada-50 ha.
		Handapa		-	-	-	Rajanpal-50 ha.
			MGNREGS	-	-	-	Baliamba-50 ha.
		Total		**84.18**	**50 Ha.**	**1007.1325 Ha.**	**510 Ha.**

58	2017-18	Athmallik	OMBADC	-	-	-	Rajing- 10 ha.
		Bamur		-	-	-	Gargadabahal-80 ha
				-	-	-	Sahajbahal- 20 ha
				-	-	-	Barakhol- 40 ha.
		Athmallik	MGNREGS	-	-	-	Titigaon-10 ha
		Dhandatopa		-	-	-	Adeswar-20 ha.
				-	-	-	Kalapatmali-50 ha.
				-	-	-	Tabada-10 ha.
		Madhapur		-	Bhoipada- 10 ha.	-	-
		Handapa		-		-	Rainali-50 ha.
		Total			**10 Ha.**		**290 Ha.**
59	2018-19	Athmallik	CAMPA(WP)	-	-	Kusumkuhuri RF Compt. No. 2&3- 150 Ha.	-
				-	-	Dantarikhol RF Compt. No. 5- 100 ha.	-
				-	-	Nuagaon RF Compt. No. 4&5- 150 ha.	-
				-	-	Nuagaon RF Compt. No. 3- 100 ha	-
		Dhandatopa	MGNREGS	-	Hinjagula- 10 ha.	-	-
		Handapa	(Pure)	-	Jamujhari- 10 ha	-	-
		Athmallik	-	-	-	Hatidhara RF Compt. No. 28- 60 ha.	
		Dhandatopa		-	-	-	Basudevpur - 50 ha
				-	-	-	Ambanali - 20 ha
		Madhapur		-	-	-	Naktideul - 50 ha
				-	-	-	Patrapada - 50 ha
		Handapa		-	-	-	Ghampur - 50 ha
		Athmallik	Green Mahanadi M	-	Titigaon- 6 ha	-	-
				-	Kuteswar- 4 ha	-	-
				-	Pataka- 10 ha	-	-
		Athmallik		-	-	-	Puleswar- 6 ha
				-	-	-	Dahimal- 10 ha
		Madhapur		-	-	-	Singarimunda- 50 ha
				-	-	-	Ghodagadi- 100 ha
		Athmallik	State Plan (GMM)	-	-	Kubera DPF- 150 ha	Kuspur- 10 ha
				-	-	Malipadar VF- 10 ha	-
		Madhapur		Mundapada VF (Bamboo pltn)- 35 ha	Singarimunda- 10 ha	-	Hatuapada- 50 ha
		Total		**35 Ha.**	**50 Ha.**	**710 Ha.**	**456 Ha.**
60	2019-20	Bamur	MGNREGS (Pure)	-	-	Kholadangiani- 15 ha	-
		Dhandatopa		-	-	-	Krutibaspur Gramya Jungle-10 ha
		Handapa		-	-	-	Sanarohila- 30 ha
		Athmallik	State Plan (GMM)	-		-	Kutulisinga- 20 ha
		Madhapur		-	Karadadadar- 8 ha	-	Bijipur- 70 ha
		Athmallik	CAMPA	-	-	Kutulisinga RF- 50 ha	-
		Bamur	CAMPA(WL)	-	-		-
		Bamur	MGNREGS (Bamboo)	Bhargamunda L	-	-	-
		Total		**40 Ha.**	**8Ha.**	**65 Ha.**	**130 Ha.**

61	2020-21	Dhandatopa	CAMPA (Bamboo)	Hatidhara RF Compt. No.10-30 ha	-	-	-
			CAMPA	-	-	Kutulisinga RF Compt. No. 5- 50 ha.	-
		Madhapur	-	-	-	Nuagaon RF- 100 ha	-
			State Plan GVM	-	Manarbeda- 10 ha	-	-
		Athmallik	-	-	-	-	Naleswar&Talbijipur- 30 ha
		Bamur	ICC	-	Bramhanipali-10 ha	-	-
		Dhandatopa		-	-	-	Hatasimili- 50 ha.
		Handapa		-	-	Batipurunapani DPF-50 ha	-
			NAP	-	-	-	Ashrubahal- 25 ha
				-	-	-	Serenda- 25 ha
		Madhapur	MGNREGS		Manarbeda- 10 ha		
		Athmallik			Manitri (Fuel Fodder)- 4 ha		Hingmandol-50 ha
							Nagaon- 20 ha.
							Naleswar- 10 ha
		Dhandatopa					Talabahali-20 ha.
							Baghuanali-20
							Pokanda-20 ha
							Siarimalia-50 ha
		Handapa					Barapali- 20 ha
							Bhejigoth-20 ha
							Karadabani-20 ha
							Khola- 50 ha
							Charkhaman-50 ha
		Bamur			Bramhanipali-10 ha		Ambapal-20 ha
							Bhangamunda-30 ha
			Total	**30 ha.**	**44 Ha.**	**200 Ha.**	**530 Ha.**
			G Total	**384.18 Ha.**	**1525.97 Ha.**	**3497.1325 Ha.**	**3948 Ha.**

6.4.1.1: Verification of Plantation

During field exercise, verification of plantations has been executed. The year of Plantation, Area planted in Ha, Name of the scheme, Max height, Min height & percentage of survival is furnished in **Table No.6.6** as follow

Table No.6.6 Status of Plantations based on field verification:

Field verification report of Plantations taken up in Athamalick Forest Division.

Name of the Range	Scheme	Location	Area	Species	Max.ht (in cm)	Min.ht (in cm)	Av. Girth (in cm)	Percentage of Survival
Dhandatopa	MGNREGS	Akhurakata KF	20ha	Teak	156	26	7	69
	MGNREGS	Bandhagan KF	10ha	Teak	91	26.2	3	85
	MGNREGS	Talabahali KF	20ha	Teak	301	26	8	84
	MGNREGS	Somanathpur KF	20ha	Teak,Acasia	302	62	7	54
	MGNREGS	Pokanda KF	10ha	Teak	104	25	3.2	47
	MGNREGS	Hatasimili KF	10ha	Teak	170	24	4	54
	MGNREGS	Talabahali KF	5ha	Teak	104	23	4	58
	MGNREGS	Kutulsingha KF	10ha	Teak	281	48	6	41
	MGNREGS	Ghanajodi KF	20ha	Teak	246	53	6	62
	MGNREGS	Dandhatopa KF	10ha	Teak	362	45	10	77
	13th FC	Dantarikhol KF	20ha	Teak	116	38	3.7	58
Athamalik	MGNREGS	Tambabajeni KF	20ha	Teak	321	55	7	87
	13th FC	Mahendrapur KF	50ha	Teak, Neem, Karanja	397	55	9	61
	MGNREGS	Mahendrapur KF	5 ha	Teak,Karanja,	230	39	8	80
	MGNREGS	Asurgadia KF	10ha	Teak	71	19	3	52
	MGNREGS	Ghanajodi Kf	10ha	Teak	210	27	4	53
	MGNREGS	Malipadar KF	5ha	Teak	211	34	6	86
	MGNREGS	Jagabandhur KF	10ha	Teak	210	23	7	57
	MGNREGS	Pataka KF	5ha	Teak,Acasia,chakunda	400	30	12	47
Madhapur	MGNREGS	Patrapada KF	20ha	Teak	83	23	3.2	77
	MGNREGS	Ghodgadi KF	20ha	Teak	196	32	3.5	62
	MGNREGS	Singarimunda KF	25ha	Teak, Amla	228	51	7	75
	MGNREGS	Pulamahula KF	25ha	Teak, badachakhunda	237	50	7	69
	MGNREGS	Bankapalasa KF	20ha	Teak	175	43	7	92
	MGNREGS	Bijpur KF	20ha	Teak	196	35	8	58
	13th FC	Raibahal KF	40ha	Teak	460	80	14	88
	13th FC	Baruneі KF	20ha	Teak	199	33	6	48
	13th FC	Hatuapada kf	20ha	Teak, Neem, Badachakhunda	186	49	7	77
	J.V.P	Ghodagadi	20ha	Phasi,Gambhari	210	22	4	78
	Fodder Plantation	Patrapada	10ha	Mango, Kaitha,Bela,Kaju	80	17	2	63

Nandapa	2406-S.P-Silv-research under 12th F.C	Dantarikhol KF	45ha	Teak	610	90	14	54	2007-08
	Compn.Affn.	BadagobindapurK.F	24.73 ha	Teak	580	100	15	58	2009-10
	Compn.Affn.	Luhamunda K.F	58.73 ha	Teak	530	60	16	61	2009-10
	Compn.Affn.	Bidisingh K.F	14.25ha	Teak	600	94	15	54	2009-10
	Compn.Affn.	Chuliapur K.F	12.16ha	Teak	535	110	14	51	2009-10
	Compn.Affn.	Krushnapur K.F	8.49ha	Teak	545	70	13	59	2009-10
	Compn.Affn.	Jamujhari K.F	33.64 ha	Teak	600	65	10	62	2009-10
	State CAMPA	Laxmipur	36 ha	Teak	550	180	12	83	2010-11
	State CAMPA	Kundali	10 ha	Teak	480	58	8	56	2010-11
	13th FC	Dantarikhol	20 ha	Teak	530	175	11	76	2010-11
	MGNREGS	Laxmipur K.F	20ha	Teak	320	150	9	68	2013-14
	MGNREGS	Charkhamana K.F	15ha	Teak	340	52	8	53	2013-14
	MGNREGS	Berham K.F	25 ha	Teak	310	55	6	57	2013-14
	MGNREGS	Solanda K.F	10 ha	Teak	200	38	7	81	2013-14
	MGNREGS	Baninali K.F	10 ha	Teak	145	28	4	55	2013-14
	MGNREGS	Bidising	40 ha	Teak	180	25	7	59	2013-14
	MGNREGS	Barham K.F	20 ha	Teak	150	27	5	62	2014-15
	Compn.Affn.	Papasara P.F	26.74 ha	Teak	145	20	4	54	2015-16
	Compn.Affn.	Bilcinali P.F	6 ha	Teak	152	30	4	53	2015-16
	Compn.Affn.	Kuajhari& Nuakuajhari P.F	110.63ha	Teak	195	22	5	49	2015-16
Bamur	State CAMPA	Bramhanipali	20 ha	Teak	210	18	6	59	2010-11
	State CAMPA	Sanorohila	30 ha	Teak	182	20	3	62	2010-11
	13th FC	Northern R.F	30ha	Teak, Amla,Karanja	150	20	5	63	2011-12
	13th FC	Northern R.F	50ha	Teak	290	15	6	45	2012-13
	13th FC	Gundari dadara	30ha	Teak	230	15	5	62	2012-13
	13th FC	Dalapaka	10ha	Teak	178	17	4	53	2012-13
	MGNREGS	Jharaberani K.F	10ha	Teak	300	156	9	91	2013-14
	MGNREGS	Chintamanipur K.F	10ha	Teak	130	30	5	66	2013-14
	MGNREGS	Ghosar R.F	10ha	Teak	90	20	3	62	2015-16
	MGNREGS	Bramhanipali K.F	10ha	Teak,Gambhari	100	30	4	39	2015-16
	MGNREGS	Champapur K.F	20ha	Teak	130	25	4	45	2015-16

6.4.2 FOREST DEVELOPMENT AGENCY

6.4.2.1 In 2002-03, new project of Forest Development Agency (FDA) was lunched in this division. This Project is funded by Ministry of Environment and Forests, Government of India. In this project there is scope for greater involvement of people because the project would be taking care of developmental needs of the people through entry point activities. The main components of FDA are Aided Natural Regeneration (ANR), Artificial Regeneration (AR), Pasture Development, Bamboo plantation and Mixed Plantation, soil and moisture conservation, etc. The specifications of different plantations are given in **Table No: 6.7**

Table: 6.7 SPECIFICATIONS OF VARIOUS OF PLANTATIONS IN FDA

Sl.No.	Type of Plantation	No. Of Plants Per H	Species
1	Aided Natural Regeneration	300	Teak, Asan, Khair, Babul, Neem, Sisso etc.
2	Artificial Regeneration	1600	Teak, Khair. Babul, Neem, Sisso,Simili etc.
3	Pasture Plantation	400	Bamboo, Gambhari, Subabul, Mulburry grass etc.
4	Bamboo Plantation	625	Salia Bamboo (Dendrocalamus strictus)
5	Mixed Plantation	1600	Amla, Bahada, Harida, Khair, Sunari, Bel etc

Source: DFO, Athamallik

6.4.2.2 FDA is a registered society, registered in September 2002. There are specific bye-laws for this society. The Conservator of Forests, Angul circle(Now Regional Chief Conservator of Forests) is the chairman of the FDA and DFO is the Member Secretary. The society contains 16 Ex-officio members, presidents of all V.S.S, one women member from each V.S.S and member secretary of all V.S.S. The executive body contains ex-officio members and 15 women representatives of V.S.S elected by General body, 5 V.S.S Presidents, 5 V.S.S Secretaries.. There will be more transparency in the spending of money. The money is directly released to the concerned V.S.S by the DFO and it is kept in joint account of V.S.S. President and Secretary.

6.4.2.3 43 V.S.S have been taken up in the 1st phase of FDA. This project runs for 6 years in each village. In each individual VSS 10-85 Ha. is taken up for plantation. The details of the V.S.S areas taken up under FDA are given in **Table No.6.3** . In 2003-04 a total of 1655 Ha. of area is treated under FDA. The details of the V.S.S areas taken up under FDA are given in

TABLE No. 6.8 DETAILS OF THE VSS AREAS TAKEN UP UNDER FDA ACTIVITIES DURING 1st PHASE

Sl No.	Name of the Range.	Name of F,D.A	ANR in Ha	AR in Ha	Total area in Ha.
1	Athmallik	Sidhapur	85	-	85
2		Rangapur	27	3	30
3		Kundapur	42	3	45
4		Mahendrapur	80	--	80
5		Nuagarh	80	--	80
6		Rajinga	20	---	20
7		Hingamandal	20	---	20
8		Rathipur	30	----	30
9		kusumkuhuri	28	2	30
10		Kendupati	60	---	60
11		Kutugaon	18	2	20
12		Badabandha	10	--	10
13	Dhandatopa	Basudevpur	10	---	10
14		Amasama	80	----	80
15		Hatasimili	20	---	20
16		Kutulsingha	30	---	30
17		Korab	25	5	30
18		Bipradiha	40	---	40
19		Hinjagola	15	5	20
20		Chintamanipur	20	---	20

21	Madhapur	Sorisapanka	25	---	25
22		Bijipur	50	---	50
23		Daulatpur	30	---	30
24	Handapa	Dhundi	30	---	30
25		Parbatipur	15	5	20
26		Garuda	35	5	40
27		Govindapur	45	---	45
28		Pratappur	60	---	60
29		Ichhapur	60	---	60
30		Kadalimunda	30	---	30
31		Gundurijharan	70	---	70
32		Damabahali	50	---	50
33		Udal	20	--	20
34		Ranibhuin	30	---	30
35	Bamur	Dangapal	40	---	40
36		Bamur tentulisahi	25	---	25
37		Rangamatia	35	5	40
38		Bhangamunda	40	---	40
39		Bairagipali	30	---	30
40		Gatikrushnapur	30	---	30
41		Brundabanpur	50	---	50
42		Ambapal	30	5	35
43		Bhejidiha	45	--	45
		TOTAL	1615	40	1655

In 2008-09; A total of 1250 Ha. of area is treated under FDA. The details of the V.S.S areas taken up under FDA are given in **Table No.6.8**.

TABLE No. 6.9 DETAILS OF THE VSS AREAS TAKEN UP UNDER FDA ACTIVITIES DURING 2nd PHASE					
Sl No.	Name of the Range.	Name of F,D.A	ANR in Ha	AR in Ha	Total area in Ha.
1	Athmallik	padmapokhari	30	-	30
2		Jadupur	40	-	40
3		Nagaon	20	--	20
4		Dudhianali	40	--	40
5		Limbadihi	40	--	40
6		Pataka dahimal	40	---	40
7		Kusupur	10	---	10
8		Gopalpur	30	----	30
9		Hariharpur	20	---	20
10		Deulabeda	20	---	20
11	Dhandatopa	Taranda	30	--	30
12		Bhaliadhara	20	--	20
13		Alekhapur	10	---	10
14		Sadanandapur	10	----	10
15		Jhatikbahal	20	---	20
16		Kantapada	30	---	30
17	Madhapur	Chandrapur	30	--	30
18		Manarbeda	10	---	10
19		Kudgaon	30	--	30
20		Sargiseni	20	---	20
21		Nuagaon	20	---	20
22		Goratopa	30	---	30
23		Digpadar	20	---	20
24		Tasarbeda	30	---	30
25		Ghosarakhol	30	--	30
26		Bharatapur	30	--	30

In 2014-15 and 2020-21, a total of 120 Ha. and 50 Ha. of area is treated under FDA. The details of the V.S.S areas taken up under FDA are given in **Table No.6.9.**

27	Handapa	Kanteikolia	30	---	30
28		Khandabara	20	---	20
29		Madhapur	20	---	20
30		Jamunali	30	---	30
31		Takaba	30	---	30
32		Mandama	30	---	30
33		Mankadchua	30	--	30
34		Jamujhari	30	---	30
35		Batrakhol	30	---	30
36		Tentoloi	30	---	30
37		Hemamura	20	--	20
38		Uchabali	20	---	20
39		Kundali	30	---	30
40		Laxmipur	30	---	30
41		Rajanipal	20	---	20
42	Bamur	Bamur Chasasahi	10	--	10
43		Renhalibeda-pipalmunda	20	--	20
44		Susab	20	--	20
45		Khandahata	30	--	30
46		Tentalapani	30	--	30
47		Pipalbahali	10	--	10
48		Champapur	30	--	30
49		Pathargarh	10	--	10
50		Chintamanipur	30	--	30
			1250	---	1250

In 2014-15 and 2020-21, a total of 120 Ha. and 50 Ha. of area is treated under FDA. The details of the V.S.S areas taken up under FDA are given in **Table No.6.9.**

TABLE No. 6.10 DETAILS OF THE VSS AREAS TAKEN UP UNDER FDA ACTIVITIES DURING 2nd PHASE

Sl No.	Name of the Range.	Name of F,D.A	ANR in Ha	AR in Ha	Year of creation.
1	Madhapur	Khajurijharan	25	-	2014-15
2		Dhuliapada	20	-	-do-
3	Dhandatopa	Kenchuanali	25	-	-do-
4	Bamur	Naktinali	25	-	-do-
5		Dalimura	25	-	-do-
6	Madhapur	Kadapada-Mangalpur	30	---	2015-16
7	Bamur	Dalapaka	20	---	-do-

The location of plantations executed under F.D.A is furnished in Table No. 6.11 as below.

ABLE No. 6.11 DETAILS OF THE LOCATION OF THE PLANTATIONS TAKEN UP UNDER FDA ACTIVITIES DURING Ist PHASE						
Sl No.	**Name of FDA**	**Area taken up for plantation.**	**Location/Area in Ha**			
			R.F	**D.P.F**	**P.F**	**K.F**
1	Sidhapur	85				85
2	Rangapur	30				30
3	Kundapur	45				45
4	Mahendrapur	80				80
5	Nuagarh	80				80
6	Rajinga	20				20
7	Hingamandal	20				20
8	Rathipur	30				30
9	kusumkuhuri	30	Kusumkuhuri (2 Ha)			28
10	Kendupati	60				60
11	Kutugaon	20				20
12	Badabandha	10				10
13	Basudevpur	10				10
14	Amasama	80				80
15	Hatasimili	20				20
16	Kutulsingha	30				30
17	Korab	30				30
18	Bipradiha	40				40
19	Hinjagola	20				20
20	Chintamanipur	20				20
21	Sorisapanka	25				25
22	Bijipur	50				50
23	Daulatpur	30				30
24	Dhundi	30				30
25	Parbatipur	20				20
26	Garuda	40	Bankimundi (35 Ha)			5

27	Govindapur	45	Bankimundi (36 Ha)			9
28	Pratappur	60				60
29	Ichhapur	60				60
30	Kadalimunda	30	Kadalimunda (30 Ha)			
31	Gundurijharan	70		Gundurijharan		
32	Damabahali	50		Tileswar(25 Ha)		25
33	Udal	20				20
34	Ranibhuin	30				30
35	Dangapal	40				40
36	Bamur tentulisahi	25	Kishoreban (25 Ha)			
37	Rangamatia	40				40
38	Bhangamunda	40				40
39	Bairagipali	30				30
40	Gatikrushnapur	30				30
41	Brundabanpur	50				50
42	Ambapal	35				35
43	Bhejidiha	45				45
	TOTAL	**1655**	***128***	***95***		***1432***

TABLE No. 6.12 DETAILS OF THE LOCATION OF THE PLANTATIONS TAKEN UP UNDER FDA ACTIVITIES DURING 2nd PHASE

Sl No.	Name of FDA	Area taken up for plantation.	Location/Area in Ha			
			R.F	D.P.F	P.F	K.F
1	padmapokhari	30				30
2	Jadupur	40				40
3	Nagaon	20				20
4	Dudhianali	40				40
5	Limbadihi	40				40
6	Pataka dahimal	40				40
7	Kusupur	10				10
8	Gopalpur	30				30
9	Hariharpur	20				20
10	Deulabeda	20				20
11	Taranda	30				30
12	Bhaliadhara	20				20
13	Alekhapur	10				10
14	Sadanandapur	10				10
15	Jhatikbahal	20				20
16	Kantapada	30				30

17	Chandrapur	30				30
18	Manarbeda	10				10
19	Kudgaon	30				30
20	Sargiseni	20				20
21	Nuagaon	20				20
22	Goratopa	30				30
23	Digpadar	20				20
24	Tasarbeda	30				30
25	Ghosarakhol	30				30
26	Bharatapur	30				30
27	Kanteikolia	30				30
28	Khandabara	20				20
29	Madhapur	20				20
30	Jamunali	30				30
31	Takaba	30				30
32	Mandama	30				30
33	Mankadchua	30				30
34	Jamujhari	30				30
35	Batrakhol	30				30
36	Tentoloi	30				30
37	Hemamura	20				20
38	Uchabali	20				20
39	Kundali	30				30
40	Laxmipur	30				30
41	Rajanipal	20				20
42	Bamur Chasasahi	10				10
43	Renhalibeda-pipalmunda	20				20
44	Susab	20				20
45	Khandahata	30				30
46	Tentalapani	30				30
47	Pipalbahali	10				10
48	Champapur	30				30
49	Pathargarh	10				10
50	Chintamanipur	30				30
51	Khajurijharan	25				25
52	Dhuliapada	20				20
53	Kenchuanali	25				25
54	Naktinali	25				25
55	Dalimura	25				25
56	Kadapada-Mangalpur	30				30
57	Dalapaka	20				20
	TOTAL	**1420**				**1420**

The Avenue Plantations taken up in the Division for the year 2013-14 to 2020-21 are given in **Table No.6.12.**

TABLE No. 6.13 DETAILS OF AVENUE PLANTATIONS	
Year	Length in (Km.)
2013-14	156
2014-15	38
2015-16	20
2016-17	12
2017-18	5
2018-19	75
2019-20	142
2020-21	89

6.5 Carbon stock: Basing on the Growing Stock of wood; biomass for carbon stock assessment has been done. Biomass for carbon stock assessment based on the forest types and land use for RFs is furnished in **Table. No. 6.16** as below**.**

Table: 6.14		BIOMASS FOR CARBON STOCK ASSESSMENT FOR RFs		
S .No.	**RF Block**	**Type of Forest**	**Area in Ha**	**Biomass(Mg)**
2	Kusumkuhuri	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	120.4	2614.4
		(ii) 5B/DS1 Dry Deciduous Scrub	491.64	10675.61
3	Talaipathar	(i) 3C/C2e Moist Peninsular Sal Forest	4210	452182.14
		(ii) 5B/C2 Northern Dry Mixed Deciduous Forest	2802.54	301011.53
4	Mahendrapur	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	85.8	3278.88
		(ii) 5B/DS1 Dry Deciduous Scrub	348.27	13309.26
5	Kutulsingha	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	1150.09	49743.78
		(ii) 5B/DS1 Dry Deciduous Scrub	494	21319.26
6	Dantarikhol	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	975	30393.73
		(ii) 5B/DS1 Dry Deciduous Scrub	649.64	20251.27
7	East Baruni	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	1445.54	34564.33
		(ii) 5B/DS1 Dry Deciduous Scrub	161	3849.67
8	West Baruni	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	240.21	10931.41
		(ii) 5B/DS1 Dry Deciduous Scrub	160	7281.23
9	Nuagan	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	598	17534.25
		(ii) 5B/DS1 Dry Deciduous Scrub	608.93	16427.16
10	Northern	(I) 5B/C1c Dry Peninsular Sal Forest	15280	1102671.14
		(ii) 3C/C2e Moist Peninsular Sal Forest	3894.67	281056.3
11	Handapa	(I) 5B/C1c Dry Peninsular Sal Forest	1620	101639.07
		(ii) 5B/C2 Northern Dry Mixed Deciduous Forest	179.21	11243.66
12	Dandarugudi	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	32	
		(ii) 5B/DS1 Dry Deciduous Scrub	130.31	No sample point
13	Kholdangiani	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	88.4	1173.91
		(ii) 5B/DS1 Dry Deciduous Scrub	132.71	1762.32
14	Kadalimunda	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	267.1	10479.51
		(ii) 5B/DS1 Dry Deciduous Scrub	30.23	1182.07
15	Bankimundi	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	275	7983.65
		(ii) 5B/DS1 Dry Deciduous Scrub	118.07	3427.75
16	Bindhyabasini	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	275.84	7806.98
17	Kishoreban	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	344.56	No sample point.
18	Ghosar	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	740.3406	22719.91
		(ii) 5B/DS1 Dry Deciduous Scrub	400	12272.24
19	Guja	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	310	8687.91
		(ii) 5B/DS1 Dry Deciduous Scrub	36.18	1013.96
20	Bijamalhia	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	108.5	2029.81
		(ii) 5B/DS1 Dry Deciduous Scrub	108.45	2028.87
		Total	**38912.6306**	

NB: Wood density is taken as 0.57 gram cm É¾"

6.6 Carbon sequestration and mitigation: Forests and wood products can effectively reduce the process of climate change in several ways. Growing trees absorb carbon dioxide from the atmosphere and store the carbon so efficiently that about half the dry weight of a tree is carbon. This carbon remains locked up in the form of wood and wood products. Sustainably grown and harvested wood (and other biomass) also provides a renewable alternative to fossil fuels and enhance carbon storage. Enhanced carbon sequestration through recognized and innovative silvicultural practices, eco-restoration of degraded/mined out forestlands, improved biomass productivity, etc. will help in improving forest health and vitality. Forest soil must be kept healthy and fertile. The growth of forest crops must be kept vigorous to attain the most desirable level of biomass production within an optimal time scale. Efforts have been made to preserve the forests in keeping with the above importance. The present revision should aim at enhanced carbon sequestration and mitigation.

CHAPTER-7

7. Optimization of forest resource utilization

7.1 Recorded removal of timber:

The Timber and Firewood harvested from different coupes of the Selection working Circle are furnished below.

1. The tree felling was not done from 1995-96 to 2006-07 due to ban on felling by Government of Odisha. This resulted in non working of the coupe.

2. The coupe working started from 2006-07. The subsidiary silvicutural operation (SSO) was not taken up during ban period i.e. up to 2005-06.

3. The area of Talaipathar felling series is 6927.31 ha. as per working plan prescription. But it is observed from the marking list and field verification that very less number of trees were marked and felled due to non-availability of trees having exploitable girth. During 2010-11 Taleipahtar SWC-V was not taken delivery due to being uneconomical to OFDC, Ltd. From this felling series 2569 trees were marked and felled from 2006-07 to 2020-21 where as 57098 has been prescribed in the working plan for the period which is very less.

4. The area of Pathargarh felling series is 7206.77 ha. as per working plan prescription. But it is observed that 4273 nos. of trees were marked and felled from 2006-07 to 2020-21 where 56436 has been prescribed in the working plan for the period, which is very less.

5. The area of Udal felling series is 7393.79 ha. as per working plan prescription. But it is observed that 4287 nos. of trees were marked and felled from 2006-07 to 2020-21 where 62522 has been prescribed in the working plan for the period, which is very less.

6. The area of Handapa felling series is 6367.66 ha. as per working plan prescription. But it is observed that 4261 nos. of trees were marked and felled from 2006-07 to 2020-21 where 46879 has been prescribed in the working plan for the period, which is very less.

7. The area of Hatidhara South felling series is 7422.34 ha. as per working plan prescription. But it is observed that 1694 nos. of trees were marked and felled from 2006-07 to 2020-21 where 59542 has been prescribed in the working plan for the period, which is very less.
8. The area of Hatidhara North felling series is 6683.63 ha. as per working plan prescription. But it is observed that 5758 nos. of trees were marked and felled from 2006-07 to 2020-21 where 52762 has been prescribed in the working plan for the period, w,hich is very less..

9. During the current year 2020-21, marking is completed. Total tree marked comes to 1184 from 6 nos. of felling series. All the marked trees have been felled.

10. The total area of selection-cum implement working circle was 42001.50 Ha. as per working plan prescription. But no. of trees to be felled were 378007 No. against which no. of trees marked is 24026 no. and total no. of trees felled is 23943 no. The production of timber is 11642.5404 Cum. And production of firewood is 6022.50 Stacks.

Talaipathar FS in Talaipathar RF							
Year	Coupe No.	No of trees as per Working Plan -2006-07 to 2020-21	No of trees marked	No. of trees felled /delivered	Timber Production (In cum)	Firewood (In stack)	Remarks
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
2006-07	Talaipathar SWC-I	7223	612	612	162.6704	136.5	
2007-08	Talaipathar SWC-II	7014	715	715	201.192	32	
2008-09	Talaipathar SWC-III	5497	215	215	10.45	0	
2009-10	Talaipathar SWC-IV	5877	224	224	171.95	0	
2010-11	Talaipathar SWC- V	6897	83	0	0	0	Not taken delivery due to being un-economical to OFDC, Ltd.
2011-12	Talaipathar SWC-VI	6904	101	101	34.149	10	
2012-13	Talaipathar SWC-VII	6733	307	307	160	60	
2013-14	Talaipathar SWC-VIII	6106	107	107	40.017	0	
2014-15	Talaipathar SWC-IX	4847	205	205	89.483	35	
2015-16	Talaipathar SWC-X	5247	153	153	105.235	30	
2016-17	-	-	-	-	-	-	-
2017-18	I	6168	453	453	149.0723	180	-
2018-19	II	7081	454	454	327.7466	229	-
	III	4386	103	103	114.6192	71	-
2019-20	IV	13894	403	403	517.1455	296	-
2020-21	V	6909	285	285	192.3566	158	-
	G. Total	**100783**	**4420**	**4337**	**2276.0866**	**1237.5**	

Pathargarh FS in Northern R.F							
Year	Coupe No.	No of trees as per Working Plan -2006-07 to 2020-21	No of trees marked	No. of trees felled /anelsea	Timber Production (In cum)	Firewood (In stack)	Remarks
1	2	3	4	5	6	7	8
2006-07	Pather garh SWC-I	5552	1042	1042	154.338	272	
2007-08	Pather garh SWC-II	7082	757	757	339.913	202	
2008-09	Pather garh SWC-III	4387	255	255	154.65	74	
2009-10	Pather garh SWC-IV	5684	505	505	298.984	99	
2010-11	Pather garh SWC-V	6218	305	305	165.075	88	
2011-12	Pather garh SWC-VI	5259	502	502	338.246	126	
2012-13	Pather garh SWC-VII	5556	377	377	190.907	30	
2013-14	Pather garh SWC-VIII	7520	259	259	150.617	81	
2014-15	Pather garh SWC-IX	9178	271	271	200	135	
	Total	56436	4273	4273	1992.73	1107	
2015-16	Pather garh SWC-X	8424	251	251	133.257	103	
2016-17	-	-	-	-	-	-	-
2017-18	I	9018	465	465	420.8754	314	-
2018-19	II	8384	341	341	331.2474	126	-
	III	22898	211	211	148.5141	80	-
2019-20	IV	15848	265	265	242.5511	115	-
2020-21	V	13091	91	91	84.0566	52	-
	G. Total	**190535**	**10170**	**10170**	**5345.962**	**3004**	

Udal FS in Northern R.F							
Year	Coupe No.	No of trees as per Working Pan - 2006-07 to 2020-21	No of trees marked	No. of trees felled /delivered	Timber Production (In cum)	Firewood (In stack)	Remarks
1	2	3	4	5	6	7	8
2006-07	Udal SWG-I	6764	873	873	159.6632	110	
2007-08	Udal SWG-II	5805	560	560	216.337	258.5	
2008-09	Udal SWG-III	7632	354	354	148.044	72	
2009-10	Udal SWG-IV	10189	451	451	312.421	185	
2010-11	Udal SWG-V	5891	353	353	288.888	95	
2011-12	Udal SWG-VI	7275	421	421	377.243	127	
2012-13	Udal SWG-VII	7164	718	718	518.04	311.75	
2013-14	Udal SWG-VIII	5599	348	348	150.539	196	
2014-15	Udal SWG-IX	6203	209	209	116.288	83	
	Total	62522	4287	4287	2287.463	1438.25	
2015-16	Udal SWG-X	4022	191	191	124.364	66	
2016-17	-	-	-	-	-	-	-
2017-18	Hatidhara South Coupe-A Hatidhara North Coupe-A	-	-	-	-	-	The coupes have not delivered to OFDC Ltd because the said forest block have been included in Satkosia Tiger Reserve
2018-19	Hatidhara South Coupe-B Hatidhara North Coupe-B	-	-	-	-	-	-do-
2019-20	Hatidhara South Coupe-C Hatidhara North Coupe-C	-	-	-	-	-	-do-
2020-21	Hatidhara South Coupe-D Hatidhara North Coupe-D	-	-	-	-	-	-do-
	G Total	**129066**	**8765**	**8765**	**4699.29**	**2942.5**	

Handapa FS in Handapa RF.							
Year	Coupe No.	No of trees as per Working Pan- 2006-07 to 2020-21	No of trees marked	No. of trees felled /delivered	Timber Production (In cum)	Firewood (in stack)	Remarks
1	2	3	4	5	6	7	8
2006-07	Handapa SWG-I	7515	1431	1431	588.742	390.75	
2007-08	Handapa SWG-II	8289	651	651	117.038	256	
2008-09	Handapa SWG-III	4073	410	410	100.602	46	
2009-10	Handapa SWG-IV	3678	230	230	119.589	91	
2010-11	Handapa SWG-V	6424	434	434	316.699	180	
2011-12	Handapa SWG-VI	3757	307	307	122.6	95	
2012-13	Handapa SWG-VII	3757	253	253	140.408	36	
2013-14	Handapa SWG-VIII	3622	315	315	100.343	80	
2014-15	Handapa SWG-IX	5764	230	230	133.95	70	
	Total	46879	4261	4261	1739.971	1244.75	
2015-16	Handapa SWG-X	10428	203	203	71.625	100	
2016-17	-	-	-	-	-	-	-
2017-18	-	-	-	-	-	-	-
2018-19	II	5525	255	255	72.852	56	-
-do-	III	10862	336	336	136.568	84	-
2019-20	IV	6538	153	153	95.462	42	-
2020-21	V	7137	311	311	246.262	120	-
	Total	134248	9780	9780	4102.2194	2891.5	

Hatidhara (South) FS in Hatidara RF.							
Year	Coupe No.	No of trees as per Working Pan -2006-07 to 2020-21	No of trees marked	No. of trees felled / delivered	Timber Production (In cum)	Firewood (in stack)	Remarks
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
2006-07	Hatidhara South SWC-I	6625	258	258	26.075	0	
2007-08	Hatidhara South SWC-II	7184	215	215	6.662	0	
2008-09	Hatidhara South SWC-III	7044	171	171	12.43	0	
2009-10	Hatidhara South SWC-IV	6153	129	129	76.385	0	
2010-11	Hatidhara South SWC-V	7080	151	151	79.839	5	
2011-12	Hatidhara South SWC-VI	6940	102	102	69.716	0	
2012-13	Hatidhara South SWC-VII	6380	282	282	221.097	10	
2013-14	Hatidhara South SWC-VIII	6006	183	183	100.023	150	
2014-15	Hatidhara South SWC-IX	6130	203	203	191.542	36	
	Total	**59542**	**1694**	**1694**	**783.769**	**201**	
2015-16	Hatidhara South SWC-X	7257	165	165	94.008	40	
2016-17	Hatidhara (S), SWC-I	-	-	-	-	-	-
2017-18	Hatidhara (S), SWC-II	-	-	-	-	-	-
2018-19	Hatidhara (S), SWC-III	–	-	-	-	-	-
2019-20	Hatidhara (S) SWC-IV	-	-	-	-	-	-
2020-21	Hatidhara, SWC- V	-	-	-	-	-	-
	G. Total	**126341**	**3553**	**3553**	**1661.546**	**442**	**126341**

Hatidhara (South) FS in Hatidara RF.							
Year	Coupe No.	No of trees as per Working Pan -2006-07 to 2020-21	No of trees marked	No. of trees felled / delivered	Timber Production (In cum)	Firewood (in stack)	Remarks
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
2006-07	Hatidhara South SWC-I	6625	258	258	26.075	0	
2007-08	Hatidhara South SWC-II	7184	215	215	6.662	0	
2008-09	Hatidhara South SWC-III	7044	171	171	12.43	0	
2009-10	Hatidhara South SWC-IV	6153	129	129	76.385	0	
2010-11	Hatidhara South SWC-V	7080	151	151	79.839	5	
2011-12	Hatidhara South SWC-VI	6940	102	102	69.716	0	
2012-13	Hatidhara South SWC-VII	6380	282	282	221.097	10	
2013-14	Hatidhara South SWC-VIII	6006	183	183	100.023	150	
2014-15	Hatidhara South SWC-IX	6130	203	203	191.542	36	
	Total	**59542**	**1694**	**1694**	**783.769**	**201**	
2015-16	Hatidhara South SWC-X	7257	165	165	94.008	40	
2016-17	Hatidhara (S), SWC-I	-	-	-	-	-	-
2017-18	Hatidhara (S), SWC-II	-	-	-	-	-	-
2018-19	Hatidhara (S), SWC-III	–	-	-	-	-	-
2019-20	Hatidhara (S) SWC-IV	-	-	-	-	-	-
2020-21	Hatidhara, SWC- V	-	-	-	-	-	-
	G. Total	**126341**	**3553**	**3553**	**1661.546**	**442**	**126341**

ABSTARCT OF TREE MARKED AND FELLED						
Sl No.	Name of felling series	No of trees as per Working Pan - 2006-07 to 2020-21	No of trees marked/ felled	Timber Production (IN CUM)	Firewood (in stack)	Remarks
1	2	3	4	5	6	7
1	Talaipathar F.S	4420	4337	2276.0866	1237.5	During 2010-11 Compt. No. V not taken delivery due to being un-economical to OFDC, Ltd.
2	Pathargarh F.S	190535	10170	10170	5345.962	
3	Udal F.S	129066	8765	8765	4699.29	
4	Handapa F.S	9780	9780	4102.2194	2891.5	
5	Hatidhara-South F.S	3553	3553	1661.546	442	
6	Hatidhara-North F.S	11737	11737	6721.38	2742	
	Total	**349091**	**48342**	**33696.23**	**17358.25**	

7.2 Recorded removal of fuel wood 7.2.1 **The sources of firewood are forest, agricultural wastes, dung cakes. of these, forest is the major source. The fuel wood requirement of the division is calculated based on the research done by FSI in 1996. The population figures of 2001, 2011 and 2021 are taken as per the presumptions made in the calculation of timber requirement calculations. The fire wood requirement is provided in** Table No: 7.1

Table: 7.1 FIRE WOOD REQUIREMENT				
Type	**Per capita consumption (kg)**	**Annual Requirement in thousand tons**		
		2001	2011	2021
Rural	168	32.3	36.98	41.78
Urban	140	1.59	1.83	2.07
Total	308	33.89	38.81	43.85

7.2.2 The demand for firewood is more in Athamallik, Madhapur, Bamur, Boinda, where the population is more. The requirement is very high for the Dhabas present along the National Highway. Mostly people take the firewood from the nearby forest area and the Revenue Forest areas. The Orissa Forest Development Corporation has opened firewood depots at different locations in the division, but the demand is very low in these depots.

7.3 Recorded removal of bamboo/ rattans

This Working Circle covers potentially rich bamboo areas. Bamboo survey had been carried out in Talaipathar and Hatidhara blocks. As per the provisions of the Bamboo Cutting Rules, Bamboo cutting was feasible in Hatidhara block only.

The Taleipathar R.F included in Bamboo working circle where no improvement work has been taken up due to want of fund. Hence the purpose of inclusion in this working circle is not fulfilled.

The total area allotted to this working circle is 21936.32 Ha. and 2 cutting series namely Talaipathar and Hatidhara have been constituted. Salia and Daba bamboo were worked only in 2007-08 & production of commercial bamboo has been obtained during 2007-08, 2008-09, 2010-11 and 2011-12. In the outgoing plan only ones i.e. in 2007-08 710.120 MT of Salia Bamboos was obtained throughout the plan period. The data on the production of industrial bamboo and commercial bamboo is given below in the table. The coupe has not been worked out during the plan period due to non-availability of sufficient bamboo clumps which are commercially viable. Silvicultural operation has

Year of working	Name of the coupe	Production (		Production (Commercial Bamboo)(		Royalty paid by OFDC, Ltd.	Reason for No working
		Salia	Daba	Total			
1	2	3	4	5	6	7	8
2006-07	Hatidhara (S & N) BCB	No. Working	-	-	-	-	During 2006-07 offered to OFDC, Ltd but surrender due to un-productive and un-economical.
2007-08	Hatidhara (S & N) BCC	710.120 MT	-	710.120 MT	1961 nos	-	
2008-09	Hatidhara (S & N) BCD	-	-	-	10933 nos	-	
2009-10	Hatidhara (S & N) BCA	No Working				-	During 2009-10 offered to OFDC, Ltd, Angul for taking delivery but the OFDC, Ltd have not taken delivery of the coupes.
2010-11	Hatidhara (S & N) BCB	-	-	-	3862 nos	-	
2011-12	Hatidhara (S & N) BCC	-	-	-	8473 nos	-	
2012-13	Hatidhara (S & N) BCD	No working	-	-	-	-	During 2012-13 offered to OFDC, Ltd, Angul to work out but the OFDC, Ltd have not taken delivery of the coupes.
2013-14	Hatidhara (S & N) BCA	No working	-	-	-	-	Delivered during 2013-14 but surrendered due to non-economic vide this Memo No. 835 dt. 20.12.2013
2014-15	Hatidhara (S & N) BCB	No Working	-	-	-	-	Delivered during 2014-15 but the OFDC, Ltd surrender due to there is no potentiality for commercial exploitation of Bamboo from these coupes.
	Total			**710.120 MT**	**25229 Nos.**		

7.4 Recorded removal of locally important NTFPs including MAPs:

7.4.1 The forests of this division are rich in various non-timber forest produce (NTFP) items like Kendu leaves, Katha, Lac, Genduli gum, Sunari bark, Kuchila, Siali leaves, Mahua flower, Sal seeds, Simul cotton, Tamarind etc. NTFPs contribute sizable portion to the livelihood of the tribals and people living around the forests. The important MFP items available in different forest blocks are given in

Table: 7.3 N.T.F.P ITEMS AVAILABLE IN ATHAMALLIK FOREST DIVISION

Sl No.	Name of the RF	N.T.F.P Items Available in R.F areas
1	Kusumkuhuri	Kendu leaves, Sal leaves, Sal seeds, Mahua flowers
2	Talaipathar	Kendu leaves, Mahua flowers, Mahua seeds, Sialifibre Siali leaves. Hill brooms, Kusum seeds, myrobilans, Honey, Sal resin.
3	Mahendrapur	Kendu leaves, Mahua flowers, Sal leaves and seeds
4	Kutulsingha	Mahua flower, Kendu leaves
5	Dantarikhol	Kendu leaves Mahua flower, Saleigum, honey
6	East Baruni	Kendu leaves, Mahua flowers, Genduligum
7	West Baruni	Kendu leaves, Mahua flowers, Khair, Genduligum
8	Nuagan	Kendu leaves, Sal leaves
9	Northern	Sal seeds, Sal leaves, Stick Sal resin, Kendu leaves, Mahua flower, Phonix, Honey.
10	Handapa	Sal seeds, Sal leaves, resin kendu leaves Mahua flower, Mahua seeds.
11	Dandarugudi	Kendu Leaves, Mahua flower, Char seeds
12	Kholdangiani	Mahua flower, Mahua seeds, Kendu leaves.
13	Kadalimunda	Kendu leaves, Mahua flower, Mahua seeds
14	Bankimundi	Kendu leaves, Mahua flowers, Mahua seeds, Char seeds Sal leaves, Sal seeds
15	Bindhyabasini	Mahua flower, Mahua seeds, Kendu leaves, Anla seeds
16	Kishoreban	Kendu eaves, Mahua flowers, Mahua seeds, Anla, Char seeds
17	Ghosar	Kendu leaves, Mahua flower Sal leaves and Sal seeds
18	Guja	Kendu leaves, Mahua flowers, Mahua seeds, Sal Seeds, Sal resin, Leaves sticks char Seeds, Khair
19	Bijamalhia	Kendu leaves, Mahua flowers Char seeds, Dhatki flowers,

DEMARCATED PROTECTED FORESTS		
1	Kuber hill	Kendu leaves, Mahua flowers & seeds.
2	Thakurgarh	Mahua flower, Kendu leaves, Char seeds
3	Pitabalibahal	Mahua flower, Mahua seeds, Kendu leaves
4	Rampur	Mahua flower, Mahua seeds, Sal seeds
5	Purunapani	Mahua flower, Kendu leaves, Mahua seeds Anla,
6	Muchhapur 'A'	Sal seeds, Sal leaves, Mahua flower and seeds, Kendu leaves
7	Muchhapur 'B'	Same on Muchhapur 'A'
8	Mangalpur	Kendu leaves, Mahua flower and seeds
9	Gundurijharan	Sal Seeds, Sal resin, kendu leaves, Phoenix
10	Kuturukani	Sal seeds, Sal leaves, kendu leaves, Mahua flowers and seeds
11	Solanda	Kendu leaves and Mahua flower and seeds
12	Barham	Mahua flower, seeds and Kendu leaves
13	Susab	Mahua flower, seeds and Kendu leaves
14	Bhangamunda	Mahua flower, Seeds and Kendu leaves
15	Digi	Kendu leaves, Mahua flower and seeds and Sal leaves
16	Batipuranapani	Kendu leaves, Mahua flower, & seeds, Sal leaves and seeds, char seeds, Honey.
17	Tileswar	Mahua flower, & seeds, Kendu leaves.
18	Tulsipur	Tamarind, Kendu leaves, Salei gum
19	Bajpur	Kendu leaves, Mahua flowers and Seeds.
Source: Field survey		

7.4.2 The people take different fruits,leaves,flowers from the forest. Most of the time the fruits from forest become their staple food. The Kendu fruit is one among them. The yield of this fruit is predominantly high and is relished very much. The mango fruits and kernels are another important food items for the tribals. Some of the fruits are also used for medicinal purposes and the animals also eat some. The fruit bearing species available in the division are furnished in **Table No: 7.4** The important oil yielding plants, important fiber yielding plants, important gum and resin yielding plants, important tannin yielding plants and important dye yielding plants present in the division are given in the respective **Table No: 7.5, 7.6, 7.7, 7.8, 7.9.** The important medicinal plants available in the division are given in **Table No: 7.10**

Table: 7.4 FRUIT BERING SPECIES AVAILABLE IN THE DIVISION				
Sl No.	Local Name	Scientific Name	Collection Period	Uses
1	Amba	*Mangifera indica*	April- May	Edible
2	Amhda	*Spondias pinnata*	Jan-Feb	Edible
3	Anla	*Emblica officinalis*	Dec-Jan.	Medicinal
4	Bahada	*Terminalia belerica*	Feb-mar	Medicinal & Edible for Animal
5	Barakoli	*Zizyphus mauritiana*	Nov-Dec	Edible
6	Baula	*Mimusops elengi*	April- May	Edible
7	Batra	*Melia composita*	Mar-April	Edible for Animal
8	Bar	*Ficus bengalensis*	Nov-Dec	Edible for Birds & Animal
9	Bela	*Aegle marmelos*	April- May	Edible
10	Bhalia	*Semicarpus anacardium*	Mar-April	Medicinal
11	Char	*Buchanania Lanzan*	April- May	Edible
12	Dimiri	*Ficus racemosa*	Nov—Dec	Edible for Birds & Animal
13	Gohira	*Acacia leucophloea*	May	Edible for Animal
14	Gambhar	*Gmelina arborea*	May-June	Edible for Animal
15	Harida	*Terminalia chebula*	Feb-mar	Medicinal
16	Jamu	*Syzygium cumini*	June-July	Edible
17	Kaitha	*Limonia acidssima*	Nov—Dec	Edible for Man & Elephant
18	Karanja	*Pongamia pinnata*	Jan-Feb	Oil & Medicine
19	Kantaikoli	*Zizyphus oenoplia*	Oct-Jan	Edible
20	Kendu	*Diospyros melanoxylon*	Mar-April	Edible
21	Kochila	*Strychnos nuxvomica*	Nov—Dec	Medicinal & Edible for birds
22	Kusum	*Schleichera oleosa*	April- May	Edible & Oil
23	Kumbhi	*Careya arborea*	July-Agus	Edible for Animal
24	Khajuri	*Phoenix Sylvestris*	May-June	Edible Fruits
25	Mahul	*Madhuca indica*	Feb-mar	Edible Oil & Fruit
26	Mankadakendu	*Diospyros embryopteris*	Feb-mar	Edible for Animal
27	Neem	*Azadirachta indica*	May-June	Oil & Medicine
28	Panas	*Artocarpus integrifolia*	May-June	Edible
29	Pipal	*Ficus religiosa*	Dec-Jan.	Edible for Animals
30	Sargi/Sal	*Shorea robusta*	April- May	Oil
31	Simal	*Bambax ceiba*	April- May	Cotton yield
32	Tal	*Borassus flabelliformis*	July	Edible
Source: Field Survey				

Table: 7.5 IMPORTANT OIL YEILDING SPECIES				
Sl No.	Local Name	Botanical Name	Useful parts	Uses
1	Mohula	*Madhuca indica*	Seed	Edible
2	Kusum	*Schleichera oleasa*	Seed	Cooking and soap making
3	Karanja	*Pongamia pinnata*	Seed	Medicine
4	Neem	*Azadirachta indica*	Seed	Medicine
5	Kochila	*Strychnos nuxvomica*	Seed	Medicine
6	Champa	*Michelia champaca*	Flower	Perfumes
7	Eucalyptus	*Eucalyptus indica*	Leaf	Medicine
8	Sal	*Shorea robusta*	Seed	Edible food
9	Polanga	*Callophylum inophyllum*	Seed	Soap making
10	Chandan	*Santalum album*	Wood	Perfume & soap making
Source: Field Survey				

Table: 7.6 IMPORTANT FIBRE YIELDING SPEICES				
Sl No.	Local Name	Botanical Name	Useful Parts	Uses
1	Bar	*Ficus bengalensis*	Tree	Rope making
2	Handiphuta	*Pueraria tuberosa*	Stem	Thatching purpose and rope making
3	Jaisanda	*Litsea sebifera*	Fiber	Medicinal value
4	Kumbhi	*Careya arborea*	Fiber	Rope making
5	Palas	*Butea monosperma*	Root	Rope Making
6	Panasi	*Eulaliopsis binata*	Whole	Rope making
7	Pipal	*Ficus religiosa*	Tree	Rope making
8	Siali	*Bauhinia vahlii*	Fiber	Binding of kendu leaves and Rope making
9	Suamnoi	*Inchnocarpus frustescens*	Stem	Binding to Thatching
Source: Field Survey				

Table: 7.7 IMPORTANT GUM AND RESINS YIELDING SPECIES				
Sl No	Local Name	Botanical name	Useful parts	Uses
1	Babool	*Acacia nilotica*	Gum	Calico-Printing, dyeing and as a sizing materials for silk, cotton
2	Dhaura	*Anogeissus latifolia*	Gum	Sizing paper and incalicoprinting
3	Genduli	*Sterculia urens*	Gum	Gum is edible and use in preparation of confectionaries.
4	Khaira	*Acacia catechu*	Khaira	Pan making industry
5	Sargi/Sal	*Shorea robusta*	Resin from Heart wood	Manufacture of varnish, paints
6	Salei	*Boswellia serrata*	Gum	Pleasant aromatic smell when burnt
Source: Field Survey				

Table: 7.8 IMPORTANT TANIN YIELDING SPECIES				
Sl No.	Local Name	Botanical Name	Part Yielding Oil	Uses
1	Anla	*Emblica officinalis*	Fruit	Medicinal, Leather
2	Arjuna	Terminalia arjuna	Bark & Fruits	Leather
3	Bahada	*Terminalia bellerica*	Myrobalans (Fruit)	Medicinal, Leather
4	Bamur/Babul	*Acacia milotica*	Bark & Fruits	Leather
5	Dhaura	*Anogeisus latifolia*	Leaves	Leather
6	Harida	*Terminalia chebula*	Fruit	Medicinal, Leather
7	Sargi/Sal	*Shorea robusta*	Bark & Fruits	Leather
8	Sunari	*Cassia fistula*	Bark & Fruits	Medicinal

Table: 7. 9 IMPORTANT DYE YIELDING SPECIES				
Sl No	Local Name	Botanical name	Parts Yielding dye	Uses
1	Dhatuki	Woodfordia fruticosa	Flowers	Dying
2	Kamala gundi	Mallotus Philippensis	Fruit	Cloth dying

Table: 7.10 IMPROTANT MEDICINAL PLANTS OF ATHAMALLIK DIVISION					
Sl. No	**Local Name**	**Botanical Name**	Family	**Parts Used**	Medicinal Properties
1	Agasti	*Sesbania grandiflora*	Fabaceae	Root, bark, leaves, flowers and fruits	Febrifuge. Useful for nasal catarrh. Stomatalgia, anaemia, emaciation.
2	Agnisikha	*Gloriosa superba*	Liliaceae	Rhizomes	Thermogenic, intensely poisonous. Antipyretic and rejuvenating. Useful in skin diseases, leprosy and also in promoting labour pain and expulsion of the placenta.
3	Amba		Anacardiaceae	Roots, bark, seed and kernel	Useful for syphilis, wounds, ulcers, diphtheria, rheumatism
4	Ambada		Anacardiaceae	Roots, barks, Fruits and Seeds	Thermogenic, appetizer and aphrodisiac. Useful in muscular rheumatism
5	Anantamula		Asclepiadaceae	Roots, leaves and stems	Aphrodisiac, demulcent, febrifuge, Useful in asthma, bronchitis, leucoderma, leprosy, epileptic fits.
6	Anchhu		Rubiaceae	Roots and leaves	Useful in gastropathy, anelse and hernia.

25	Baula		Sapotaceae	Bark, flowers, fruits and seeds	Flowers are used as brain tonic. Unripe fruits to fix loose teeth.
26	Begunia		Verbenaceae	Whole plant	Antiseptic, antipyretic, ophthalmic, general debility, sprains and cardiac disorder.
27	Bela		Rutaceae	Roots, leaves & fruits	Useful in anelse and dysentery, seminal weakness, uropathy, gastric, diabetes and asthmatic complaints
28	Bhalia		Anocordiaceae	Fruits	Digestive, purgative, liver tonic stimulant, antiseptic, uterine stimulant. Useful in Beri beri, cancer, diabetes and tumours.
29	Bhersunga		Rutaceae	Roots, bark and leaves	Demulcent, febrifuge, appetizing. Useful in skin diseases, leucoderma, leprosy and foul ulcers.
30	Bhringaraja		Asteraceae	Whole plant	Antibacterial demulcent and antiferbrile properties. It is indicated in the treatment of phelegmon, boils, impetigo, mastitis, abscesses, cystitis, cold and eruptive fever.
30	Bhuin anla		Euphorbiaceae	Whole plant	Febrifuge and antiseptic. Useful in Jaundice and diseases of the urino-genital system.
31	Bhuinnimba		Acanthaceae	Whole plant	Wounds, ulcers, chronic fever, malaria, skin diseases, and intestinal worms.
32	Bichhuati		Euphorbiaceae	Roots and leaves	Venereal diseases, diabetes, blood impurities, giddiness.
33	Brahmi		Scrophulariaceae	Whole plant	Intellect promoting, anticonvulsant, cardio tonic, useful in epilepsy and insanity.
34	Chakunda		Caesalpiniaceae	Leaves and seeds	Thermogenic, laxative, liver tonic, cardio tonic.
35	Champa		Magnoliaceae	Whole plant	Useful in chronic gastritis and cardiac debility and malarial fever.
36	Chandan		Santalaceae	Heartwood and roots	Intellect promoting, cardio-tonic. Naemostatic, aphrodisiac. Useful in psychopathy, cardiac debility, gastric irritability and hyper acidity.
37	Char		Anacardiaceae	Roots and fruits	Skin diseases, seminal weakness, cardio tonic, nervous debility and cardiac debility
38	Chhatian		Apocynaceae	Barks and leaves	Useful in preparation of cardio-tonic and abdominal disorder, anelse, dysentery and cardiopathy.

39	Chhatu		Agaricaceae	Whole plant	Used in paralysis, constipation, seminal weakness, and general debility
40	Chireta		Gentanaceae	Whole plant	Useful in all types of fevers and skin diseases.
41	Debadaru		Annonaceae	Bark	Useful for skin diseases, diabetes and hypertension.
42	Dhanan-twari		Poaceae	Whole plant	Useful in the treatment of gastric irritation, poisonous bites, epilepsy, cholera, skin diseases, fever and sprains.
43	Dhatki		Lythraceae	Flowers	Stimulant, antibacterial corrective of urinary pigments, and diabetes.
44	Dhaura		Combretaceae	Roots, bark, leaves and seeds	Haemostatic and rejuvenating, useful in *kapha* and *vata*, skin diseases, anelse and dysentery.
45	Dimiri		Moraceae	Bark and fruit	Anti-dysenteric, anti-inflammatory. Useful in ulcers, leucoderma, anaemia jaundice
46	Duba ghassa		Poaceae	Whole plant	Haemostatic, useful in the treatment of skin diseases, vomiting, anelse, dysentery and abortion.
47	Dudura		Solanaceae	Whole plant	Narcotic, antispasmodic, intoxicant. Useful in asthma, fever, ulcers and skin diseases. Also used to treat rabid dog bite and cure insanity.
48	Gambhari		Verbenaceae	Whole plant	Useful in fever, dyspepsia skin diseases and promoting the growth of hair.
49	Gangasiuli		Oleaceae	Leaves, flowers and seeds	Thermogenic, Antibacterial and febrifuge. Useful in malaria, chronic fever and grayness of hair and baldness.
50	Ganghauda		Papaveraceae	Whole plant	Antipyretic, sedative, aphrodisiac used in asthma, skin diseases, wounds and ulcers, latex is used in jaundice and malaria fever.
51	Gayasha		Lamiaceae	Leaves, flowers	Thermogenic, antipyretic. Leaf juice is used as eye drop and nasal drop.
52	Ghikuanari		Liliaceae	Leaf juice	Used in dyspepsia, burns, colic, abdominal tumours.
53	Ghurudu		Rubiaceae	Resin	Thermogenic, antispasmodic, cardio-tonic. Useful in intestinal worms specially roundworms.

57	Hadabh-anga		Vitaceae	Whole plant	Used in treatment of fractures, swellings, powdered roots and stem paste are used in specifically for bone fractures.
58	Harida		Combretaceae	Fruits	Purgative, Digestive, Cordio tonic. Useful in tridosa neuropathy and general debility.
59	Hinjala		Barringtoniaceae	Roots, leaves, and fruits	It is similar to cinchona in action when administered in malarial fever, also useful; in syphilis, nasal catarrh
60	Jamu		Myrtaceae	Bark, leaves and fruits	Useful in Diabetes and strengthening the teeth, gums, ring worms.
61	Jari		Moraceae	Roots, bark and leaves	Useful in the treatment of wounds, ulcers, bruises, anelse, dysentery and diabetes.
62	Kadamba		Rubiaceae	Bark, leaves and fruits	Febrifuge, and digestive. Decoction of leaves good for ulcers and wounds. Fruits are useful in gastric irritability.
63	Kaincha		Fabaceae	Roots, leaves and seeds.	*Pitta* and *Vata*, leucoderma, skin diseases asthma and fever.
64	Kainthha		Rutaceae	Bark, fruits and gums	Useful in gastropathy, anelse, vomiting, bronchitis. It is also cardio tonic.
65	Kamala-gundi		Euphorbiaceae	Glandular hairs of the fruit	Thernogenic, purgative and digestive. Useful for scabies, ringworms and parasitic skin affections.
66	Kanchana		Caesalpinaceae	Roots and bark.	Useful in skin diseases, leprosy, intestinal worms, wounds and ulcers.
67	Kanta baunsa		Bambusaceae	Roots, leaves, sprouts and grains	Skin diseases, ringworm, anelse, anelsea. It is also an abortive.
68	Kantamaris		Amaranthaceae	Whole plant	Antipyretic and febrifuge, useful in cure of leprosy, eczema, and bronchitis.

69	Kanteikuli		Flacourtiaceae	Roots, leaves and fruits	Useful in the treatment of *pitta* and *vata*, poisonous bites, skin diseases. Fruits are appetizer and digestive.
70	Karamanga		Oxalidaceae	Leaves and fruits	Antipyretic and febrifuge useful in anelse, vomiting scabies and general debility.
71	Karanja		Fabaceae	Whole plant	Useful in cleaning foul ulcers, teeth, anelsea, Beriberi, vaginopathy.
72	Kathha-champa		Apocynaceae	Root, leaves and latex	Thermogenic, laxative. Useful in gastropathy and rheumatism
73	Khair		Mimosceae	Bark and heart wood	Anti-dysentric, haemostatic, *kapha* and *pitta*, leprosy, leucoderma.
74	Kochila		Loganiaceae	Bark, leaves and seeds	Useful in Chronic wounds and Ulcers, leaf decoction is useful in Paralytic comp0-laints. Diabetes, Malarial fevers and weakness of limbs.
75	Koilekha		Acanthaceae	Roots & leaves	Useful in jaundice, rheumatism, promoting sexual vigour and strength, arresting in abortion.
76	Kumbhi		Barriangtoniaceae	Bark, leaves and fruits	Thermogenic and antipyretic. Useful for tumours. Colic, intestinal worms, epileptic fits and healing of vaginal ruptures.
77	Kunkum		Bixaceae	Roots, bark and seeds	Antipyretic and astringent. Useful in gonorrhea and fevers. A mosquito repellent and nontoxic dye.
78	Kurein		Apocynaceae	Bark, seeds and leaves	Aphrodisac, digestive and febrifuge. Useful in amoebic dysentery, anelse, asthma, skin diseases and chronic bronchitis.
79	Kusum		Sapindaceae	Bark and oil	Bark used for Malaria, ripening boils seed oil used for burns and ulcers.

80	Lajkuli		Mimosaceae	Roots and leaves	Antispasmodic, Febrifuge, Useful in leucoderma, Vaginopathy, Jaundice, Asthma, Small pox and tumour of the uterus.
81	Lalkaniar		Apocynaceae	Roots and leaves	Thermogenic, Aphrodisiac and febrifuge. A powerful repellant for ring worm and scabies.
82	Lantana (Naga Airi)		Verbenaceae	Whole plant	Antispasmodic. Useful in malaria, epilepsy and gastopathy.
83	Lodha		Symplocaceae	Bark	Useful in *Pitta* and *Kafa*, Tumours, Ulcers, Skin diseases.
84	Mai		Anacardiaceae	Bark and leaves	Useful in treatment of cuts, wounds, bruises, ulcers and sprains.
85	Manjuati		Lythraceae	Roots, leaves, flowers and seeds	Useful in leprosy, leucoderma, scabies, boils, anaemia. Falling of hair, jaundice, intellect promoting and cardio tonic.
86	Mayur-shikha		Polypodiaceae	Whole plant	Useful in *kapha* and *pitta*, anelse, dysentery, diabetes and fever.
87	Mohakal		Cucurbitaceae	Roots and fruits	Abortifacient and Purgative. Good for anelsea. Recommended for asthma, ophthalmia Epilepsy and Leprosy.
88	Mohalimba		Meliaceae	Whole plant	Asthma, diabetes, fevers, after delivery, hysteria, cardiac diseases and typhoid fever
89	Mohul		Sapotaceae	Bark, fruits and seeds	Useful for epilepsy, sprains and Rheumatism.
90	Mudmudi		Sterculiaceae	Roots, bark and fruit	Lactifuge, demulcent. Useful in colic, scabies, diabetes and gastropathy.
91	Mundi		Rubiaceae	Roots, barks and leaves	Useful for Colic and fever.
92	Mutha		Cyperaceae	Tubers	Anti-inflammatory, nervine tonic, intellect promoting, febrifuge, and useful in the treatment of leprosy, scabies, epilepsy.
93	Nageswar		Clusiaceae	Flowers and oil	Aphrodisiac, Febrifuge and cardio tonic. Useful to improve impotency.

94	Neem		Meliaceae	Bark, leaves, seeds and oil	Useful in the cure of *pitta* , skin diseases, eczema, leucoderma, malarial fever, bronchitis and diabetes.
95	Nil		Fasaceae	Whole plant	Thermogenic, laxative. Useful for promoting the growth of hair, cordiopathy and neuropathy.
96	Nirmuli		Convolvulaceae	Whole plant	Useful in jaundice, cough, bronchitis and paralysis.
97	Palas		Fabaceae	Bark, seeds and gums	Aphrodisiac, appetizer, digestive. Also useful in cure of intestinal worms, bone fractures and rectal diseases. Efficacious in birth control.
98	Panasa		Moraceae	Roots, leaves, fruits and seeds	Useful in *kapha* and *vata* and *pitta* , aphrodisiac and sedative.
99	Patal garuda		Apocynaceae	Roots and leaves	Useful for hypertension, insomnia, epilepsy.
100	Phanaphana		Bignoniaceae	Roots, leaves, fruits and seeds	Useful for asthma, bronchitis, colic, anelse, dysentery, cardiac disorder and gastropathy.
101	Piasal		Fabaceae	Heartwood and gum	Rejuvenating and union promoter. Useful in fractures, bruises, skin diseases, leucoderma, diabetes. Gum is used as liver tonic.
102	Pitamoi		Burseraceae	Roots, stem, leaves and fruits	Useful for asthma, roundworms and gastropathy.
103	Poksungha		Asteraceae	Roots and leaves	Used in *kapha* and *vata*, wounds and sores and preparation of eye lotion.
104	Polango		Clusiaceae	Bark, leaves and seeds	Skin diseases, internal haemorrhages, scabies and intra-muscular pain in leprosy.
105	Rakta chandan		Febaceae	Heartwood and fruits	Febrifuge, ophthalmic, aphrodisiac and tonic. Useful in mental aberrations.
106	Raktachita		Plumbaginaceae	Roots	Abortifacient Narcotic, digestive, Nervous stimulant and rejuvenating. Useful in leucoderma, ringworm and scabies.
107	Rithha		Sapindaceae	Roots, bark and fruits	Bark decoction is useful for cattle suffering from Ulcers, Abortifacient and tonic.

108	Saguan		Verbenaceae	Whole plant	Useful in hyper acidity, diabetes, leprosy, skin diseases.
109	Sahada		Moraceae	Roots, Bark, leaves and latex	Useful in vitiated condition of cough, ulcers, bronchitis, convulsions sores heal and chapped hands.
110	Sal		Dipterocarpaceae	Bark, fruits and resin.	Useful in *Kapha* and *Pitta*, bacterial afflictions. Tubercular, ulcers, Seminal weakness and burning of eyes
111	Salai		Burseraceae	Bark, gum and resin	Antipyretic and anti-dysentric. Also useful in syphilitic diseases and jaundice.
112	Salaparni		Fabaceae	Roots	Febrifuge, thermogenic, nervine tonic, cardio tonic.
113	Satabari		Liliaceae	Tuberous roots	Useful in nervous disorder, anelse, dysentery, throat infections, tuberculosis and epilepsy, cardiac debility hypertension and abortion.
114	Semul		Bombacaceae	Roots, gum, bark and fruit.	Paste is good for skin eruptions, fruits useful in ulceration of bladder and kidney.
115	Siju		Euphorbiaceae	Roots juice	Thermogenic and digestive. Useful in colic, constipation, wounds and ulcers, rheumatism, neuropathy.
116	Siris		Mimosaceae	Bark, flowers and seeds	Used in *pitta* and *kapha*, catarrh, asthma, leprosy, leucoderma, sprain, wounds and ulcers.
117	Sissoo		Fabaceae	Roots, leaves, bark and heart wood	Thermogenic, aphrodisiac and antipyretic. Useful in the treatment of skin diseases, leucoderma, scabies, ulcers, syphilis, gastropathy and ophthalmopathy.

118	Soyamlai		Apocynaceae	Roots	Seminal weakness, fever, skin diseases and diabetes.
119	Sunari		Caesalpiniaceae	Whole plant	Useful in skin diseases, tuberculosis glands, syphilis, diabetes, leprosy, ring worm, and cardiopathy.
120	Sunsunia		Marsileaceae	Whole plant	Hypnotic, ophthalmic, aphrodisiac. Useful in dyspepsia and insomnia.
121	Sweta simli		Bombacaceae	Root and bark	Useful in treatment of anelsea fevers, abdominal complaints and tumours.
122	Tentuli		Caesalpiniaceae	Roots, fruits and seeds	Thermogenic, anti-fungal, jaundice, scabies, ringworm, small pox, Alcoholic intoxication, vaginopathy and diabetes.
123	Thalkudi/		Apiaceae	Whole plant	Useful in treatment of cardiac debility, epilepsy abdominal disorders and leprosy. Intellect promoting.
	Brahmi				
124	Urguna		Cycadaceae	Bark and tender leaves	Useful for treatment sores and swellings.
125	Uturudi		Asclepiadaceae	Whole plant	Useful in *vata* and *kapha*. Plant extract useful in uterine and menstrual disorder.

Table- 7.11 NTFP inventorization.				
Name of the Range	Forest Block	Area in Ha.	Sampling Intensity in ha.	Name of different NTFP found
Athamallik	Kusumkuhuri	612.04		Mahua flowers, Mahua seeds, Char seeds,Bela,Karanj,Bahada,Amla,Kusuma
	Talaipathar	1806.04		Mahua flowers, Mahua seeds, Amla, Siali fibre, Bahada, Harida,Siali leave Mango, Tamarind, Sal leaf,Sal Seeds, Bela
	Mahendrapur	434.07		Anla, Kendu leaves,Bahada,Karanj,Bela,Kusuma,
Dhandatopa	Hatidhara	8984.97		Mahua flowers, Char Seeds, Mahua Seeds,Sal Leaf &Seeds,Siali
	Talaipathar	2054.99		Mahua flowers, Mahua seeds, Amla, Siali fibre, Bahada, Harida,Siali leave Mango, Tamarind, Sal leaf,Sal Seeds, Bela
	Kutulsinga	1646.64		Mahua flower & seeds.
	Dantarikhol	527.32		Mahua flowers, Mahua seeds, Bela.
Madhapur	Talaipathar	3151.51		Mahua flowers, Mahua seeds, Amla, Siali fibre, Bahada, Harida,Siali leave Mango, Tamarind, Sal leaf,Sal Seeds, Bela.
	East Baruni	1606.54		Mahua flower & seed, Mango,Bahada, Amla. Tamarind
	West Baruni	400.21		Anla, , Mahua flowers, Mahua seeds, Mango, Bahada
	Nuagaon	1298.93		Bahada, Amla,Mango,Sal leaf&Seeds
Handapa	Northern	12336.29		Sal seeds, Sal leaves, Siali leaves, siali fibers, Anla, Bahada, Chara seeds, Harida, Karanja, Bela,Hill broom, Kusum., Suam lai, Bela
	Handapa	1799.21		Sal leaf, Hill broom., Chara, Hopney, Bahada, Amla. Suam Lai, Bela,
	Dandarugudi	162.31		Karanja, Kusum, Mahua flowers & Mahua seeds, Bela.
	Kholdangiani	221.11		Karanja, Kusum, Mahua flowers & Mahua seeds, Bela.Char seeds, Honey, Harida,Bahada, Amla.

Bamur	Northern	6838.38		Sal seeds, Sal leaves, Siali leaves, siali fibers, Anla, Bahada, Chara seeds, Harida, Karanja, Bela,Hill broom, Kusum., Suam lai, Bela
	Bidhyabasini	275.84		Mahua flower, Mahua seeds, Honey, Karanja, Kusum, Char. Bela.
	Kishoreban	344.56		Char seeds, Mahua flower, Mahua seeds, Karanja, Kusum, Bahada.,Bela.
	Ghosar	1140.53		Sal leaves, , Mahua flower, Mahua seeds, Harida, Bahada, Amla.Kusum, Suam lai. Bela.
	Bijamaliha	216.95		Mahua flower & seeds, Char seeds
	Guja	346.18		Mahua flower & seeds, Bahada, Char seeds

Table- 7.12 NTFP inventorization: Report Generation.

Name of the Range	Name of Species	Total consumption by Collector (in Qtl)	Total sold (In Qtl)
1	2	5	6
Athmallik	Sal	100	250
	Sal	-	70
	Kusum	5	10
	Suam Lai	1	2
	Mahua	250	500
	Mahula	100	150
	Chara	2	4
	Bahada	5	25
	Harida	2	8
	Bela	17	38
	Honey	1	1
	Karanja	0.5	2
	Siali	50	150
	Amla	3	15
Madhapur	Sal	-	200
	Sal	-	50
	Mango	650	900
	Mahua	675	1897
	Mahua	800	-
	Harida	0.5	2.5
	Bahada	-	20
	Amla	-	10
	Uruguna	-	2
	Honey	0.3	1.5
	Tamarind	5	5
	Siali	-	400

Bamur	Sal	53	23
	Kusum	1	5
	Mahua	1200	2340
	Mahua	142	312
	Hill Broom	3000 nos	70000 nos
	Bahada	5	3
	Harida	2	9
	Amla	3	15
	Chara	1.5	03-
	Honey	0.3	0.47
	Suam Lai	1	2
	Siali	8.5	28
	Karanja	0.5	2
Handapa	Sal	25	45
	Mahua	142	85
	Mahua	118	236
	Kusum	4	8
	Hill Broom	3000 nos	70000 nos
	Bela	17	35
	Siali	8.5	28
	Suam Lai	1	2
	Bahada	0.5	10
	Harida	1.7	11
	Amla	3	15
	Honey	0.2	0.42
	Char	1.5	3
	Karanja	0.5	2
Dhandatopa	Sal	-	85
	Mahula	-	1250
	Mahula	625	-
	Siali	-	150
	Siali	-	45

Name of the Range	Name of product	Name of local market
1	2	4
Athmallik	Sal Leaf	Athmallik, Boudha
	Kusum	Athmallik, Boudha
	Mahua Flower	Athmallik, Boudha, Sambalpur, Bargarh
	Mahua Seed	Athmallik, Boudha
	Sal Seed	OFDC
	Bahada	Athmallik, Boudha, Sambalpur, Bargarh
	Harida	Athmallik, Boudha, Sambalpur, Bargarh
	Amla	Athmallik, Boudha, Sambalpur, Bargarh
	Bela	Athmallik, Boudha, Sambalpur, Bargarh
	Honey	Athmallik, Boudha
	Suam Lai	Athmallik, Boudha, Sambalpur, Bargarh
	Karanja	Athmallik, Boudha
	Char	Athmallik, Boudha
	Siali fibre	Athmallik, Boudha
Madhapur	Sal Leaf	Athmallik, Boudha
	Sal Seeds	OFDC
	Mango	Athmallik, Boudha
	Mahua Flower	Athmallik, Boudha, Sambalpur, Bargarh
	Mahua seed	Personal use
	Harida	Athmallik, Boudha, Sambalpur, Bargarh
	Bahada	Athmallik, Boudha, Sambalpur, Bargarh
	Amla	Athmallik, Boudha, Sambalpur, Bargarh
	Urguna	Angul,Sambalpur, Kolkata, Raipur
	Honey	Athmallik, Boudha, Sambalpur, Bargarh
	tamarind	Athmallik, Boudha, Sambalpur, Bargarh
	Siali Fibre	Athmallik, Boudha, Sambalpur, Bargarh
	Siali leaf	Athmallik, Boudha.

Bamur	Kusum	Athmallik, Boudha, Sambalpur, Bargarh
	Mahua Flower	Athmallik, Boudha, Sambalpur, Bargarh
	Mahua seed	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol
	Hill Broom	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol, Cuttack.
	Bahada	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol, Cuttack
	Harida	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol, Cuttack
	Amla	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol, Cuttack
	Honey	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol,
	Suam Lai	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol,
	Karanja	Athmallik,Boudha,Rairakhol
	Chara	Athmallik,Boudha,Rairakhol
	Siali Fibre	Athmallik,Boudha,Rairakhol
Handapa	Kusum	Rairakhol,Angul,Sambalpur, Cuttack
	Mahua Flower	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol
	Mahua seed	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol
	Hill Broom	Rairakhol,Angul,Sambalpur, Cuttack, Raipur.
	Bahada	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol
	Harida	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol
	Amla	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol
	Bela	Angul,Cuttack,Sambalpur
	Honey	Athmallik, Boudha, Sambalpur, , Rairakhol
	Suam Lai	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol
	Karanja	Angul,Rairakhol,Sambalpur
	Xhara	Angul,Rairakhol,Sambalpur
	Siali fibre	Athmallik,Rairakhol,Boudha
	Sal leaf	Boinda, Rairakhol
Dhandatopa	Sal leaf	Athmallik, Boudha,
	Siali leaf	Athmallik, Boudha,
	Siali fibre	Athmallik,Rairakhol,Boudha
	Mahua Flower	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol
	Mahua Seed	For sself consumption only

Table- 7.13 NTFP inventorization: Market study.

Name of the Range	Name of product	Price per Unit (Rs /Qtl)	Name of
1	2	3	4
Athmallik	Sal Leaf	250/- Qnt	Athma
	Kusum	1500/-Qntl	Athma
	Mahua Flower	1500/-Qntal	Athmallik,
	Mahua Seed	1200/- Qntal	Athma
	Bela	200/-qntls	Athmallik, Boudh
	Honey	20000/-qntls	Athma
	Suam Lai	500/-qntls	Athmallik, Boudh
Madhapur	Sal Leaf	400/- Qtl	Athma
	Sal Seeds	800/-Qtl	OFDC
	Mango	500/-qntl	Athma
	Mahua Flower	1400/-qntl-	Athmallik, Boudh
	Mahua seed	1500/- qntl	Perso
	Harida	3000/-qntl	Athmallik,
	Bahada	500/-qntl	Athmallik,
	Amla	1200/-qntl	Athmallik,
	Sialileaf	600/-qntl	Athma
Bamur	Kusum	1500/-qntl	Athmallik,
	Mahua Flower	1500/-qntl	Athmallik,
	Mahua seed	1200/-qntl	Athmallik, Boudh
	Hill Broom	15/- perno	Athmallik, Boudha,
	Bahada	600/- qntl	Athmallik, Boudha,
	Harida	1500/-qntl	Athmallik, Boudha,

Dhandatopa	Sal leaf	600/ Qtl	Athmallik, Boudha,
	Siali leaf	450/ Qtl	Athmallik, Boudha,
	Siali fibre	150/-qntl	Athmallik,Rairakhol, Boudha
	Mahua Flower	1450/-qntl	Athmallik, Boudha, Sambalpur, Bargarh, Rairakhol
	Mahua Seed	1500/ Qtl	For sself consumption only

7.5 Demand and supply of timber and important non-timber forest produce

7.5.1 Local people's need for forest products

7.5.1.1 People depend on forest for variety of products. Rural population require Bamboo, Poles, Fuel wood, Timber for agricultural implements, NTFP items like seeds, leaves, flowers, roots, bark, etc. The main species used in the rural areas are Sal, Bandhan, Teak, Kurum, and Asan for timber, Arjun, Kendu, Sidha, Karada, Dhaura etc. for poles. Since majority of population being rural and whole of their daily requirements comes from the forests, the damage to forest would have major impact on the livelihood of rural population. The industrialization in Angul district has an impact on the forest of Athamallik division. The expanding population in urban areas puts pressure on the forest. The presence of industries like NALCO, MCL, Jindal Steels, and Bhusan Steel, etc in this district has increased the urban population. Organized timber smugglers operate in the area to supply timber to Angul, Talcher, Cuttack and Paradeep towns. The main species that are illicitly removed from the forest and transported to outside the division are Teak, Sissoo, P.Sal, Sal etc. Mostly the furniture manufactured out of illegal timbers is transported to outside the division.

7.5.1.2 Timber

7.5.1.2.1 The timber is required for various purposes like wooden posts, household wooden panels, doors and window leaves, furniture, agricultural implements, cart wheels, etc. Generally Sal, Bija, Sissoo, Asan, Kasi, Bandhan are used for ridge pieces, door and window frames. The important timber species available in the division and their uses for different purposes are elaborated in the following **Table No: 7.14**

Table: 7.14 PRINCIPAL TIMBER YIELDING SPECIES IN ATHAMALLIK				
Sl No.	**Local Name**	**Botanical Name**	**Uses**	**Remarks**
1	Saguan	*Tectona grandis*	House building, Bridge and wharf construction, Furniture and cabinet work,	It resists the action of water and not attacked by Termites and white ants
2	Sal	*Shorea robusta*	House building, Railway sleepers, door and window frames, rafters, ploughs, boats, centering for bridges.	Sal seeds are used for extraction of oil, leaves and sticks are used locally as plates and tooth brush. The resins have medicinal value
3	Piasal (Bija)	*Pterocarpus marsupium*	Furnitures, planks and door anels.	Locally used and exported.
4	Sisoo	*Dalbergia latifolia*	Furnitures, Agricultural implements ornamental wood works	Stands water logged areas, locally used and exported, it is reckoned the best furniture wood.
5	Bandhan	*Ougeinia oojeinensis*	Cart wheels and agricultural implements	It is a large straight timber used locally and also exported.
6	Gambhar	*Gmelina arborea*	Cart Yokes, furniture, cabinet making bus bodies	Locally used and exported.
7	Asan	*Terminalia tomentosa*	For Building materials not in contact with ground, house building Rafters and Beams	Tassar cultivation is done on the leaves and the leaves are used for leather dying, locally a good substitute for Sal.
8	Kasi	*Bridelia retusa*	Furniture, agriculture implements.	It is resistant to white ants and fire.

9	Kurum	*Adina cordifolia*	Planks, furniture, box wood and ceilings	Locally used and exported.
10	Mundi or Mitkania	*Mitragyna parviflora*	Planks, furniture, box wood and ceilings	Locally used and exported.
11	Dhaura	*Anogeissus latifolia*	Axles of carts, Axe handle, plough	Locally used and exported.
12	Kendu	*Diospyros melanoxylon*	Used for rafters and beams	Used Locally
13	Jamu	*Syzygium cumini*	Planks, door frames, Agricultural implements and house	The fruit is eaten raw and locally used
14	Mohula	*Modhuca indica*	No timber value, used as firewood, planks, house post	Flower and seeds produce spirit and oil respectively
15	Siris	*Albizia lebbeck*	Agriculture implements, planks,	
16	Kusum	*Schleichera oleosa*	Agriculture implements	Seeds are used for oil extraction
17	Mango	*Mangifera indica*	House building material, used in plywood industries and for manufacturing match splints	Fruits used for pickle making, ripen are edible and kernels are also used locally
18	Sidha	*Lagerstroemia parviflora*	House poles and rafters.	Used Locally
19	Arjun	*Terminalia arjuna*	House building purpose like rafter and beams.	Bark is used for tanning, Tassar being reared on these plants.
20	Simili	*Bombax ceiba*	Match splints	Exported for match sticks
21	Karada	*Cleistanthus collinus*	Rafters	Used Locally
22	Tenttra	*Albizzia procera*	Planks and furniture making in carpentry units.	Used Locally
23	Kansha	*Hymenodictyon excellsum*	Planks, packing box, ceiling and used for bed planks	Used Locally
24	Phasi	*Anogeissus acuminata*	Timber used for car festival of Lord Jagannath.	Exported
Source: Field Survey				

7.5.1.2.2 The timber requirement is quantified in Athamallik division and this is done on the basis of report of Forest Survey of India, 1996. The population of the division is 2, 30,671 (2011 census). The urban population is 12,298 (5.6%) and the rural population is 2, 18,373 (94.4%). The population growth rate between 1941-1961 is 18.90%. The population growth rate between 1961-1981 is 25.10%. The population growth rate between 1981-2001 is 17.50%. The population growth rate between 2001-2011 is 13.33 %. Taking the trend it is presumed that the population growth rate would be 14.5% between 2011-21 and hence the projected population for 2021 and 2031 would be 2, 33,162 and 2, 63,473 respectively. The rural population of 2021 and 2031 would be 2, 20,104 and 2, 48,719 and the urban population in both the years would be 13,058 and 14,754 respectively. Per capita requirement for different activities like housing, furniture and agricultural implements have been calculated by FSI in 1996 and using those per capita data the total requirement is calculated and provided in **Table No: 7.15.** The requirements projected are only indicative of the needs of the people in the division. It is seen that most of the rural requirements are met from vast stretch of Revenue and Village forests present in the division. The main threat is from the demand of the urban people outside the division like Angul, Talcher, and Cuttack etc.This needs to be given attention by the administrators of the Department.

Table: 7,15 TIMBER REQUIREMENT PROJECTIONS IN DIFFERENT YEARS

Purpose	Type	Per capita consumption	Annual Requirement (cum)		
			2001	2011	2021
Housing & Allied uses	Rural	0.04	7,690	8,804	9948.76
	Urban	0.047	535	613.726	693.438
	Sub Total		8,225	9,418	10,642
Furniture	Rural	0.008	1538.016	1760.832	1989.752
	Urban	0.015	170.745	195.87	221.31
	Sub Total		1,709	1,957	2,211
Agricultural Implements	Rural & Urban	0.053	10,793	12,358	13,964
Total Requirement			20,726	23,732	26,817

7.5.1.2.3 There is no coupe working in the forest since 1992-93 after imposition of ban on green felling by Government of Orissa. Only small quantities of timber is produced through the seizures and salvaging of the timber fallen from the forest floor. The details of the timber production for the period from 1991-92 to 2004-05 and from 2006-07 to 2020-21 are given in **Table No: 7.16 &Table No:7.17.**

Table: 7.16 YEAR WISE TIMBER AND FIREWOOD PRODUCTION

Year	OR. Cases		U.D cases	Salvaged		Private		Total	
	Timber	F.W.	Timber	Timber	F.W.	Timber	F.W.	Timber	F.W.
1991-92	106.24	110	83.06	167.87	3201.3	--	---	357.17	3311.3
1992-93	47.86	75	100	980.91	2296.8	--	---	1128.77	2371.8
1993-94	50.9	110	186	673.05	2076.3	--	---	909.95	2186.3
1994-95	97.89	160	180	234.83	996.6	--	---	512.72	1156.6
1995-96	35.83	95	290	801.01	7364	--	---	1126.84	7459
1996-97	42.77	110	250	898	10180	--	---	1190.77	10290
1997-98	45.97	75	288	628.36	6650	--	---	962.33	6725
1998-99	87.78	125	210	377.81	5120	--	---	675.59	5245
1999-00	14.84	565	84	307.86	4840	--	---	406.7	5405
2000-01	68.26	115	236.54	563.57	5880	--	---	868.37	5995
2001-02	80.98	130	227.35	166.14	3200	86.94	810	561.4	4140
2002-03	45.47	70	197.11	468.38	3870	38.82	210	710.96	4150
2003-04	24.37	95	77.77	128.02	3365	--	120	230.16	3580
2004-05	67.14	95	491.28	76.98	1760	--	---	635.4	1855
2005-06	472.18	0.71			129			472.18	0.7

Source: DFO, Athamallik

Table: 7.17 YEAR WISE TIMBER AND FIREWOOD PRODUCTION

Year	Salvage meterials			U.D & OR cases seized materials			Private		Total	
	Timber (cum)	F.W. (stack)	Poles (Nos)	Round timber (Cum)	Sawn Size (In Cum)	F.W. (Stack	Timber (Cum)	F.W. (stack)	Timber (Cum)	F.W. (stack)
2006-07	65.614	27 stack	---	188.285	---	---	1.736	–	255.635	27
2007-08	9.77	---	---	112.752	---	---	21.729	–	144.251	---
2008-09	---	---	---	88.574	0.617	---	---	–	89.191	---
2009-10	---	---	---	58.69	2.39	18	15.283	–	76.363	18
2010-11	---	---	---	73.643	15.255	5.5	5.663	3	94.561	8.5
2011-12	---	---	---	81.979	10.084	---	14.144	4	106.207	4
2012-13	---	---	---	50.311	18.806	---	8.042	–	77.159	–
2013-14	442.328	305 stack	1158	33.6	3.121	9.5	8.695	4	487.744	13.5
2014-15	255.197	83 stack	177	6.052	---	---	---	–	261.25	83
2015-16				77.789	7.094	126	58.289	39	143.12	165
2016-17	26.299	11	-	59.413	5.317	3	0	0	91.029	14
2017-18	-	-	-	36.159	11.431	13	0	0	47.59	13
2018-19	-	-	-	7.513	0.856	2.133	0	0	8.369	2.133
2019-20	32.912	-	-	38.574	0.918	6.114	0	0	72.404	6.114
2020-21	90.4632	20	-	39.0647	5.1778	-	0	0	134.7057	20
Total	123.3752	176	143.3752	952.3987	30.7938	1126.5677	127.918	50	2089.5787	316.747

7.5.2.2 Firewood

7.5.2.2.1 The sources of firewood are forest, agricultural wastes, dung cakes. of these, forest is the major source. The fuel wood requirement of the division is calculated based on the research done by FSI in 1996. The population figures of 2001, 2011 and 2021 are taken as per the presumptions made in the calculation of timber requirement calculations. The fire wood requirement is provided in **Table No: 7.18**

Table: 7.18 FIRE WOOD REQUIREMENT				
Type	Per capita consumption (kg)	Annual Requirement in thousand tons		
		2001	2011	2021
Rural	168	32.3	36.98	41.78
Urban	140	1.59	1.83	2.07
Total	308	33.89	38.81	43.85

7.5.2.2.2 The demand for firewood is more in Athamallik, Madhapur, Bamur, Boinda, where the population is more. The requirement is very high for the Dhabas present along the National Highway. Mostly people take the firewood from the nearby forest area and the Revenue Forest areas. The Orissa Forest Development Corporation has opened firewood depots at different locations in the division, but the demand is very low in these depots.

7.5.4.4 Fodder

7.5.4.4.1 The domestic animal (cattle, cow, buffalo, sheep and goat) population of Athamallik division is 2, 17,949. There is no concept of stall-feeding and the usual practice followed is mass grazing. Generally the herdsman takes the animals of one or two villages to the nearby forest from morning to evening. Also there is a religious sentiment in disposal of unproductive cattle. The annual requirement of the fodder by these domestic animals is calculated based on the field observations and the report of Forest Survey of India. It is generally observed that each cow takes food 2-3% of its body weight, it consumes the fodder quantity of 5 kg/day approximately. FSI investigation shows that nearly 30% of the fodder requirement is met from the forests. Buffalo consumes fodder approximately two times of cow and sheep and goat consumes half that of the cow (FSI report, 1996). Based on the above observations a rough calculation has been made to know the fodder requirement and the fodder being consumed from the forest. The results are given below in **Table No: 7.19.**

Table: 7.19	ANNUAL REQUIREMENT OF FODDER			
Sl. No	Livestock	Total Population	Fodder Requirement per Year (M. T.)	Fodder Obtained From Forests (M. T)
1	Cattle	122568	223686	67106
2	Buffalo	9721	35481	10644
3	Goat	50315	45912	13774
4	Sheep	13925	12706	3812
	Total	1,96,529	3,17,785	95,336

As compared to the previous working plan estimation; The total livestock population has increased from 1,96,529 Nos to 2,17,949 Nos. While the population of cattle and Buffalo has decreased; that goat and sheep population has increased. Accordingly the fodder requirement per year (M.T.) is projected in **Table No: 7.20.** as there has been no alternative; the excess fodder requirement of 3,000 M.T(approximately) is met from the forests.

Table: 7.20	ANNUAL REQUIREMENT OF FODDER			
Sl. No	Livestock	Total Population	Fodder Requirement per Year (M. T.)	Fodder Obtained From Forests (M. T)
1	Cattle	120590	220076	66023
2	Buffalo	6777	24736	7421
3	Goat	60421	55134	16505
4	Sheep	30161	27521	8257
	Total	2,17,949	3,27,467	98,206

7.5.4.4.2 It is clear from the table that the total fodder taken from the forests roughly comes to 98206 MT. If it is converted into monetary values it comes to 4.91 Crores by taking minimum market price of green fodder as Rs.500/MT.Mostly the fodder requirement is met from the Khesra Forests, Demarcated Protected Forests and also the Reserved Forests. Some amount of fodder requirement is also met from the agricultural fields up to March and April. There is more grazing pressure on the forest from July to November when the agricultural lands are under crops. Grazing pressure is more in Northern, Dantarikhol Reserved Forests**.** The grazing fees was realized in the division from the graziers. It is observed that over a period of time the amount of fees realized has come down considerably. The details of the grazing fees collected are furnished in **Table No: 7.21.** There is no more collection of grazing fees at present.

Table: 7.21 DETAILS OF GRAZING FEES REALISED					
Year	Rs	Year	Rs	Year	Rs
1984-85	1559	1991-92	612	1998-99	1589
1985-86	1130	1992-93	1039	1999-00	747
1986-87	1207	1993-94	658	2000-01	543
1987-88	757	1994-95	997	2001-2002	78
1988-89	1440	1995-96	1286	2002-03	322
1989-90	1131	1996-97	818	2003-04	274
1990-91	1021	1997-98	1070		
Source: DFO, Athamallik					

7.5.4.5 Bamboo

7.5.4.5.1 The bamboo coupes were leased out to Titagarh Paper Mills Co. Ltd. in 1941for a long time. The main blocks, that are leased out were Hatidhara, Kutulsingha, Bankimundi and Dantarikhol blocks. Besides lease, the bamboo from Hatidhara was also worked through local contractors for sale in Cuttack. The potential yield of bamboo was to the tune of forty lakhs or even more (Dr. H. F. Mooney). Then from 1988 onwards the Orissa Forest Development Corporation Ltd (OFDC Ltd) started working the bamboo coupes. After working directly up to 1995-96, in 1996 the OFDC Ltd became the leaseholder and the working of the coupes was done by the Orient Paper Mills as Raw Material Procurer (RMP). This arrangement continued up to 1999-00 and then the paper mill has backed out due to heavy losses. There is no working of Bamboo coupes for 3 years, from 2000-01 to 2002-03. In 2003-04 the OFDC Ltd has worked the bamboo coupes directly. But, the outturn was very low. In 2004-05 the BILT, Chaudwar has worked the coupes. The details of industrial and commercial bamboo production are available from 1988-89. The production details in the entire division from 1988-89 to 2003-04 are reflected in **Table No: 7.22.** It is seen from the table that the production of Bamboo has gone down considerably from 1998-99 and is lowest in 2003-04. The main reason for abyssimal production in 2003-04 is mainly due to delay in taking the delivery of coupes by OFDC Ltd. and as a result effective working time has reduced drastically. The low production and non-working of bamboo coupes result is loss of revenue to Government and employment to wage earners.

Table No: 7.22 DETAILS OF BAMBOO PRODUCTION/ROYALTY				
	Production		Royalty in Rs	
Year	Industrial In S.U	Commercial	I. B	C. B
1988-89	2527.67	52248	808854	52248
1989-90	2572.23	44420	864437	44420
1990-91	1473.29	24842	521544	24842
1991-92	2634.16	44075	52318	44075
1992-93	2777.8	47190	979907	47190
1993-94	2398.32	52495	1083342	52495
1994-95	1968.24	40018	1103227	48022
1995-96	1978.45	48718	950660	58462
1996-97	2396.84	25444	1052535	30533
1997-98	2017.69	17950	1339834	21540
1998-99	448.42	3040	1184384	3952
1999-00	813.55	33546	276238	43610
2000-01	--	--	526367	9020
2001-02	No Bamboo working done			
2002-03	No Bamboo working done			
2003-04	153.21	9020	--	--
2004-05	263.21	2700		
Total	24423.08	445706	10743647	480409
Source: DFO, Athamallik				

The production details in the entire division from 2006-07 to 2020-21 are reflected in **Table No: 7.22**

Table No: 7.23 DETAILS OF BAMBOO PRODUCTION/ROYALTY							
Year of working	Name of the coupe	Production (industrial Bamboo) (in MT)			Production (Commercial Bamboo) (in	Royalty paid by OFDC, Ltd. (Rs)	Reason for No working
		Salia	Daba	Total			
1	2	3	4	5	6	7	8
2006-07	Hatidhara (S &N) BCB	No. Working	-	-	-	-	During 2006-07 offered to OFDC, Ltd but surrender due to un-productive and un-economical.
2007-08	Hatidhara (S & N) BCC	710.120 MT	-	710.120 MT	1961 nos	-	
2008-09	Hatidhara (S & N) BCD	-	-	-	10933 nos	10933	
2009-10	Hatidhara (S &N) BCA	No Working				-	During 2009-10 offered to OFDC, Ltd, Anugl for taking delivery but the OFDC, Ltd have not taken delivery of the coupes.
2010-11	Hatidhara (S & N) BCB	-	-	-	3862 nos	-	
2011-12	Hatidhara (S & N) BCC	-	-	-	8473 nos	-	
2012-13	Hatidhara (S & N) BCD	No working	-	-	-	-	During 2012-13 offered to OFDC, Ltd, Anugl to work out but the OFDC, Ltd have not taken delivery of the coupes.

2013-14	Hatidhara (S & N) BCA	No working	-	-	-	-	Delivered during 2013-14 but surrendered due to non-economic vide his Memo No. 835 dt. 20.12.2013
2014-15	Hatidhara (S &N) BCB	No Working	-	-	-	-	Delivered during 2014-15 but the OFDC, Ltd surrender due to there is no potentiality for commercial exploitation of Bamboo from these coupes.
2016-17	-	-	-	-	-	-	-
2017-18	HatidharaSouth Coupe-A HatidharaNorth Coupe-A	-	-	-	-	-	The coupes have not delivered to OFDC Ltd because the said forest block have been included in Satkosia Tiger Reserve
2018-19	HatidharaSouth Coupe-B HatidharaNorth Coupe-B	-	-	-	-	-	-do-
2019-20	HatidharaSouth Coupe-C HatidharaNorth Coupe-C	-	-	-	-	-	-do-
2020-21	HatidharaSouth Coupe-D HatidharaNorth Coupe-D	-	-	-	-	-	-do-
	Total	**710.12**		**710.12**	**25229**	**10933**	

7.5.4.6 Non-Timber Forest Produces (NTFPs)

7.5.4.6.1 Number of NTFP items are available in the forests. Prior to 2002 the NTFP items were leased out in favour of co-operative bodies like TDCC, OFDC, Tussar Silk Co-operative Society and private agencies like M/s Hanuman Oil Mills Ltd etc. These organizations used to collect NTFP items through local people and provide them seasonal employment. The details of NTFP out-turn and royalty realized are furnished in **Table No.7.20** . 28 MFP items were leased out in favour of M/s Utkal Forest Products Ltd, a joint sector company set up in collaboration with IPICOL for a period of 2 years i.e. from 1.10.90 to 30.9.92 on experimental basis by the Government of Orissa. Items leased out are Neem seed, Bana tulasi, Karanja Benachera, Chakunda, Bana kulathi, Babul seed, Baidanka, Baghanakhi, Gila seed, Bana haldi Sikakai seed, Gille, Mahua seed, Basil, Kamalagundi, Kusum seeds, Palas, Chiranjibidana, Indrajaba, Marda seed, Chara seeds), Gaba, and cover, Jute seed, Landa baguli, Makhan seed, Mango kernel, Ananto, Nageswar seed, seed, Polanga and Sheali seed. Subsequently the order was modified and the lease period was extended for 10 years instead of 2 years w.e.f. 1.10.90 by the Government of Orissa. Later on, however, the lease of Mango kernel was withdrawn from M/s Utkal Forest Products Ltd. and given to different lessee after the approval by Government. Out of the balance 28 lease items, 10 items namely Ananta, Baidanka, Baghanakha, Jute seed, Kamalagundi, Landa baguli, Makhan seed, Marda seed, Nageswar seed, and Polanga have been surrendered by M/s UFP Ltd. w.e.f 1.10.95. As per the Government instructions, the Divisional Forest Officer held auction sale of the above items. The contract of collection of 18 M.F.P items in favour of M/S UFP Ltd. has however been determined by the Principal CCF vide his memo No.19339 dt.08.10.98 due to default in payment of royalty. In this division, Siali Fibres are collected by DFO (KL), and he pays royalty for the same.

TABLE NO.7.24 YEAR WISE OUT TURN AND ROYALITY OF M.F.P ITEMS				
Year	Agency	Name of M.F	Out turn	Royalty in Rs.
1984-85	O.F.D.C Ltd.	Sal seed	375 M.T	150000
	Seri Fed.	Tussar coccoo	86-01-00 K.P.G	11016
	Private holder	M. Flower	228.30 M.T	167813
1985-86	O.F.D.C Ltd.	Sal seed	270.708 M.T	203031
	Seri Fed.	Tussar coccoo	94-10-04 K.P.G	12117
	Private holder	M. Flower	92.40 M.T	67934
1986-87	O.F.D.C Ltd.	Sal seed	820.537	430782
	Seri Fed.	Tussar coccoo	104-02-02 K.P.G	13329
	Private holder	M. Flower	126.80 M.T	93198
1987-88	O.F.D.C Ltd.	Sal seed	112.786 M.T	52445
	Seri Fed.	Tussar coccoo	114-08-15 K.P.G	14662
	Private holder	M. Flower	168.80 M.T	124074
1988-89	O.F.D.C Ltd.	Sal seed	55.226 M.T	42635
	Seri Fed.	Tussar coccoo	126-00-00. K.P.G	1628
	Private holder	M. Flower	90.10 M.T	66275
1989-90	O.F.D.C Ltd.	Sal seed	858.152 M.T	185886
	Seri Fed.	Tussar coccoo	113-07-10 K.P.G	17887
	Private holder	M. Flower	192.6 M.T	141583
KPG -	Kahana,	Pana,	Ganda,	
	1 Ganda =	4 tussar		
	1 Pana =	20 Ganda		
	1 Kahana	16 Pana		

7.5.4.6.2 In March 2000 Government of Orissa announced new NTFP policy. The orientation is changed from revenue earning to livelihood approach. The ownership of 68 MFP items in the scheduled areas has been vested with panchayats. Anyone who is interested in doing trade in NTFP has to get registered in panchayats. Subsequently in November 2002, Government of Orissa, Panchayati Raj Department framed the Orissa Gram Panchayats (Minor Forest Produce Administration) Rule, 2002. As per these rules Panchayat Samiti fixes the minimum procurement price for MFP items. The penal provisions for violation of any conditions are also spelt out in these rules. The procurement price used to be fixed by the District Level Price Fixation Committee (DLPFC) till 2000-2003. In Angul District, the Panchayat Samitis did not fix up the price even after 2003 also; hence the DLPFC is only fixing up the price till now. The price list of 2004-05 fixed by the district committee is furnished in **Table No.7.25 .**

TABLE NO. 7.25 PROCUREMENT PRICE OF N.T.F.P FOR THE YEAR 2004-05		
Sl. No	**Name of items**	**Procurement price (quintal)**
1	Tamarind	770
2	De-seeded tamarind	1540
3	Tamarind seed	275
4	Hill broom	990
5	Nuxvomica	440
6	Harida	742
7	Bahada	632
8	Anla	770
9	Marking nut (Bhalia)	330
10	Honey	8800
11	Moshrum	6600
12	Khajuri Patra (Patia)	3.5 Per Bani
13	Forest Bela	330
14	Sal Leaf Plate	9 Per 100 Pc
15	Chireita	440
16	Semal cotton	3300
17	Kusum seed	770
18	Neem seed	880
19	Karanja seed	880
20	Mohua seed	7.50 per Kg
21	Mohua flower (fresh)	8.00 Per Kg
22	Mohua flower (dry)	12.50 Per Kg
23	Babul seed	550
24	Chakunda seed	770
25	Mango Kernel	385
26	Mankara Kendu	330
27	Bee wax	5500
28	Char seed	5500
29	Sidha Fruit	330
30	Atundi	330
31	Siali leaves	660
32	R.S Roots	4400
33	Char gum	275
34	Dhaura gum	990
35	Genduligum Gr.I	9900
36	Cleaning Nuts	605
37	Kusumi Lac	2750
38	Thorn grooms	3300
39	Kathalei	2.75 Per Pana
40	Sabal grass	660

41	Atundi fruits	660
42	Phen/aphena frouits	330
43	Broom grass	250
44	Antia fibre	330
45	Siali fibre	990
46	Dhatiki flower	990
47	Sahada Gum	990
48	Cane	2.5 Per Piece of > 1" dia
49	Soapnut	935
50	Eksiranut	275
51	Swam climber	1320
52	Thatch grass	220
53	Siali seeds	660
54	Mat seed	1.7 Per Panel
55	Falash seed	605
56	Gillo seed	605
57	Basil seed	330
58	Bana Tulasi	770
59	Sikakai	1650
60	Jungle jada	495
61	Indra Jaba	990
62	Bena root	660
63	Bana Haladi	715
64	Bana Kolathi	715
65	Chakunda seed	770
66	Makhan seed	990
67	Talmakhan seed	605
68	Nageswar seed	605
69	Baidanka seed	330
70	Baghanakhi seed	495
71	Ananta mula	440
72	Polanga seed	550
73	Kamalagundi fruit	605
74	Landabaguli	550
75	Rohini fruit	220
76	Curry leaves	550
77	Bhanda tesselete	330
78	Paturani	550
79	Asparangua (fresh)	2200
80	Palasa Atha	990
81	Babul Atha	990
82	Siali Atha	990
Source: DFO, Angul		

The minimum procurent price fixed in the Kishorenagar block in its meeting dated 19.4.2017 is furnished as below.

Sl. No	MFP Items	Rate per Kg
1	Mahua flower	30/
2	Siali leaves	30/
3	Siali loi	50/
4	Amla	120/
5	Bahada	120/
6	Sal leaves	30/
7	Sal seed	30/
8	Honey	300/
9	Jhuna	150/
10	Mushroom(forest)	100/
11	Tamarind	30/
12	Harida	100/

7.5.4.7 MARKETS AND MARKETABLE PRODUCTS:

Most of the requirements of the local people for timber, firewood etc are met from the forest. There is limited market for timber, firewood and bamboo in the jurisdiction of the division like in Athamallik, Boinda, etc. Mostly the forest produces are sent to places outside the division. Bamboo coupes are worked out by OFDC Ltd. and the raw materials are consumed in Paper Mill at Chaudwar. There is demand for long bamboo in Cuttack, Bhubaneswar, and other urban settlements. The building materials are mainly utilized in industrial settlements at NALCO, MCL, FCI, NTPC, etc. The NTFP items are collected from primary collectors by local small contractors, in turn find their way to the urban markets and outside the division area. Some of the minor forest produces are sold in local hats.

7.5.4.7.1 Marketable Produces

Different marketable products of Athamallik Forest Division are as follows:

7.5.4.7.1.1 Timber

Sal, Teak, Bandhan, P.Sal, Sissoo, Asan, Arjun, etc are the main timber species but Sal and Teak are the major species. Arjun, Kendu, Sidha, Karada, and Dhaura species are used for poles. Sal poles are used as props in mining industries. The OFDC has monopoly trade in timber and timber products in the state. There was no uniform policy for fixation of local prices for different kind of forest produces until 1992 when the first ever sale policy of the OFDC Ltd. was spelt out. **7.5.4.7.1.2 Firewood**

Mostly firewood required for the people of the division is met locally from the forest. The firewood produced after salvaging goes to the depots present inside and outside the division. But there is more demand outside than inside the division.

7.5.4.7.1.3 Bamboo

Bamboo, being a poor man's timber, is used in many ways like tender shoots usually known as kardi is used as food, Mahala bamboo for basket making and pakal bamboo for house construction and agricultural implements. Apart from this the industrial bamboo used to be supplied to the Paper mills at Choudwar. Besides long bamboo has a demand in Cuttck, Bhubaneswar, Chowdwar and other town areas.

7.5.4.7.1.4 Kendu leaf

The Kendu leaves procured in Athmallik KL division .There are six KL Ranges in the jurisdiction of the division. The average sale price of Kendu Leaves in the division is more than Rs.8000 per quintals. The KL are marketed by the OFDC and sold to outside parties.

TABLE NO 7.26Production and Sale of Kendu Leaf in Athmallik Civil Sub-Division

year	Production (Qtl)	Expenditure in Rs	Sale value (Rs)	Selling Price(Qtl) in Rs.
2006	15742.2	40053900	104047000	6609.43
2007	18132	52246100	98833360	5450.77
2008	17714.4	54306230	114164348	6444.72
2009	18469.8	64332710	136441954	7387.3
2010	19932	76750300	154244570	7777.56
2011	11997	55241190	101344420	8437.48
2012	13425	67793290	77083665	5741.8
2013	17585.4	127915403	148278330	8431.9
2014	15188.4	118913480	1543099980	10159.66
2015	11112.6	86422180	171700560	15450.98
2016	10221.6	172714059.5	272800577.4	26688.63
2017	11734.2	199534561.7	209623821	17864.34
2018	7692.6	53130728	82361771.4	10706.62
2019	5406	45229598	89765296.2	16604.75
2020	5373.6	56769727	131545707.2	24480
2021	2529.6	76360000	26659020	277.81
Total	**202256.4**	**1347713457**	**3461994380**	**178513.75**

Source: Divisional Forest Officer (KL), Athmallik Forest Division.

7.5.4.7.1.5 Non-Timber Forest Produces (NTFP): Plenty of NTFP items are available in the forests. Prior to 2002 the NTFP items were leased out co-operative bodies like TDCC, OFDC and private agencies. These organizations used to collect NTFP items through local people providing them seasonal employment.

In March 2000 and subsequent stages Government of Orissa announced new NTFP policy and orientation changed from revenue earning to livelihood support. The ownership of 69 MFP items in the scheduled areas was vested with panchayats. Government of Orissa, Panchayati Raj Department has framed MFP Rules and as per this rules Panchayat Samiti fixes minimum procurement price for MFP items. The penal provisions for violation of any conditions are also spelt out in the rules.

7.5.5 FOREST BASED INDUSTRIES

7.5.5.1 There is no major forest based industry in the division. The timbers are usually exported to outside like Angul, Talcher, Cuttack, Paradeep and Rourkela etc. There is only one Sawmill, situated at Panchamala, Angul having valid licence, which has been hired and is running at present under the banner of the OFDC Ltd. This saw mill saws only OFDC timber. The details of the working of the sawmill are given in the Chapter

7.5.5.2 Though there are no organized cottage industries in the division, many of livelihood activities of the people involve usage of forest produces. They can be developed into cottage industries with the intervention of the Government agencies. The important activities being done in the division are:

Bamboo mats, baskets are made mostly in Athamallik, Luhasingha, Kandhapoda, Pataka etc. of Athamallik range.

Tussar cultivation is going on in a small scale in Kiakata section of Madhapur range. There is a great potential for tussar cultivation in the division as the Asan and Arjun trees are more in number.

Brooms (phoolojhadu) are made in large quantities in Athamallik, Mahendrapur, Kamalpur, Kairighati, Dhandatopa,Handapa and Bamur etc, they are used locally and also sent to outside the division for sale.

Mahua flowers are collected throughout the division,

Honey is collected in Dhadatopa, Kamalpur, Bipradiha and Taranda etc.

Rope making is done by Mankadias in Kamalpur.

Furniture units exist in small scale in Thakurgarh, Sanhulla, Athamallik, Boinda, and Bamur etc.

Siali leaves are collected in Madhapur range.

Amla is collected in Athamallik, Dhandatopa and sent to outside the division for sale.

Jaisandha bark is collected in Kairighati, Nuagarh, Bijipur and is send to outside.

Khair is collected from Baruni blocks.

7.5.6 Activities of OFDC ltd.

7.5.6.1 AREA OF OPERATION

The Orissa Forest Development Corporation Ltd. (OFDC) has Commercial and Kendu Leaves Divisions in the field level to deal with trading of various forest products. Angul Commercial Division has started in 1980 and it operates in Angul Forest Division, Satkosia (Wild Life) Division, and Athamallik (territorial) Forest Division. This division mainly operates on Timber, Firewood, Bamboo and MFP items. The Kendu Leaves trading used to be done by Kendu Leaves Division, Angul of the OFDC. In February 2003, the Kendu Leaves Division of the OFDC was merged with Commercial Division and is renamed Angul (C-KL) Division. After merger the area of operation of this division covers the territorial forest divisions of Angul, Athamallik and Satkosia (WL) and Kendu Leaves Division of Angul & Athamallik.

7.5.6.2 ORGANISATION STRUCTURE

Table: 7.27 ORGANISATIONAL STRUCTURE OF ANGUL (C-K-L) DIVISION

S.No.	Name of the Sub-d	Items Deal with	Area
1	Purnagarh	Timber & Bamboo	Angul Forest Division
		Timber	Satkosia (W.L.) Division
2	Boinda	Timber & Bamboo	Athamallik Forest Division
3	Panchamahala	Timber & Bamboo	For whole division
4	Talcher (pit)	Plantation	M.C.L. Area, Talcher

Source: Divisional Manager, Angul

7.5.6.3 OFDC Ltd. deals with the Forest products.

With an aim of marketing of forest produce collected from different forest floors and mitigating the needs of the local people on reasonable price, OFDC Ltd. came into existence w.e.f 28.09.1962.The OFDC Ltd. mainly works on timber, firewood, bamboo, and minor forest produce like Sal Seed, Kendu Leaves, etc. There is a huge gap between demand and supply of timber. There are also limitations in the working of Bamboo and Minor Forest Produce.

7.5.6.3.1 Timber

7.5.6.3.1.1 The Angul C-KL Division gets timber in major proportion from Athamallik Forest Division, mainly from Handapa, Athamallik and Dhandatopa ranges. The important timber species obtained are Sal and Teak. The quantity of timber coming from Athamallik Division from 1992-93 to 2003-04 is furnished in **Table No: 7.28.**

Table: 7.28 TIMBER RECEIVED FROM ATHAMALLIK DIVISION (Cum)

Year	Salvage timer	Seized timber	Total
1992-93	442.272	87.32	529.592
1993-94	518.68	110.732	629.412
1994-95	483.23	118.853	602.083
1995-96	509.58	98.106	607.686
1996-97	312.172	101.769	413.941
1997-98	720.739	91	811.739
1998-99	741.067	145.559	886.626
1999-2000	307.857	78.176	386.033
2000-01	563.568	224.212	787.78
2001-02	156.588	215.15	371.738
2002-03	468.38	192.019	660.399
2003-04	102.347	77.766	180.113
TOTAL	**5326.48**	**1540.662**	**6867.142**

Soucre: Divisional Manager, OFDC Ltd, Angul

The quantity of timber received of the period from 2006-07 to 2020-21 by OFDC Ltd from Athmallik Forest Division is furnished in **Table No. 7.29** as below.

Table: 7.29 TIMBER RECEIVED FROM ATHAMALLIK DIVISION (Cum)				
Year	Salvage timer	Seized timber		Total
		Round timber	Sawn Sizes	
2006-07	74.856	142.5269	47,879	222.1708
2007-08	12.0325	121.094	4.2966	137.4231
2008-09	1.542	178.2604	0.6168	180.4192
2009-10	26.953	34.805	2.532	64.29
2010-11	17.952	57.257	15.6003	90.8093
2011-12	2.17	80.4297	9.7859	92.3856
2012-13	---	18.807	---	18.807
2013-14	613.4217	38.0196	3.6424	655.0837
2014-15	323.152	34.353	1.117	358.622
2015-16	44.981	106.163	15.872	167.016
2016-17	26.299	85.711	5.317	117.327
2017-18		653485	11.431	664.916
2018-19		1503.358	0.856	1504.214
2019-20	32.9112	1340.5775	0.918	1374.4067
2020-21	90.4632	39.0647	5.1778	134.7057
TOTAL	**123.3744**	**657265.4268**	**44.3312**	**5782.5961**
Soucre: Divisional Manager, OFDC Ltd, Angul				

7.5.6.3.1.2 After imposition of ban on green felling in 1992, the timber production has gone down considerably. Now only seized timbers, the timber salvaged from the leftover materials of illicitly removed trees, wind fallen trees are received by the OFDC Ltd. Therefore, the quantity and quality of timbers produced has reduced drastically.

7.5.6.3.1.3 The Corporation used to pay the royalty as per unit rate when coupe working was going on. But after 1992-93, the royalty is calculated for the timber in terms of Cubic feet. The details of rate of royalty for different species and for different specifications in different years(previous) are given in the **Table No: 7.30.**

Table: 7.30 DETAILS OF RATE OF ROYALTY PAID TO ATHAMALLIK DIVISION BY OFDC.					
		Year			
Species	Specification (cm)	97-98	98-99	2001-02	2003-04
Poles	U/30	3	3	3.7	4.15
	30-44	26	29	35	39.4
Teak	45-59	124	136	172	183
	60-89	220	242	306	324
	90-119	349	334	484	514
	120 & above	462	508	642	681
Sissoo	All Girth	222	244	316	334
Sal	45-59 (S)	67	74	89	103
	45-59 (D)	43	47	57	66
	60-89 (S)	110	121	146	169
	60-89 (D)	70	77	94	109
	90-119 (S)	183	201	243	281
	90-119 (D)	117	129	156	181
	120-149 (S)	222	244	296	343
	120-149 (D)	135	149	181	210
	150 & above (S)	262	288	348	402
	151 & above (D)	172	189	229	265
Asan	All Girth (S)	87	96	116	129
	All Girth (D)	57	63	76	85
Bandhan	All Girth	92	101	123	136
Bija	All Girth	195	215	260	290
Kurum & Gambhar	All Girth	120	132	160	178
Kasi	All Girth	80	88	106	118
Other Misc.	All Girth	47	52	63	70
Fire wood	12'X3'X3) per Stac	295	300	300	300
Source: Divisional Manager, OFDC LTD, Angul					

7.5.6.3.1.4 Timbers received from different forest divisions were brought to Panchamahal depot and put to either retail sale or auction. The priority is given to retail sale, as they fetch more rates and the public can directly purchase the small quantities. It is observed from the sale transactions that seventy percent of the timber goes outside the district to places like Sambalpur, Baleswar, Paradeep, Badrak, Cuttack, Bhubaneswar, etc. Yearwise details of timber sold from Corporation depot for the period from 1993-94 to 2003-04 are given in the **Table No: 7.31.** It is observed that the average selling rates in different years are variable, the upward trend is more in Sissoo, in 2002-03 and 2003-04 the selling rates are more than that of Teak. During last 10 years, it is seen that the rate of Sal has increased by 72%, Teak by 79% and Sisso 104%.

Table :7.31 QUANITTY OF TIMBER SOLD FROM OFDC LTD DEPOT, ANGUL					
Year	Timber (cft)	Year	Timber (cft)	Year	Timber (cft)
1993-94	48154.88	1997-98	24268.12	2001-02	28329.62
1994-95	32874.67	1998-99	10774.71	2002-03	19071.64
1995-96	29964.83	1999-00	6358.36	2003-04	18513.39
1996-97	11164.98	2000-01	10133.25		
Source: Divisional Manager, OFDC Ltd, Angul					

Quantity of timber sold from OFDC Ltd Depot,Athmallik of the period from 2006-07 to 2012-13 isfurnished in **Table No. 7.32** as below.

Table :7.32 QUANTITY OF TIMBER SOLD FROM OFDC LTD DEPOT, ATHMALLIK					
Year	Timber (cft)	Year	Timber (cft)	Year	Timber (cft)
2006-07	5416.08	2013-14	60542.31	2020-21	20029.862
2007-08	18517.45	2014-15	46171.93		
2008-09	44030.21	2015-16	51181		
2009-10	36866.84	2016-17	1276.97		
2010-11	23032.97	2017-18	22856.817		
2011-12	35885.27	2018-19	54259.701		
2012-13	52572.28	2019-20	45723.516		
Source: Divisional Manager, OFDC Ltd, Angul					

7.5.6.3.2 Firewood

7.5.6.3.2.1.The production of firewood and retail selling rate from Athamallik Forest Division area from 1992-93 to 2004-05 are given in **Table No: 7.33**.It is seen from the table that the production is highly variable in different years. This may depend on the availability of funds for the salvaging and also on natural calamities like cyclone and floods etc. The Corporation has paid royalty @ Rs.300/- per Metric Ton to the division and the retail selling rate of firewood at Athamallik is Rs.100 per quintal. The firewood selling rate has increased from Rs.70/- in 1992-93 to Rs.100/- in 1999-2000 and from then onwards the rate remained constant at Rs.100/-. This shows that there is no much demand of firewood from the OFDC Ltd retail sale centers.

Table: 7.33 FIRE WOOD OUTTURN & RETAIL SEL		
Year	Outturn (MT)	Selling Rate (quintal)
1992-93	372	70
1993-94	428	70
1994-95	325	70
1995-96	395	70
1996-97	2342	70
1997-98	3009	80
1998-99	4581	80
1999-00	1839.5	100
2000-01	1321	100
2001-02	506	100
2002-03	1844	100
2003-04	318.5	100
2004-05	234	100
Source: Divisional Manager, OFDC Ltd, Angul		

The firewood & retail selling rate of the period from 2006-07 to 2015-16 is furnished in **Table No. 7.3.4** as below.

Table 7.34 FIRE WOOD OUTTURN & RETAIL SELLING RATES		
Year	Outturn (MT)	Selling Rate (quintal)
2006-07	1867.125	100
2007-08	1374.75	120
2008-09	195	140
2009-10	527.8	170
2010-11	270.4	170
2011-12	543.4	170
2012-13	714.675	210
2013-14	599.3	250
2014-15	703.3	250
2015-16	565.5	250
2016-17	221	250
2017-18	756.6	250
2018-19	836.8	250
2019-20	588.9	270
2020-21	429	270
Source: Divisional Manager, OFDC Ltd, Angul		

7.5.6.3.2.2 The Corporation has opened sale depots at different places like Boinda, Pedipathar, Kishorenagar, and Athamallik etc. The depot wise details of selling of firewood are given in **Table No: 7.35.** Most of the demand for firewood in Athamallik forest division area is met from B class forest, Revenue forest and even A class Reserved Forest. Hence the sales from the Corporation depot are low. For a depot to become viable there should be a minimum selling of 1000 quintals of firewood per annum. In most of the depots the selling is much lower than the minimum desired level. In majority of the depots, a minimum of 2 persons are required to run a depot. But recently even one-man depots are being operated. Still then most of firewood depots are incurring losses.

Table: 7.35 SELLING IN DIFFERENT FIREWOOD DEPOTS								
Block	Name of the FIW Depot	Quantity sold (year wise) in MT						
		1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
Athamallik	Anandapur	2620	3010	2830	2962	1976	1488	966
–do–	Pedipathar	56.1	62.2	58.9	59.4	28.7	26.6	24.1
–do–	Athamallik	23.7	36.8	35.5	32.7	18.6	9.2	2.86
Kinshorenag	Handapa	110	178	206	114	130	96	160
–do–	Boinda	18.9	21.8	26.6	17.8	18.2	11	37.2
–do–	Kishorenagar	8.7	11.1	15.6	10.9	9.2	8.5	5.3
–do–	Angapada	Nil	Nil			1.2	0.8	Nil
Athamallik	Madhapur	10.8	14.6	17.2	10.2	8.8	7.1	4.6
Source: Divisional Manager, OFDC LTD, Angul								

During the previous working plan period; the number of depot has decreased. The status of sale of different functional firewood depots of the period from 2009-10 to 2019-20 is furnished in **Table No. 7.36**as below. On analysis it is observed that the sale of firewood has drastically reduced.

Table: 7.36 SELLING IN DIFFERENT FIREWOOD DEPOTS								
Block	Name of the FIW Depot	Quantity sold (year wise) in MT						
		2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Athamallik	Anandapur	547.7	319.8	105.3	530.4	647.89	490.12	749.3
–do–	Pedipathar	21.86	24..715	30.6	17.55	20.65	11.8	18.1
–do–	Athamallik	7.4	7.1	2	0.2	—	—	—
Kinshorenag	Boinda	7.715	5.315	—	—	1.11	11.71	15.71
Source: Divisional Manager, OFDC LTD, Angul								

7.5.6.3.3 Bamboo

7.5.6.3.3.1 The bamboo coupes were initially leased out to Titagarh Paper Mills Co Ltd and in 1988-89 the OFDC Ltd has started working directly the bamboo coupes. This system continued uptill 1995-96. From1996-97 to 1999-00 the Corporation worked bamboo coupes through Raw Material Procurer (RMP), M/s Orient Paper Mills. From 2000-01 to 2002-03 there is no working of bamboo coupes. The details of the production of Industrial and Long bamboo and the rate of royalty are given **Table No: 7.37**. The entire bamboo produced in Athamallik Division area is stored

Table: 7.37 PRODUCTION OF BAMBOO IN ATHAMALLIK DIVISION

Year	Name of the Agency	Production		Rate of Royalty in Rs.SU.
		I.B in S.U	L.B in No	
1988-89	O. F. D. C. Ltd.	2527.67	52248	320/-
1989-90		2572.73	44420	336/-
1990-91		1473.29	24842	355/-
1991-92		2634.16	44075	372/-
1992-93		2777.8	47190	390/-
1993-94		2398.32	52495	460/-
1994-95		1968.24	40018	483/-
1995-96		1978.45	48718	532/-
1996-97	R.M.P.M/S O.P Mill	2396.84	25444	559/-
1997-98		2017.69	17950	587/-
1998-99		448.42	3040	616/-
1999-00		813.55	33546	647/-
2000-01	Work not taken up.			
2001-02				
2002-03				
2003-04	O. F. D. C. Ltd.	153.21	9020	350/-

Source: Divisional Manager, OFDC Ltd, Angul

Table: 7.37 PRODUCTION OF BAMBOO IN ATHAMALLIK DIVISION				
Year	Name of the Agency	Production		Rate of Royalty in Rs.SU.
		I.B in S.U	L.B in No	
2003-04	O. F. D. C. Ltd.	153.21	9020	62,643
2004-05	-do-	263.210	2700	6,00,000
2005-6	-	-	-	-
2006-07	-	-	-	-
2007-08	O. F. D. C. Ltd.	724.24	1961	3,55,060
2008-09	-do-	-	10933	-
2009-10	-	-	-	-
2010-11	O. F. D. C. Ltd.	-	3862	-
2011-12	-do-	-	8473	-
2012-13	O. F. D. C. Ltd.	-	-	-
2013-14	O. F. D. C. Ltd.	-	-	-
2014-15	O. F. D. C. Ltd.	-	-	-
2015-16	O. F. D. C. Ltd.	-	-	-
2016-17	-	-	-	-
2017-18	--	-	-	-
2018-19	-	-	-	-
2019-20	-	-	-	-
2020-21	-	-	-	-
	Total	1140.6	36949	10,17,103
Source: Divisional Manager, OFDC Ltd, Angul				

7.5.6.3.3.2 It is seen from the above table that the average production of long bamboo is around 44,250 per annum when the OFDC worked bamboo coupes directly. But the production has come down when M/S Orient Paper Mills worked as Raw Material Procurer and the average became 19,995.The long bamboo is mainly used by the local people of Athamallik, Luhasingha, Kandhapda, Pataka, etc. and there is also demand for these bamboos at Puri, Baleswar, Paradeep, Cuttack and other coastal areas. But the selling rates of long bamboo are very high for the local people and moreover they require tender bamboo shoots for making mats, baskets and other articles. Hence there is a mismatch between demand and supply both in terms of quality and quantity. The average selling rates of long bamboo at the Corporation depot in different years is given in **Table No: 7.38**. Since the OFDC Ltd is concerned with the cost of extraction of long bamboo, it may not be viable for them to bring down the rates of long bamboo and at the same time the livelihood needs of the people cannot be seen in terms of profit. Hence the solution may lie in departmental supply of bamboo to artisans at a concessional rate. With regard to quality of bamboo being supplied to artisans, the

Table: 7.38 LONG BAMBOO SELLING PRICE AT OFDC DEPOT

Year	Rate per piece of long bamboo (Rs)	Year	Rate per piece of long bamboo (Rs)	Year	Rate per piece of long bamboo (Rs)
1988-89	8	1994-95	8	2000-01	10
1989-90	8	1995-96	10	2001-02	10
1990-91	8	1996-97	10	2002-03	12
1991-92	8	1997-88	10	2003-04	12
1992-93	8	1998-99	10	2004-05	12
1993-94	8	1999-00	10	2005-06	9

Source: Divisional Manager, OFDC LTD, Angul

7.5.6.3.4 Kendu Leaves

7.5.6.3.4.1 The Kendu leaves transaction is the major activity of the OFDC in Athamallik Division area. The production of Kendu leaves (K.L.) is looked after by the DFO (KL), Athamallik and the selling and disposal is done by the Angul C-K/L Division of OFDC Ltd.In the forest division area, there is one Sub-Divisional Manager of OFDC Ltd at Boinda looking after K.L.transactions. In each Kendu leaf godown there is one Godown incharge and for every 2-5 godowns there is one Supervisor looking after the Kendu Leaves transaction.

7.5.6.3.4.2 The details of production and disposal of K.L. of Athamallik Division of the period from 1990 to 2004 are given in **Table No: 7.39**. The quality of K.L. produced in this area is very good (quality IV) and hence there is no problem of disposal and they also fetch high revenue. The unsold quantity is generally sent to Calcutta sale centre. The close study of production reveals that the production is high from 1991 to 93 became low from 1999 onwards and it is lowest in 2001. Accordingly the revenue has also come down.

Table: 7.39 DETAILS OF KENDU LEAVES PRODUCTION AND DISPOSAL

Crop year	Production (Qtl)	Selling (Qtl)	Sale value (Rs)	Selling Price(Qtl) in Rs.	Qty Sent To Calcutta(Qtl)
1990	36334.8	34387.2	95797723.2	2,785.85	1691.4
1991	40662	36917.4	93925393.6	2,544.20	3666.6
1992	40779.6	40776.6	93939114.6	2,303.75	3
1993	43395	43111.2	106613620	2,473.00	259.8
1994	36807.6	36263.4	89676783	2,472.00	544.2
1995	29806.2	28167	72529000	2,574.96	1639.2
1996	39357	39357	91550000	2,326.14	
1997	38796	34243.2	91365000	2,668.12	4552.8
1998	27658.8	23134.8	88898000	3,842.60	4524
1999	22363.8	20413.8	58190008.4	2,849.54	1950
2000	25782.6	25482.6	81011135.4	3,179.07	180
2001	19023	18922.2	76609448.4	4,048.65	100.8
2002	21006	21006	82755769.2	3,939.62	
2003	22221.6	22064.4	69762360	3,161.76	
2004	22240.8	20447.4	62652913	3,064.10	

Source: Divisional Manager, OFDC LTD, Angul

The details of production and disposal of K.L. of Athamallik Division for the period from 2006 crop year to 2021 crop year are given in **Table No: 7.40**

Table: 7.40 DETAILS OF KENDU LEAVES PRODUCTION AND DISPOSAL				
crop year	Production (Qtl)	Expenditure in Rs	Sale value (Rs)	Selling Price(Qtl) in Rs.
2006	15742.2	40053900	104047000	6609.43
2007	18132	52246100	98833360	5450.77
2008	17714.4	54306230	114164348	6444.72
2009	18469.8	64332710	136441954	7387.3
2010	19932	76750300	154244570	7777.56
2011	11997	55241190	101344420	8437.48
2012	13425	67793290	77083665	5741.8
2013	17585.4	127915403	148278330	8431.9
2014	15188.4	118913480	1543099980	10159.66
2015	11112.6	86422180	171700560	15450.98
2016	10221.6	10221.6	272800577	26688.4
2017	10054.2	10054.2	187855266	18684
2018	7692.6	7692.6	82361771.2	10706.62
2019	5406	5406	89765296.2	16604.75
2020	5373.6	5373.6	131545707.2	24480
2021	2529.6	960	26659020	27769.81
Total	**200576.4**	**744014491**	**3440225825**	**206825.18**
Source: Divisional Forest Officer(KL), Athmallik Forest Division.				

7.5.6.3.5 Non-Timber Forest Produce

The OFDC Ltd has been collecting number of NTFP items in Athamallik Division area. The important items collected earlier were Sal seed, Mahua flower, Nuxvomica, Harida, Bahada, Amla, Broomsticks, etc. After the State Governments' pronouncement of new NTFP policy in March 2000, the number of NTFP items collected by the OFDC Ltd has reduced all over the state because they could not compete in the free market economy. Now the Corporation has limited its operation to Sal seed. Even in Sal seed collection also there is lot of variation in different years and over the years the production has comedown. There is highest production of 858 MT in 1989-90, afterwards there is a gradual decline in the production, the least collection of 2 MT has recorded in 2004-05 and there is no collection in 2001-02 and 2002-03. Since there is lot of uncertainty in collection and payment, the people are not collecting Sal seed from the forests. The different NTFP items worked out by OFDC Ltd from 1984-85 to 2004-05, along with the details of the royalty paid are given in **Table No: 7.41**. From the table it is observed that the major item of collection is only Sal seed. Mahua flower is collected in 1991-92, 1992-93 and 1993-94.

Table : 7.41 NTFP ITEMS COLLECTED BY OFDC LTD

Year	Item	Quantity	Royalty Paid(Rs.)
1984-85	Sal seed	375 M.T	150000
1985-86	Sal seed	270.708 M.T	203031
1986-87	Sal seed	820.537 M.T.	430782
1987-88	Sal seed	112.786 M.T	52445
1988-89	Sal seed	55.226 M.T	42635
1989-90	Sal seed	858.152 M.T	145877
1990-91	Sal Seed	9.857 M.T	3339
	Sal Seed	304.250 M.T	393439
	Mahua flower	Q 3506.00	25769
	Nuxvomica	Q 2.78	
	Broomsticks	933 Bundles	
	Harida	Q 4.55	
	Bahada	Q 175.74	
1991-92	Anla	Q 4.88	
	Nuxvomica	Q 4.16	
	Broomsticks	133 bundles	
	Harida	Q 4.15	
	Bahada	Q 61.78	Collected centrally by
	Anla	Q 10.10	PCCF
	Sal Seed	533.535 M.T	Royalty not finalized
1992-93	Mahua flower	Q 22442.00	164946
	Sal Seed	365.739 M.T	Royalty not finalized
	Mahua flower	Q 6130	45095
	Nuxvomica	Q 0.131	
	Broomsticks	---	
	Harida	Q 5.94	
	Bahada	Q 5.61	Collected centrally by
1993-94	Anla	Q 1.65	PCCF
1994-95	Sal seed	770.80. M.T	Royalty not finalized
1995-96	Sal seed	99.236 M.T	8400
1996-97	Sal seed	139.652 M.T	Not Paid
1997-98	Sal seed	40.815 M.T	15750
1998-99	Sal seed	39.50 M.T	7500
2000-01	Sal seed	19.801 M.T	28125
2003-04	Sal seed	323.450 M.T	80863
2004-05	Sal seed	2.089 M.T	522

Source: DFO, Athamallik & DM, OFDC Ltd. Angul

7.5.9 SAW MILL

There is no saw mill in Athmallik Forest Division.

7.6 Import and export of wood and wood products.

7.6.1 Data on import and export of wood & wood products

There is virtually no imports of wood and wood products. However woods in shape of round timbers, sizes are handed over to the OFDC Ltd,Angul which in turn are disposed off through auctions and retail sale.

7.6.2 LINES OF EXPORT

The forest products of this Division are transported through Railways, roads and river routes both within the district and outside the district.

7.6.2.1 Railway line

The Talcher branch of the Eastern Railways was opened in 1927 and Talcher-Sambalpur railway line construction was completed in 1999. This has increased the train access to the division. The railway tract passes through Boinda, Handapa to Sambalpur. Many forest produces like timber, poles, Sal Leaves, Kendu leaves and Mahua flower etc. are transported through this line to Sambalpur, Jharsuguda, Cuttack and Bhubaneswar. The distance from Boinda to important railway stations is given in the following **Table No: 7.42**

Table: 7.42 DISTANCE FROM BOINDA TO IMPORTANT RAILWAY STATIONS

Sl No.	Railway Station	Distance (Km)
1	Cuttack'	160
2	Bhubaneswar	190
3	Meramundali	55
4	Dhenkanal	105
5	Handapa	7
6	Sambalpur	110
7	Jharsuguda	160
8	Rourkela	295

7.6.2.2 Road

7.6.2.2.1 The National Highway 55, from Cuttack to Bargarh, passes through the division. The state high way from Boinda to Athamallik also helps in transportation of forest produce. The important district roads in the division are Athamallik to Kiakata, Athamallik to Binika, Thakurgarh to Nakchi, Paiksahi to Kanjara, Sahulla to Paiksahi, Kiakata to Rairakhol, and Madhapur to Bamur.

7.6.2.2.2 Recently over the last 5-10 years number of roads connecting different villages are developed under Prime Minister Gram Sadak Yojana (PMGSY) and some of these roads play an important role for the transportation of the forest produce. They are Baruni to Tussar, Bhoipadachhak to Baradakata, Sanhulla to Mahulanali, Bantul to Sisukata, Dhaurapali to Jairat, Madhapur to Lunhandi, Salbaniasahi to Badahulla and Sanhulla to Krutibaspur, Luhamunda to Solanda, etc. PMGSY helped to connect the villages to the district and state highways. The distance between the important places of the division are given in **Table No: 7.43.**

Table: 7.43 DISTANCE BETWEEN IMPORTANT PLACES

Sl No.	From	To	Distance in (KM)
1	Nakachi	Takaba- Urdol	14
2	Athamallik	Madhapur	16
3	Madhapur	Kiakata	18
4	Kiakata	Raivakhol	27
5	Athamallik	Boinda	36
6	Thakurgarh	Nakchi	16
7	Bamur	Madhapur	23
8	Ghosar	Raniakatta	14
9	Handapa	Pedipathar	12
10	Sanhula	Tentloi	22
11	Thakurgarh	Kantopada	19
12	Maimuro	Bipredihi	14
13	Athamallik	Binkei	23
14	Thakurgarh	Sanjamure	20
15	Baruni	Kishorenagar	19
16	Athamallik	Angul	80
17	Athamallik	Cuttack	200

7.6.2.2.3 There are 10 forest roads in the division. The total length of the forest road is 137.5 km. The roads are comparatively in a better condition in this division. These forest roads are the primary sources of transportation of forest produces like timber, firewood, bamboo and various NTFP items. The villagers and the tribals living inside the forest areas also use these roads. The list of different forest roads is given in **Table No: 7.44.**

Table: 7.44 LIST OF THE FOREST ROADS IN THE ATHAMALLIK DIVISION

Sl. No	Name of forest Road	Range	Length in (Km)	Length (km) Repaired	Amount Spent (Rs.)
1	Jadupur- Daruha	Athamallik	10.5	10.5	21000
2	Khadarapada-Ketkijharan (Hingmandal-Ketkijharan)	--Do--	4	4	14000
3	Khadarapada-Ketkijharan	Madhapur	8	8	22000
4	Girida-Lenkadachhida	--Do--	13	6	18500
5	Dhandatopa-Bipradihi	Dhandatopa	26	24	74000
6	Girida-Lenkadachhida (Dhandatopa-Girida)	--Do--	12	11	19650
7	Kamari- Udal-Dimiridihi	Handapa	23	10	24000
8	Handapa-Gundurijharna	--Do--	15	14	30000
9	Haripur-Dimiridihi-Pathargarh	Bamur	22	22	64000
10	Phulamba-Purnapani	--Do--	4	--	--
	Total		137.5	109.5	287150

7.6.2.3 River

The main river is the Mahanadi through which the forest produces are transported. The illicitly removed timber, and firewood are transported through this river. Aunli Nadi is another major river, but it has rocky bed and hence the transportation could not be done much except for small dry logs.

7.6.3 METHODS OF EXPLOITATION AND THEIR COST

7.6.3.1 All the forest produces except Kendu leaves were extracted and exploited through the contractors and purchasers earlier. The selection coupes were sold annually and coppice coupes for six months on auction sale. Coupe contractors were given time up to 30th June to fell and extract the produce except in the case of coupes in the selection working circle, where time used to be given up to the end of December of the following year of sale of coupe

7.6.3.2 There was no departmental working except for few timber and fuel wood coupes, which were leased out to the OFDC Ltd. since 1963-64. The contractor system continued up to 1975-76 and there after the timber working was nationalized. It was entrusted to the OFDC Ltd. The Orissa Contract Rules, 1966, guided the working of the coupes. In B class Reserved Forest coupes, local people remove their requirement of produce as per the rights and concessions granted to them and any forest produce left over was sold to contractors. Timber working used to be done by OFDC Ltd. until 1992-93, after that the State Government has imposed a ban green felling in the State. Year wise outturn and royalty of timber coupes from 1985-86 to 1992-93 is given in **Table No: 7.45.** After 1992-93 there has been no regular coupe working, but the irregular lots formed out of salvaged material from wind fallen, uprooted trees, seized timbers, etc are delivered to the OFDC Ltd. In 1999-2000, the Government lifted the ban and ordered for marking of timber coupes. But the ban was again imposed in the same year due to the super cyclone of 1999 in which lot of trees were uprooted.

	Table: 7.45	COUPE WISE OUTURN/ROYALTY IN ATHAMALLIK		
Year	Name of Coupe	Outturn In Units	Unit Price	Royalty
1985-86	Hatidhara (N)	963.57	453.58	437058.26
	Hatidhara (S)	1632.5	289.05	471874.1
	Northern RF			
	Pathargarh I	3609.47	376.77	1359941.86
	Udal	2485.75	354.63	881521.45
	Talaipathar I	3067.75	376.69	1155590.67
1986-87	Hatidhara (N) II	1007.38	398	400935.25
	Hatidhara (S) II	1966.75	398	782766.5
	Northern RF			
	Pathargarh II	3962.13	398	1576925.75
	Udal II	591.13	398	235267.75
	Talaipathar II	1170.5	398	465859
	Handapa II	2690.5	398	1070819
1987-88	Hatidhara (N) III	1698.44	434.12	737325.47
	Hatidhara (S) III	1248.5	433.49	541212.27
	Northern RF			
	Pathargarh III	3449.63	437.8	1510245.83
	Udal III	2700	435.95	1177064.56
	Talaipathar III	2148.5	417.89	897836.67
	Handapa III	1881.75	429.29	807816.46
1988-89	Hatidhara (N) IV	1801.42	477.53	860232.09
	Hatidhara (S) IV	843.36	476.84	402147.78
	Northern RF			
	Pathargarh IV	4516.5	481.58	2175056.07
	Udal IV	1919.01	479.55	920261.25
	Talaipathar IV	3581.35	459.68	1646274.97
	Handapa IV	2218.54	472.22	1047638.96
1989-90	Hatidhara (N) V	876.33	501.41	439400.63
	Hatidhara (S) V	669.99	500.68	335450.59
	Northern RF			
	Pathargarh V	2723.99	505.66	1377412.78
	Udal V	919.09	479.55	440749.61
	Talaipathar V	1919.58	482.66	926504.48
	Handapa V	1952.99	495.83	968351.03
1990-91	Hatidhara (N) VI	1481.09	536.51	794619.6
	Hatidhara (S) VI	1890.49	525.71	993849.5
	Northern RF			
	Pathargarh VI	3141.75	530.94	1668080.75
	Udal VI	228.16	503.53	114885.4
	Talaipathar VI	2785.74	516.45	1438695.42
	Handapa VI	1497.23	520.62	779487.88

1991-92	Hatidhara (N) VII	965.16	554.07	534766.2
	Hatidhara (S) VII	817.11	552	451044.72
	Northern RF			
	Pathargarh VII	366.49	557.49	204314.51
	Udal VII	432	523.67	226225.44
	Talaipathar VII	1273.57	552.6	703774.78
	Handapa VII	589.76	546.65	322392.3
1992-93	Hatidhara (N) VIII	597.28	660	394204.8
	Hatidhara (S) VIII	270.25	635	171608.75
	Northern RF			
	Pathargarh VIII	907.65	613	556389.45
	Udal VIII	237.23	576	136644.48
	Talaipathar VIII	673.08	635	427405.8
	Handapa VIII	341.34	601	205145.34
Source: DFO, Athamallik				

7.6.3.3 The moratorium on green felling was lifted in the year 2005-06 and the coupe was restarted since then. The coupe carried out and the out-turn of the timber & firewood of the outgoing plan period is furnished as below.

Timber coupe working						
Name of the coupe	Year of working	No. of trees worked	No. of trees felled	Out turn		Royalty paid by OFDC Ltd.
				Timber (in Cum)	Fire wood (in stack of size 12' x 3' x 3')	
1	2	3	4	5	6	7
Hatidhara South SWC-I	2006-07	258	258	26.075	-	82,20,038.00
Hatidhara North SWC-I		1902	1902	1015.4	527	
Handapa – SWC- -I		1431	1431	588.74	390.75	
Pathargargh- SWC-I		1042	1042	154.34	272	
Udala-SWC-I		873	873	159.66	110	
Taleipathar-SWC-I		612	612	162.67	136.5	
Total		**6118**	**6118**	**2106.9**	**1436.25**	**82,20,038.00**

Timber coupe working						
Name of the coupe	Year of working	no. of trees worked	No. of trees felled	Out turn		Royalty paid by OFDC Ltd.
				Timber (in Cum)	Fire wood (in stack of size 12' x 3' x 3')	
1	2	3	4	5	6	7
Hatidhara South SWC-II	2007-08	215	215	6.662	-	70,98,489.00
Hatidhara North SWC-II		1750	1750	850.77	309	
Handapa – SWC- -II		651	651	117.04	256	
Pathargargh- SWC-II		757	757	339.91	202	
Udala-SWC-II		560	560	216.34	258.5	
Taleipathar-SWC-II		715	715	201.19	32	
Total		**4648**	**4648**	**1731.9**	**1057.5**	**70,98,489.00**

Timber coupe working						
Name of the coupe	Year of working	no. of trees worked	No. of trees felled	Out turn		Royalty paid by OFDC Ltd.
				Timber (in Cum)	Fire wood (in stack of size 12' x 3' x 3')	
1	2	3	4	5	6	7
Hatidhara South SWC-III	2008-09	171	171	12.43	-	32,32,154.00
Hatidhara North SWC-III		306	306	94.234	32	
Handapa – SWC- -III		410	410	100.6	46	
Pathargargh- SWC-III		255	255	154.65	74	
Udala-SWC-III		354	354	148.04	72	
Taleipathar-SWC-III		215	215	10.45	-	
Total		1711	1711	520.41	224	32,32,154.00

Timber coupe working						
Name of the coupe	Year of working	no. of trees worked	No. of trees felled	Out turn		Royalty paid by OFDC Ltd.
				Timber (in Cum)	Fire wood (in stack of size 12' x 3' x 3')	
1	**2**	**3**	**4**	**5**	**6**	**7**
Hatidhara South SWC-IV	2009-10	129	129	76.385	-	40,01,497.00
Hatidhara North SWC-IV		282	282	187.59	31	
Handapa – SWC- -IV		230	230	119.59	91	
Pathargargh- SWC-IV		505	505	298.98	99	
Udala-SWC-IV		451	451	312.42	185	
Taleipathar-SWC-IV		224	224	171.95	-	
Total		**1821**	**1821**	**1166.9**	**406**	**40,01,497.00**

Timber coupe working						
Name of the coupe	Year of working	no. of trees worked	No. of trees felled	Out turn		Royalty paid by OFDC Ltd.
				Timber (in Cum)	Fire wood (in stack of size 12" x 3" x 3")	
1	**2**	**3**	**4**	**5**	**6**	**7**
Hatidhara South SWC-V	2010-11	151	151	79.839	5	34,01,879.00
Hatidhara North SWC-V		288	288	151.66	20	
Handapa – SWC- -V		434	434	316.7	180	
Pathargargh- SWC-V		305	305	165.08	88	
Udala-SWC-V		353	353	288.89	95	
Taleipathar-SWC-V		Not taken delivery			-	
Total			**1531**	**1531**	**388**	**34,01,879.00**

Timber coupe working				
Name of the coupe	Year of working	no. of trees worked	No. of trees felled	Out turn
				Fire wood (in stack of size 12' x 3' x 3')
1	2	3	4	6
Hatidhara South SWC-VI	2011-12	102	102	-
Hatidhara North SWC-VI		320	320	60
Handapa – SWC- -VI		307	307	95
Pathargargh- SWC-VI		502	502	126
Udala-SWC-VI		421	421	127
Taleipathar-SWC-VI		101	101	10
Total		**1753**	**1753**	**418**

Timber coupe working				
Name of the coupe	Year of working	no. of trees worked	No. of trees felled	Out turn
				Fire wood (in stack of size 12' x 3' x 3')
1	**2**	**3**	**4**	**6**
Hatidhara South SWC-VII	2012-13	282	282	10
Hatidhara North SWC- VII		301	301	102
Handapa – SWC- - VII		253	253	36
Pathargargh- SWC- VII		377	377	30
Udala-SWC- VII		718	718	311.75
Taleipathar-SWC- VII		307	307	60
Total		**2238**	**2238**	**549.75**

Timber coupe working					
Name of the coupe	Year of working	no. of trees worked	No. of trees felled	Out turn	Royalty paid by OFDC Ltd.
				Fire wood (in stack of size 12' x 3' x 3')	
1	2	3	4	6	7
Hatidhara South SWC-VIII	2013-14	183	183	—	39,09,606.00
Hatidhara North SWC- VIII		292	292	105	
Handapa – SWC- - VIII		315	315	80	
Pathargargh- SWC- VIII		348	348	196	
Udala-SWC- VIII		259	259	80.5	
Taleipathar-SWC- VIII		107	107	—	
Total		**1504**	**1504**	**461.5**	**39,09,606.00**

Timber coupe working				
Name of the coupe	Year of working	no. of trees worked	No. of trees felled	Out turn
				Fire wood (in stack of size 12' x 3' x 3')
1	2	3	4	6
Hatidhara South SWC-IX	2014-15	203	203	36
Hatidhara North SWC- IX		317	317	182
Handapa – SWC- - IX		230	230	70
Pathargargh- SWC- IX		209	209	83
Udala-SWC- IX		271	271	135
Taleipathar-SWC- IX		205	205	35
Total		**1435**	**1435**	**541**

Timber coupe working				
Name of the coupe	Year of working	no. of trees worked	No. of trees felled	Out turn
				Fire wood (in stack of size 12' x 3' x 3')
1	**2**	**3**	**4**	**6**
Hatidhara South SWC-X	2015-16	165	165	40
Hatidhara North SWC- X		221	221	96
Handapa – SWC- - X		203	203	100
Pathargargh- SWC- X		191	191	66
Udala-SWC- X		251	251	103
Taleipathar-SWC- X		153	153	30
Total		**1184**	**1184**	**435**

7.7 Import and export of NTFPs.

There is virtually no import of NTFPs. In fact, they are exported. However no concrete documentary records are available on quantity of total collection and export. In the inventorization conducted, some information could be generated which is reflected in **chapter 7.4**.During socio-economic survey of the fringe villages, information on collection, sale are collected which is projected in the special chapter on Socio-economic survey.The trade of important NTFPs with purchase price from the primary gatherers to the immediate sale centre is furnished in **Table. No.7. 46** as follows.

Table. No.7. 46 Import and export of NTFPs

Sl. No.	NTFP items	Purchase price in Rs/Kg	Marketing price in Rs/Kg
1	Pingu	10/	20/
2	Talmuli	30/	60/
3	Badagila	40/	60/
4	Chhatabari	60/	80/
5	Lalgunja	40/	60/
6	Harida	05/	07/
7	Whitegunja	60/	80/
8	Bela fruit(per pc)	01/	02/
9	Bhalia	05/	07/
10	Kochila	30/	50/
11	Satrangi	30/	40/
12	Damghurud	05/	07/
13	Sunari fruit	30/	50/
14	Anantamula	70/	90/
15	Katak seed	40/	60/
16	Char seed	40/	60/
17	Tentuli seed	05/	08/
18	Mahula flower	15/	25/
19	Kantaghadu	10/	12/
20	Phuljhadu	10/	12/
21	Ambada	20/	30/
22	Ritha phala	10/	15/
23	Mango kernel	05/	07/
24	Simili cotton	05/	07/
25	Jhataki flower	05/	10/

26	Sialiseed	05/	07/
27	Palasa seed	10/	15/
28	Gila seed	10/	15/
29	Benachar	05/	07/
30	Banahaladi	30/	40/
31	Banakulutha	05/	07/
32	Tulasi seed	06/	09/
33	Baidanka	40/	60/
34	Landa baguli	40/	60/
35	Bela gunda	10/	12/
36	Bhuinneem	05/	07/
37	Kusum seed	05/	07/
38	Chakunda seed	10/	15/
39	Neem seed	10/	15/
40	Karanja seed	07/	10/
41	Chakunda seed	10/	15/
42	Babul seed	20/	25/
43	Rohini seed	05/	07/
44	Phanaphana fruit	05/	07/
45	Sidha fruit	02/	05/
46	Satabari	30/	50/
47	Atandiloi	05/	07/
48	Katha loi	05/	07/
49	Atandiseed	06/	08/
50	Salleaves	05/	07/
51	Jhuna	200/	220/
52	Dhaura gum	10/	15/
53	Genduligum	50/	80/
54	Bahada	02/	04/
55	Palasa gum	05/	08/
56	Salai	10/	15/
57	Khaira gum	20/	50/
58	Karanja seed	07/	10/

7.8 Removal of Fodder:

No recorded information are available. However, anticipated removal has been projected in **Chapter 7.5.4.4.1.**

7.9 Valuation of the Products:

7.9.1 Past and Current Rates:

7.9.1.1 Schedule of rate of royalty to be charged for different kinds of forest produce is to be adopted in the Division as per the details mentioned in Orissa Forest Code. But this schedule of rates is never indicative of the actual market price. The schedule of rates of 1977 has become obsolete and needs revision as the market rates have gone up considerably.

7.9.1.2 The price of timber in 1940s was very less; the rate of Sal was only Rs. 1.75 – 2.25 per cft. In 1960s it became Rs.5 – 8 per cft, in 1980s it became Rs.92 per cft and in 2003-04 the rate became Rs.244 per cft. The average rates of timber in 40s, 60s, 80s are given in the**Table No: 7.47 to 7.47**

Table: 7.47 MARKET PRICE OF DIF	
Sal	Rs.1.75 to 2.25 Per cubic feet
Bija	Rs.3.00 to 5.000 per cubic feet
Bandhan	Rs.3.00 to 5.000 per cubic feet
Sissoo	Rs.2.50 to 4.00 per cubic feet
Kurum	Rs.2.00 to 3.00 per cubic feet
Asan	Rs.0.75 to 1.25 per cubic feet
Bamboos (Salia)	Rs.12.00 to 20.00 per 100
Source: Working Plan For the Reserved Forests of Athamallik Division, 1965-66 to 1984-85 by Sri S.B Das	

Table: 7.48 TIMBER PRICE PER CUBIC FEET IN 1960S			
Species	2-3'	3-4'	4-5'
Sal	5	6	7
Bija	6	7	8
Kurum	3	4	5
Asan	4	4.5	5
Jamu Mohul	2.37	2.75	2.5
Source: Working Plan For the Reserved Forests of Athamallik Division, 1965-66 to 1984-85 by Sri S.B. Das			

Table: 7.48 TIMBER PRICE PER CUBIC FEET IN 1960S				
Species	2-3'	3-4'	4-5'	>5'
Sal	5	6	7	8
Bija	6	7	8	9
Kurum	3	4	5	6
Asan	4	4.5	5	5
Jamu Mohul	2.37	2.75	2.5	2.5
Source: Working Plan For the Reserved Forests of Athamallik Division, 1965-66 to 1984-85 by Sri S.B. Das				

Table 7.49 TIMBER RATES IN 1984-85		
Sl. No.	Name	Rs.
1	Sal	92
2	Bija	80
3	Sissoo	51
4	Bandhan	33
5	Kurum	56
6	Asan	39
7	Miscellaneous	21
8	Fire wood	18/- per qunital
Source: Working Plan For the Reserved Forests of Athamallik Division, 1985-86 To 2004-05, by Sri Dinesh Singh I.F.S.		

Table: 7.50 SPECIES WISE AVERAGE SELLING RATE AT OFDC LTD. DEPOT, ANGUL (Rate Per Cft)

Sl No.	Species	93-94	94-95	96-97	98-99	99-00	2000-01	2001-02	2002-03	2003-04
1	Teak	311.97	298	310.82	376.11	256.71	523	457.4	441.24	538
2	Sal	135.46	167.72	240.39	195.78	223.51	319.42	251.57	367.18	244
3	Tentra/Siris	141	148.74	202	254.06	266	—	258	241.9	—
4	Asan.	84.83	93.96	104.85	—	104	130.8	142.76	—	114
5	Dhaura	74.81	82.79	129.25	—	—	—	141.51	120.4	—
6	Arjuna	84.31	108.95	—	140.48	—	—	—	173.33	146
7	Misc.(H. wood)	79.32	76.4	86	108.5	—	—	134.84	—	—
8	Misc. (S.wood)	61	40.95	37	53.26	—	—	—	—	—
9	Kendu	108.5	97.56	—	—	—	125.82	—	—	—
10	Phasi	—	96.16	—	—	—	—	—	—	—
11	Bija	157.43	175.57	170.35	231.93	—	242.64	233.45	237.41	—
12	Sisoo	276.64	280.98	319	474.5	—	363.28	578	—	565
13	Bali sisoo	—	114.95	—	—	—	—	—	213.56	—
14	Kasi	152	138.82	132.32	—	—	188.48	175.52	157.48	203
15	Kurum	166	156.81	193.48	—	186.58	268	265	255.55	237
16	Jamu/L. Mai	81.88	109.51	97.9	—	—	—	—	—	188
17	Mahula	95	73.53	97.76	—	—	—	—	42.7	34.85
18	Eucalyptus	—	41.11	—	—	—	—	—	—	—
19	Bandhan	88.4	77.37	155.45	171.62	—	—	178.88	—	—
20	Gambhari	182.8	—			—	—	—	—	—
21	Mitikinia	104.45	—	222.49	158.99	—	—	—	—	—
22	Black Kendu	—	—	—	—	153.68	—	—	—	—
23	Mango	51.3	—	—	—	—	—	—	—	—

Source: Divisional Manager, Angul C-K/L Division

Species wise average selling rate at OFDC Ltd depot at Athmallik is furnished in **Table. No. 7.51**as follows.

Table: 7.51 SPECIES WISE AVERAGE SELLING RATE AT OFDC LTD. DEPOT, ATHMALLIK (Rate Per Cft)

Sl No.	Species	2006-07	2007-08	2009-10	2011-12	2012-13	2013-14	2014-15	2015-16
1	Teak	—	—	—	731.71	787.51	904.84	938.08	836.21
2	Sal	251.44	266.5	289.21	532.9	422.68	521.97	570.55	620.95
3	Bija	468.64	401.38	—	654.58	518.17	497.48	915.65	542.33
4	Asan.	211.41	194.96	251.53	280.83	303.88	269.76	372.79	360.73
5	Dhaura	168.62	148.18	129.92	246.94	223.5	168.43	267.64	331.54
6	Arjuna	—	—	—	—	—	—	—	457.19
7	Misc.(H. wood)	—	167.18	107.62	222.99	176.67	150.22	169.51	274.35
8	Kurum	—	—	451.19	—	594.76	853.59	873.39	365.06
9	Kendu	108.5	97.55	—	—	—	125.82	—	—
10	Bandhan	—	358.18	199.69	—	261.83	361.13	394.05	326.27
11	Sidha	—	—	—	—	—	168.52	301.64	188.08
12	Sisoo	—	—	827.38	704.84	1306.28	1240.26	1295.78	1008.04
13	Mai	—	—	—	—	—	—	237.34	154.7
14	Kasi	—	—	311.83	485.16	453.34	644.7	531.06	464.86
15	LMai	—	261.09	138.62	402.38	160.53	236.09	453.74	318.57
16	Jamun	—	—	—	—	160.53	160.53	—	191.93
17	Rai	—	—	—	—	—	107.16	—	—
18	Simili	—	—	—	—	84.74	—	265.83	—
19	Tentela	—	276.41	389.33	—	430.12	652.18	609.91	434.71
20	Gambhari	—	—	—	—	553.31	543.08	513.22	—
21	Mtikiria	—	193.74	220.1	249.57	—	—	—	—

Sl No.	Species	2016-17	2018-19	2020-21
1	Teak	1,189.00	1,499.00	671
2	Sal	536	900	839
3	Bija	-	1,041.00	1,101.00
4	Asan.	291	572	372
5	Dhaura	181	333	301
6	Arjuna	-	384	-
7	Misc.(H. wood)	-	362	206
8	Kurum	512	761	446
9	Kendu	238	406	269
10	Bandhan	266	581	319
11	Sidha	-	279	333
12	Sisoo	950	976	-
13	Mai	-	-	-
14	Kasi	541	800	625
15	L.Mai	335	341	461
16	Jamun	286	482	328
17	Rai	-	-	-
18	Simili	132	-	-
19	Tentela	475	589	520
20	Gambhari	657	857	671

7.9.2 Royality realized for Athmallik Forest Division:

The rate of royality for the period from 2009-10 to 2015-16 is furnished in **Table. No. 7.52** as below.

Table. No. 7.52 Fixation of Royality											
Sl. No.	Type.	2009-10	2010-11 2011-12	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
1	Regular Coupe per Unit.	1,080.00	1,135.00 1,200.00	1,387.00	1,456.00	1,514.00	1,060,967	4,556,433	10,187,601	8,713,194	3,779,555
2	Salvage/ Seized/ U.D. cases	157	167 180	212	220	230					
3	Sawn/Rough Dressed.	204	217 ---	276	286	299					
4	Firewood per stack.	330	365 ---	385	385	385					
5	Sal poles per piece	35	40 ---	47	50	52					
6	Teak poles per piece	30	35 ---	40	40	42					
7	Other poles per piece	25	25 ---	27	30	31					

7.9.3 REVENUE AND EXPENDITURE

The revenue and expenditure of Angul C-K.L Division are given in the **Table No: 7.53** Since the royalty is paid centrally from the head office, the expenditure shown in the table does not include the royalty. It includes only the establishment cost and the working expenditure like transportation cost and the cost of maintenance of depot etc. The revenue includes the selling price of timber, firewood and commission to OFDC Ltd. For sale price of the Kendu Leaves of Athamallik Kenduleaves Division appears to perform better in terms of revenue and expenditure.

Table: 7.53 REVENUE AND EXPENDITURE OF ANGUL (C-KL) DIVISION

Year	*Revenue (Lakh Rs)*	*Expenditure (Lakh Rs)*
1986-87	*83.23*	*73.06*
1987-88	*110.63*	*105.62*
1988-89	*108.38*	*122.21*
1989-90	*86.63*	*5086*
1990-91	*102.18*	*89.34*
1991-92	*90.57*	*92.09*
1992-93	87.01	72.77
1993-94	119.25	141.19
1994-95	277.73	149.32
1995-96	194.94	138.61
1996-97	150.27	95.72
1997-98	308.39	111.31
1998-99	130.26	118.92
1999-00	56.62	122.75
2000-01	121.71	143.48
2001-02	223.79	130.23
2002-03	203.08	138.35
2003-04	164.35	143.65
2004-05	220.98	166.98
Source: Divisional Manager, OFDC LTD, Angul		
NB: The expenditure is exclusive of Royalty and Other Adjustments.		

The revenue and expenditure of Angul C-K/L Divisionfor the period from 2005-06 to 2020-21 are given in the **Table No: 7.54.**

Table: 7.54REVENUE AND EXPENDITURE OF ANGUL (C-KL) DIVISION		
Year	***Revenue (Lakh Rs)***	***Expenditure (Lakh Rs)***
2005-06	*251.57*	*170.47*
2006 -07	*148.87*	*286.79*
2007-08	*149.09*	*201.64*
2008-09	*269.11*	*180.28*
2009-10	*173.82*	*187.15*
2010-11	*184.55*	*314.83*
2011-12	294.83	593.44
2012-13	324.77	451.77
2013-14	381.44	362.07
2014-15	363.78	430.12
2015-16	413.43	428.37
2016-17	1,052,100.00	143,676.00
2017-18	16,365,501.00	3,542,811.00
2018-19	40,474,845.00	6,644,940.00
2019-20	39,216,113.00	5,624,417.00
2020-21	17,426,234.00	2,812,697.00
G Total	114,537,748.26	18,772,147.93
Source: Divisional Manager, OFDC LTD, Angul		
NB: The expenditure is inclusive of Royalty and Other Adjustments.		

CHAPTER – 8

8. Maintenance and enhancement of social, economic, cultural and spiritual benefits.

8.1 Number of JFM committees and areas protected by them:

During the starting of outgaining plan in 2006-07, 115 nos. of VSS were registered which were managing 8400.59 ha. of forest area. By March, 2017, another 55 VSS have been formed and thus at present there are170 VSS registered and forest areas assigned to them is 13121.19 ha. The summary is shown in the table below in **Table: 8.1** and the detail list of the VSS along with the area assigned to them is annexed in **Annexure -XI.**

Number of VSS & extent of forest area covered in different classes of forests in Athmallik Forest Division.

Table: 8.1 EXTENT OF FOREST AREA UNDER JFM

Year ending	Total No. of VSS	Extent of forest area	
		RF (ha)	Rev. (ha)
March,2006	115	2154.81	6245.78
March,2017	170	3358,68	9762.51

The JFM resolution of 2011 was modified vide resolution No.9182/F&E dt.1.6.15. As per the current rule in force, the committees should be reconstituted in all the VSS and a micro plan has to be drawn by the DFO to do the same within a time frame of 6 months.

Going by the JFM resolution of 2011, the area of forest assigned to a particular VSS should be decided based the area of forest that was customarily being protected by the VSS and claims of adjacent villages. The resolution also provides that the area previously assigned may be changed in consultation with village community.

8.2 Status of Empowerment of JFMCs :

The State Govt. vide Resolution NO.17240 dt.01.08.1988 and No.13638 dt.01.10.1988 introduced the concept of Joint Forest Management (JFM) in the State for the protection degraded Reserved Forest by communities. Subsequently, another resolution was issued by Govt. vide No.29825 dt.11.12.1990, which envisages Protection of Reserved Forests and Protected Forests by community and sharing of usufructs. By virtue of the said resolution, they were granted certain concessions as per section-24 of the Orissa Forest Act, 1972 to meet their bona fide requirement of firewood and small timber.

The concept of participatory Forest Management, a modified form of the JFM, was introduced vide Govt. Resolution No.16700 dt.03.07.1993. Emphasis was laid on formation of Vana Samrakshyana Samiti (VSS) in each village(s) adjoining the forests. As per the said resolution the VSS members are required to protect and manage the degraded forests through JFM. In turn, they were granted usufruct rights for collection of royalty free small timber and firewood along with 100% of the intermediate yield and 50% of the final harvest. Incentives to villagers for protection of forests and conferment of right to usufruct in respect of forests protected by villagers have been envisaged vide Resolution No.22180/F & E dt.30.09.1996.

The National Forest Policy 1988, envisaged co-operation of the people in conservation and development of forests. In keeping with this policy Govt. of Odisha adopted the joint Forest management (JFM) approach and short community participation for protection, regeneration and management of the forest wealth. JFM has not only been a tool for forest regeneration but also a means of employment generation and social empowerment of the forest fringe dwellers.

The state Govt. enacted the Orissa Village Forest Rules 1985, which envisaged preparation of management plan for every village forest and short co-operation of the community in protection of this forest. In 1988, the state Govt. passed a resolution to formally introduce a scheme of protection of peripheral Reserved Forest areas with participation of the adjoining villagers by forming a village level forest Protection committee. The scope of this resolution was enlarged in 1990 to include the Protected Forests. To make the forest people interface more effective, the Govt. of Odisha in Forest & Environment Department issued a resolution dated.03.07.1993. The resolution dealt in a fairly exhaustive manner, the involvement of the local communities in protection of adjoining forest, formation of Vana Sarankshyana Samiti (VSS), duties & responsibilities of the VSS and their executive committees and the role of Forest Department and Gram Panchayat, preparation of Joint Forest Management Plans, usufruct benefits for the VSS and provision of MOU etc. Since these resolution in the past didn't cover the Mangrove Wetlands and the Protected Areas (PA) of the States, i.e. National Parks and Sanctuaries and participatory modes of management are needed their too, the 2008 resolution was issued to extend the participatory approach to all types of forests. Eco development was adopted as a strategy in order to improve the livelihood of local people and their by securing their support for conservation.

Participatory Forest Management in JFM mode is an evolving concept encompassing ecological, Socio-Cultural and Economic dimension. People have played an important role in protection and re-generation of forests all over the State of Odisha. Villagers have either formed VSS or as per JFM resolution or Community Forest Management groups outside the existing JFM framework.

The community forest resource has been defined under the Schedule Tribes and other Traditional Forest Dwellers (Reorganisation of Forest Right's) act 2006, (Popularly known as Forest Rights Act's). As per the said act, Community Forest Resource means customary common Forest land within the traditional and customary boundary of the village and seasonal use of the landscape in case of pastoral communities etc. The minor Forest Produce has been defined under the Forest Right Act which includes all Non-timber Forest Produce of plant origin such as bamboo, brushwood, Stumps, Cane, Tasser, Cocoons, Honey, Wax, Lac, Kenduleaf, medicinal plants and herbs, roots, tubers and the like.

Whereas the Ministry of Environment & Forests, Govt. of India have under the SAMANWIT GRAM VANIKARAN SAMRIDDHI YOJANA (SGVSY) SCHEME, adopted an integrated approach for forest conservation and the development of the communities living in the forest fringes by ensuring a convergence in the flow of funds under the various Central Sector and centrally sponsored schemes in the forestry sector through Forest Development Agencies constituted in every Forest Division.

AND, whereas the Government of Orissa have decided to constitute Forest Development Agencies (FDAs) in every Territorial Forest Division of the State for implementation of the integrated forestry development programmes under the SAMANWIT GRAM SAMRIDDHI YOJANA.

A study on status of empowerment of JFMCs was taken up on the following criteria in Athmallik Forest Division.

- Extent of forest area under effective control, protection and management of V.S.S.
- Regularity and frequency of holding meetings of the General Body and Executive Committee of the V.S.S., proper attendance in these meetings, deliberation of vital issues ,and record keeping.
- Improved status of forest protection.
- Quality control, exercised by the V.S.S, on day-to-day management of the forest.
- Resolution of conflicts.
- Sustainable collection of N.T.F.P.
- Effective preservation and control of forest fire.
- Reduction in day-to-day dependency on the produce of the forest.
- Effectiveness in-implemention of afforestation , soil moisture conservation measures and silvicultural operations.
- Equity and gender equity.

Basing on the above criteria; the status of JFMCs is reflected in **Table No 8.2** as below.

TABLE NO 8.2 The status of empowerment of JFMCs

Name of the Range.	Name of the section	No. of V.S.S	Active	Poor
Athmallik	Athmallik	9	2	4
	Manitri	7	1	4
	Pataka	7	2	4
	TOTAL	**23**	**5**	**12**
Dhandatopa	Dhandatopa	9	2	3
	Maimura	4	1	1
	Paiksahi	2	1	1
	Ambasarmunda	2	1	1
	TOTAL	**17**	**5**	**6**
Handapa	Handapa	18	2	11
	Urukula	16	4	9
	Charkhaman	8	2	3
	Pedipathar	10	3	3
	TOTAL	**52**	**11**	**26**
Bamur	Bamur	14	3	7
	Kishorenagar	20	2	13
	Kadalimunda	2	0	2
	Sargipali	12	1	9
	TOTAL	**48**	**6**	**31**
Madhapur	Madhapur	11	3	5
	Kiakata	13	1	8
	Dekrud	6	3	2
	TOTAL	**30**	**7**	**15**
	G.TOTAL	***170***	***34***	***90***

It is observed that only 20% of the VSS are active.
VSS wise status of empowerment is furnished in

8.3 Labour Welfare :

Athmallik Forest Division has been providing direct employment to labourers while executing various development works under different schemes. The labourers were paid minimum wages as per Govt. Notification modified from time to time. Table shows the minimum wages in force in Odisha during various period of time in the current working plan. With respect to the welfare scheme and expenditure no special welfare scheme was in operation during the current working plan period. No cases are pending in the labour courts. With respect to provisions of drinking water, childcare, first aid etc. the labourers are being provided as a matter of right in case of schemes under MGNREGS. However for others departmentally funded schemes no such facility is available.

DIFFERENT WAGE RATES NOTIFIED FOR UNSKILLED WORKERS

Year	Wage Rate
2007-08	70
2008-09	70
2009-10	90
2010-11	90
2011-12	90
2012-13	150
2013-14	150
2014-15	150
2015-16	200
2019-20	280

8.4 Use of Indigenous Knowledge:

The field survey on indigenous Knowledge and documentations of the same has not been done in the division. In Athamallik Division 47 Nos. of Biodiversity Management Committees (BMCs) as per Biodiversity Act have been formed. Action is being taken to hunt for indigenous knowledge on medicinal plants, NTFP by organising BMC meeting.

8.5 Extent of Cultural / Sacred Groves :

An area with particular types of trees dedicated to local deities or ancestral spirits that are protected by local communities through social traditions and taboos incorporating spiritual and ecological values are called as sacred groves.

8.5.1 Importance of Sacred Groves :

Sacred Groves provide shelter to thousands of species of other plants and animals.

Sacred Groves have great powers to heal body and spirit.

Sacred Groves are important reservoirs of biodiversity.

These are last refuge for endemic and endangered plant and animal species.

These are store houses of Medicinal plants valuable to village communities as well as modern pharmacopoeia.

Sacred Groves contain relatives of crop species that can help to improve cultivated varieties.

Sacred Groves help in keeping the water cycle in local areas.

These improve soil stability, prevent top-soil erosion and provide irrigation for agriculture in drier climates.

8.5.2 Need for conservation of Sacred Groves:

The Sacred Groves are the history of our culture. In the past, protection and conservation of the sacred grove were closely linked with the religious beliefs and traditional culture of the indigenous tribal communities, The cultural heritage survived through generation, but unfortunately the religious beliefs taboos that were in the centre of sacred grove preservation are now fast eroding due to change in social set up, increase consumerism for better living and change in the belief system of the people attributable to modern system of education.Therefore it is extremely difficult to protect sacred grove only on the basis of religious belief. There is a need to revitalize the age old ethos of culture of traditional societies by supplementing with scientific knowledge about the crucial role of sacred groves in conserving biodiversity and providing large number of valuable goods and vital ecological service to the people living around the sacred grove.Therefore urgent interventions are required for the conservation of the sacred grove.

8.5.3 : List of Sacred Groves in Athmallik Division:

10 sacred groves are under management by Athmallik Forest Division. The details of sacred groves along with their ownership, status of management and interventions for conservation are listed as follows.

8.5.3.1 MAA MAHESWARI PITHA, DALAPAKA:

Maa Maheswari sacred grove is located in village Dalapaka under Kishorenagar block of Angul District. Dalpaka village is situated near N.H.55 and 4 km from Bamur range office. The village is having 120 houses and population of about 600 numbers.The main inhabitant of this village are suda, kamara, chasa and teli clan. The people of this village depend on cultivation and as daily labourer in various field works. It is located between N 21 00' 07" to E 84 30'59.1" with an area of 0.2 Ha. This grove is under Rangamatia beat of Bamur Section,Bamur GP which is 5km from it.

Five deities are worshipped in Dalpaka pitha. The main God present in this pitha is MAA MAHESWARI and the main adorer Dehuri is adore in this place. The deities are :Maheswari, Pancha khanda, Rana ghanta, Khambeswari and Pitabali.The deities are adored on the 10th day of bright lunar fortnight(Suklapakhya) of Vadraba. The process of adore start at 12 noon. The trend of immolation is still in this place but due to administrative restriction it is banned in this place from some years ago. The Prasad is distributed equally among the villagers at the end of the worship. The villagers as well as their near relatives enjoy the festival in the evening. This adore gives an opportunity for the villagers to unite as well as to spend some happy moments with their relatives.

The villagers, in a meeting have constituted a Managing Committee with 10 members for proper management of the grove, various functions and rituals of the deity. 10 members are nominated in the managing committee. As per the decision in the committee meeting; they will sit regularly to discuss the issues for development of the sacred grove and to sort out solutions for eradication of the problems.

The villagers have decided to take up the following activities for overall development of the sacred grove.

Barbed wire fencing around the pitha: To prevent trespassing, grazing and to protect the newly planted seedlings inside the pitha.

One open mandapa for God: To provide a good platform for worship.

One hereditary signboard: Name of the God present and information about the grove.

Plantation inside the pitha: To increase the aesthetic and ornamental view of the pitha and to check soil erosion.

Sl.No	ACTIVITIES	Amount in Rs
1	Barbed wire fencing	10,000.00
2	Construction of mandapa	10,000.00
3	Construction of signboard	5,000.00
4	Conducting meeting	5,000.00
5	Planning	5,000.00
6	plantation	6,000.00

Under future plan it is proposed to (i) dug a deep well to meet the requirements of water at the time of holy feast. (ii) construction of a permanent shed. (iii) Electricity facility (iv) Open pendal for hymns at the time of festival.

BIODIVERSITY ASSESSMENT :

Species present:

Name of the plant	Family	Local Name
Madhuca indica	Sapotaceae	Mahula
Shorea robusta	Dipterocarpaceae	Sal
Buchanania lanzan	anacardiacea e	Chara
Schleichera oleosa	Sapindaceae	Kusuma
Diospyros melanoxylon	Ebenaceae	Kendu
Lagerstroemia parviflora	Lythraceae	Sidha

Species planted

Name of the plant	**Family**	**Local Name**
Saraca asoca	Fabaceae	Ashok
Aegle marmelos	Rutaceae	Bela
Azadirachta indica	Meliaceae	Limba
Emblica officinalis	Euphorbiaceae	Aanla
Terminalia catapa	Combretaceae	Pesta badam
Peltophorum ferrugineum	Caesalpinaceae	Radhachuda
Swietenia mahagony	Meliaceae	Mehogani

8.5.3.2 GRAMAPATI PITHA, TENTALAPANI:

Gramapati sacred grove is located in village Tentalapani under Kishorenagar block of Angul District. Tentalapani village is situated at the foot of East-Baruni mountain range and about 20 km from Bamur range office and 15 KM from Kishorenagar. Initially the deity was worshipped in an open space stimulated with stone. It is located between N 20 53' 13.5" to E 84 20'17.1" with an area of 1.37 Ha. This grove is under Tentalapani beat of Kadalimunda Section,Kadalimundar GP which is 5 km from it.

From ancient time Tentalapani village is situated in the bank of East-Baruni mountain ranges. This village was ruled by king Kishore Chandra Deo of Athmallik fortress. Later on the power of ruling was passed to the landlords and then to the gadatias. The two main inhabitants of this village are the gadatia clan and dehuri clan.Other inhabitants of all clans except these two are from Sonepur, Boudh, Marjakud and Natada. The people of this village depend on cultivation,animal husbandry and collection of kendu leaves as well as mahua flower for their livelihood.The main drink in the morning and evening of these people is the juice obtained from date palm tree. The total population of this village is almost 400 and most of them belong to the scheduled caste and scheduled tribe. They enjoy the evening with reading the Bhagabata as well as enchanting the hymns.

The Tentalapani pitha is also as old as the village. Five deities are worshipped in the sacred place.This sacred place was established by the gadatias. The main adorer called 'The Dehuri' adore in this place.The other deities are Gramapati, Pitabali, Panchakhanda,Matimaa and Debi Budhi. The deities are adored on the 10th day of bright lunar fortnight(Suklapakhya) of Vadraba. The process of adore start at 12 noon. The trend of immolation is still in this place but due to administrative restriction it is banned in this place from some years ago. The Prasad is distributed equally among the villagers at the end of the worship. The villagers as well as their near relatives enjoy the festival in the evening. This adore gives an opportunity for the villagers to unite as well as to spend some happy moments with their relatives.

A VSS is constituted in this village and different developmental activities under the micro plan are in progress.

The villagers, in a meeting have constituted a Managing Committee with 10 members for proper management of the grove, various functions and rituals of the deity. 10 members are nominated in the managing committee. As per the decision in the committee meeting; they will sit regularly to discuss the issues for development of the sacred grove and to sort out solutions for eradication of the problems.

The villagers have decided to take up the following activities for overall development of the sacred grove. Barbed wire fencing around the pitha: To prevent trespassing, grazing and to protect the newly planted seedlings inside the pitha. One open mandapa for God: To provide a good platform for worship..One hereditary signboard: Name of the God present and information about the grove. Plantation inside the pitha: To increase the aesthetic and ornamental view of the pitha and to check soil erosion.

Sl.No	ACTIVITIES	Amount in Rs
1	Barbed wire fencing	10,000.00
2	Construction of mandapa	10,000.00
3	Construction of signboard	5,000.00
4	Conducting meeting	5,000.00
5	Planning	5,000.00
6	plantation	6,000.00

Under future plan it is proposed to (i)
dug a deep well to meet the requirements of water at the time of holy feast. (ii) construction of a permanent shed. (
(iii) Electricity facility
(iv) Open pendal for hymns at the time of festival.

BIODIVERSITY ASSESSMENT :

Species present:

Name of the plant	Family
Azadirachta indica	Meliaceae
Protium serratum	Burseraceae
Adina cordifolia	Rubiaceae
Schleichera oleosa	Sapindaceae
Mitragyna Parviflora	Rubiaceae
Lagerstroemia parviflora	Lythraceae
Dendrocalamus strictus	Poaceae

Species planted

Name of the plant	Family
Mimusops elengi	Sapotaceae
Aegle marmelos	Rutaceae
Azadirachta indica	Meliaceae
Emblica officinalis	Euphorbiaceae
Terminalia catapa	Combretaceae
Peltophorum ferrugineum	Caesalpiniaceae
Swietenia mahagony	Meliaceae

8.5.3.3 MAA MAHESWARI PITHA, NAKTIDEUL:

Maa Maheswari sacred grove is located in village Naktideul under Athmallik block of Angul District. Naktideul village is situated at 8 km from Madhapur range office. Village Gudgudi is located in the east, Naktideul K.F. in the west, East-Baruni R.F. in the northern side and state highway from Rairakhol to Boudh runs in the south. It is located between N 20 50' 44.9" to E 84 23'40.8'.'

According to the villagers of Naktideul; the village was established in 1840. The first inhabitant of the village is Jadumani Mishra. The people of this village depend on cultivation, animal husbandary and collection of kendu leaves as well as Mahua Flower for their livelihood. The main drink of the people is the juice obtained from the date palm tree.The total houses of the village is almost 22 and most of them belong to the scheduled caste and scheduled tribes i.e. Ganda and Munda clan. They enjoy the evening with reading Bhagabata as well as enchanting the hymns. Five deities are worshipped in Naktideul pitha. The main God present in this pitha is MAA MAHESWARI and the main adorer Ganda is adore in this place. The deities are :Maa Maheswari, Swapneswari. The deities are adored on the 10th day of bright lunar fortnight(Suklapakhya) of Vadraba. The process of adore start at 12 noon. The trend of immolation is still in this place but due to administrative restriction it is banned in this place from some years ago. The Prasad is distributed equally among the villagers at the end of the worship. The villagers as well as their near relatives enjoy the festival in the evening. This adore gives an opportunity for the villagers to unite as well as to spend some happy moments with their relatives.

The villagers, in a meeting have constituted a Managing Committee with 10 members for proper management of the grove, various functions and rituals of the deity. 10 members are nominated in the managing committee. As per the decision in the committee meeting; they will sit regularly to discuss the issues for development of the sacred grove and to sort out solutions for eradication of the problems.

Sl.No	ACTIVITIES
1	Barbed wire fencing
2	Construction of mandapa
3	Construction of signboard
4	Conducting meeting
5	Planning
6	plantation

Under future plan it is proposed to
(i) dug a deep well to meet the requirements of water at the time of holy feast.
(ii) construction of a permanent shed.
(iii) Electricity facility
(iv) Open pendal for hymns at the time of festival.

BIODIVERSITY ASSESSMENT :

Species present:

Name of the plant	Family	Local Name
Pterocarpus Marsupium	Fabaceae	Piasala
Anogeissus Latifolia	Combretaceae	Dhaura
Terminalia Tomentosa	Combretaceae	Asan
Aegel marmelos	Rutaceae	Bela
Diospyros melanoxylon	Ebenaceae	Kendu

Species planted

Name of the plant	Family	Local Name
Tectona Grandis	Verbenaceae	Teak
Azadirachta indica	Meliaceae	Limba
Mimusops elengi	Sapotaceae	Baula
Desmodium Polycarpum	Fabaceae	Krushnachuda
Michelia Champaca	Magnoliaceae	Champa

8.5.3.4 MAA MAHESWARI SAKTI PITHA, GORATOPA:

Maa Maheswari sacred grove is located in village Goratopa under Kishorenagar block of Angul District. It is situated at the Kishorenagar-Madhupur Road and 14 KMs from Madhupur. Manjore irrigation project is present in the North side and other three sides are covered with Goratupa village area. It is located between N 20 52' 34.4" to E 84 27'00.9'.'

According to the villagers of Goratopa; the deities was established long before the village was set up. The first inhabitant of the village are the ganda clan. The people of this village depend on cultivation, animal husbandary and collection of kendu leaves as well as Mahua Flower for their livelihood. The main drink of the people is the juice obtained from the date palm tree.The total population of the village is almost 250 and most of them belong to the scheduled caste and scheduled tribes They enjoy the evening with reading Bhagabata as well as enchanting the hymns.

Five deities are worshipped in Goratopa pitha. The main God present in this pitha is MAA MAHESWARI and the main adorer Dehuri is adore in this place. The deities are :Maa Maheswari, Pitabali, Gramapati, Vrukundi and Kainta devi. The deities are adored on the 10th day of bright lunar fortnight(Suklapakhya) of Vadraba. The process of adore start at 12 noon. The trend of immolation is still in this place but due to administrative restriction it is banned in this place from some years ago. The Prasad is distributed equally among the villagers at the end of the worship. The villagers as well as their near relatives enjoy the festival in the evening. This adore gives an opportunity for the villagers to unite as well as to spend some happy moments with their relatives.

The villagers, in a meeting have constituted a Managing Committee with 10 members for proper management of the grove, various functions and rituals of the deity. 10 members are nominated in the managing committee. As per the decision in the committee meeting; they will sit regularly to discuss the issues for development of the sacred grove and to sort out solutions for eradication of the problems. The villagers have decided to take up the following activities for overall development of the sacred grove. Barbed wire fencing around the pitha: To prevent trespassing, grazing and to protect the newly planted seedlings inside the pitha. One open mandapa for God: To provide a good platform for worship. One hereditary signboard: Name of the God present and information about the grove.antation inside the pitha: To increase the aesthetic and ornamental view of the pitha and to check soil erosion.

Sl.No	ACTIVITIES	Amount in Rs
1	Barbed wire fencing	10,000.00
2	Construction of mandapa	10,000.00
3	Construction of signboard	5,000.00
4	Conducting meeting	5,000.00
5	Planning	5,000.00
6	plantation	6,000.00

Under future plan it is proposed to (i) dug a deep well to meet the requirements of water at the time of holy feast. (ii) construction of a permanent shed. (iii) Electricity facility (iv) Open pendal for hymns at the time of festival.

BIODIVERSITY ASSESSMENT :

Species present:

Name of the plant	Family
Adina cordifolia	Rubiaceae
Anogeissus Latifolia	Combretaceae
Schleichera oleosa	Sapindaceae
Borassus flabelliformis	Palmae/ Arecaceae

Species planted

Name of the plant	Family	Local Name
Tectona Grandis	Verbenaceae	Teak
Azadirachta indica	Meliaceae	Limba
Mimusops elengi	Sapotaceae	Baula
Desmodium Polycarpum	Fabaceae	Krushnachuda
Michelia Champaca	Magnoliaceae	Champa
Anogeissus acuminate	Combretaceae	Phasi
Emblica officinalis	Euphorbiaceae	Amla
Saraca asoca	Fabaceae	Ashok
Ficus bengalensis	Moraceae	Bara
Ficus religiosa	Moraceae	peepal
Mesua ferrea	Clusiaceae	Nageswar
Santalum album	Santalaceae	Chandan
Mangifera indica	Anacadiaceae	Amba
Aegel marmelos	Rutaceae	Bela
Polyalthia longigolia	Annonaceae	Debdaru
Saccharum munja	poaceae	Baunsha
Limonia acidissima	Rutaceae	Kaitha

8.5.3.5 MAA MAHESWARI SACRED GROVE, BASUDEVPUR :

Maa Maheswari sacred grove is located in village Basudevpur under Athmallik block of Angul District. It is situated at the foot of Panchadhara pahad and about 5 Km from Dhandatopa Forest Range office and 18 Km from Athmallik.The village boundary is located on the east and west side of the village and other two sides are covered with Forest lands. Initially the deity was worshipped in an open space stimulated with stones and in course of time a mandap was constructed in the grove. It is located between N 20 47'42.8" to E 84 37'20.1" with an area of 0.5 ha. Basudevpur pitha is as old as the village. Four deities are worshipped in this sacred place. The sacred place was established by the tribal society called "GANDA" The total population of the village is almost 300 and almost all of them belong to the scheduled tribes

The deities are :Maa Maheswari, Maa Kali, Maa Budhithakurani and Sidheswar Baba The main adorer called the dehuri adore in this place. The villagers of Basudevpur manage the sacred grove with the great passion and sanctity through protection. The community beliefs that its protection will in return provide safety to them from evils. People strongly belief that MAA MAHESWARI looks after the welfare and well being of the local people. Villagers feel that village would be protected by the deity against famine and epidemic diseases. In addition to the daily worship of MAA MAHESWARI, seasonal festivals like Panasankaranti, Sibaratri, Bhadraba Puja, Dhulia puja, Pusa Purnami were observed in the deity place of sacred grove. Thousands of people from local community have gathered during festival period. During these rituals, sacrifice of poultry bird and offerings like liquor, banana, fruits, paddy and vegetable items are offered. These rituals are performed for the well-being of the people. The deity is believed to be looked after the wellbeing of people and also protect the grove.

The villagers, in a meeting have constituted a Managing Committee with 10 members for proper management of the grove, various functions and rituals of the deity. 10 members are nominated in the managing committee. As per the decision in the committee meeting; they will sit regularly to discuss the issues for development of the sacred grove and to sort out solutions for eradication of the problems.

The villagers have decided to take up the following activities for overall development of the sacred grove.

Construction of compound wall around the sacred grove: To prevent trespassing, grazing and to protect the newly planted seedlings inside the pitha.

One open mandapa for God: To provide a good platform for worship.

Concrete of sacred grove road:100mts

Levelling of Sacred Grove site.

Plantation inside the pitha: To increase the aesthetic and ornamental view of the pitha and to check soil erosion.

Sl.No	ACTIVITIES	Amount in Rs
1	Barbed wire fencing	10,000.00
2	Construction of mandapa	10,000.00
3	Construction of signboard	5,000.00
4	Conducting meeting	5,000.00
5	Planning	5,000.00
6	plantation	6,000.00

BIODIVERSITY ASSESSMENT :

Species present:

Name of the plant	Family	Local Name
Tectona Grandis	Verbenaceae	Teak
Azadirachta indica	Meliaceae	Limba
Mangifera indica	Anacadiaceae	Amba
Aegel marmelos	Rutaceae	Bela
Acacia catechu	Mimosaceae	Khaira
Lannea coromandalica	Anacardiaceae	Mai
Pongamia Pinnata	Fabaceae	Karanja
Dendrocalamus strictus	Poaceae	Bamboo

Species planted

Name of the plant	Family	Local Name
Tectona Grandis	Verbenaceae	Teak
Saraca asoka	Fabaceae	Ashoka
Mimusops elengi	Sapotaceae	Baula
Desmodium Polycarpum	Fabaceae	Krushnachuda
Magnolia champaca	Magloliaceae	Swarna champa

8.5.3.6 MAA BANKIMUNDI SACRED GROVE, CHINTAMANIPUR :

Maa Bankimundi sacred grove is located in village Chintamanipur under Athmallik block of Angul District. It is situated at the foot of Panchadhara pahad and about 7 Km from Dhandatopa Forest Range office and 18 Km from Athmallik. The village boundary is located on the north side of the village and other three sides are covered with Forest lands. Initially the deity was worshipped in an open space stimulated with stones and in course of time a mandap was constructed in the grove. . It is located between N 20 49' 04.9" to E 84 35'25" with an area of 0.5 ha.

Chintamanipur pitha is as old as the village. Four deities are worshipped in this sacred place. The sacred place was established by the tribal society called "GANDA" The total population of the village is almost 150 and almost all of them belong to the scheduled tribes.

The deities are :Maa Bankimundi, Maa Khambeswari, Maa Pitabali and Sidheswar Baba The main adorer called the dehuri adore in this place. The villagers of Chintamanipur manage the sacred grove with the great passion and sanctity through protection. The community beliefs that its protection will in return provide safety to them from evils. People strongly belief that MAA BANKIMUNDI looks after the welfare and well being of the local people. Villagers feel that village would be protected by the deity against famine and epidemic diseases.

In addition to the daily worship of MAA BANKIMUNDI, seasonal festivals like Sibaratri, Bhadraba Puja, Chaiti puja, Sitalasasthi were observed in the deity place of sacred grove. Thousands of people from local community have gathered during festival period. During these rituals, banana, fruits, paddy and vegetable items are offered. These rituals are performed for the well-being of the people.

The villagers, in a meeting have constituted a Managing Committee with 10 members for proper management of the grove, various functions and rituals of the deity. 10 members are nominated in the managing committee. As per the decision in the committee meeting; they will sit regularly to discuss the issues for development of the sacred grove and to sort out solutions for eradication of the problems.

The villagers have decided to take up the following activities for overall development of the sacred grove.Construction of compound wall around the sacred grove.: To prevent trespassing, grazing and to protect the newly planted seedlings inside the pitha. One open mandapa for God: To provide a good platform for worship.

Concrete of sacred grove road:100mts

Construction of rest shed. Plantation inside the pitha: To increase the aesthetic and ornamental view of the pitha and to check soil erosion.

Sl.No	ACTIVITIES	Amount in Rs
1	Barbed wire fencing	10,000.00
2	Construction of mandapa	10,000.00
3	Construction of signboard	5,000.00
4	Conducting meeting	5,000.00
5	Planning	5,000.00
6	plantation	6,000.00

BIODIVERSITY ASSESSMENT :

Species present:

Name of the plant	Family	Local Name
Shorea robusta	Dipterocarpaceae	Sal
Cleistanthus collinus	Euphorbiaceae	Karada

Species planted

Name of the plant	Family	Local Name
Tectona Grandis	Verbenaceae	Teak
Saraca asoka	Fabaceae	Ashoka
Mimusops elengi	Sapotaceae	Baula
Desmodium Polycarpum	Fabaceae	Krushnachuda
Magnolia champaca	Magloliaceae	Swarna champa

8.5.3.7 MAA BAYANIPITHA SACRED GROVE,TAKABA :

Maa Bayanipitha sacred grove is located in village Takaba under Kishorenagar block of Angul District. It is situated at the foot of Northern R.F and about 12 Km from Handapa Forest Range office and 30 Kms from Kishorenagar.In the west of the grove,a perennial stream flows and in the east side,Takaba village is situated.The other two sides are covered with Forest. Initially the deity was worshipped in an open space stimulated with stones and in course of time a mandap was constructed in the grove. It is located between N 20 59' 55.8'' to E 84 38'08.3'' with an area of 1.0 ha. The sacred grove is surrounded with dense forests with varied degree of ecological and socio-cultural dimensions. Last year Handapa Forest Range has planted Neem,Ashok,Bahada,,Anla,Raktachandan, Pestababam,Boula, Radhachuda and chandan etc around the grove.

According to the villagers, the deity Maa bayani pitha was established long before the village was set up. No body knows when and how the deity was established here. Initially the grove was on an open space under a tree. Village priest named Golekha Behera worship the deity.

The villagers of Takaba manage the sacred grove with the great passion and sanctity through protection. The community beliefs that its protection will in return provide safety to them from evils. People strongly belief that MAA BAYANI looks after the welfare and well being of the local people. Villagers feel that village would be protected by the deity against famine and epidemic diseases.

In addition to the daily worship of MAA BAYANII, festivals like Dussehera, Pusha Purnima, Pana Sankrati,Bayani puja were observed in the deity place of sacred grove. Thousands of people from local community have gathered during festival period. During these rituals,sacrifice of poultry bird,Goat, banana, fruits, paddy and vegetable items are offered. These rituals are performed for the well-being of the people.

The villagers, in a meeting have constituted a Managing Committee with 10 members for proper management of the grove, various functions and rituals of the deity. 10 members are nominated in the managing committee. As per the decision in the committee meeting; they will sit twice a month to discuss the issues for development of the sacred grove and to sort out solutions for eradication of the problems.

The villagers have decided to take up the following activities for overall development of the sacred grove. Construction of compound wall around the sacred grove.: To prevent trespassing, grazing and to protect the newly planted seedlings inside the pitha. Increase the area of mandap: To provide a good platform for worship Levelling of sacred grove site:

Herbal Plantation inside the pitha: To increase the aesthetic and ornamental view of the pitha and to check soil erosion.

Sl.No	ACTIVITIES	Amount in Rs
1	Barbed wire fencing	10,000.00
2	Construction of mandapa	10,000.00
3	Construction of signboard	5,000.00
4	Conducting meeting	5,000.00
5	Planning	5,000.00
6	plantation	6,000.00

BIODIVERSITY ASSESSMENT :

Species present:

Name of the plant	Family	Local Name
Shorea robusta	Dipterocarpaceae	Sal
Tectona Grandis	Verbenaceae	Teak
Syzigium Cumini		Jamun
Semicarpus anacardium	Anacardiaceae	Bana bhalia
Careya arborea		Kumbhi
Sterculia urens		Girdhini
Solanum	Solonaceae	Dengavegi
Sida rhombilia	Malvaceae	Bajramuli
Holarrhen pubescens	Apocynaceae	Pita kurei
Combretom decandrum	Combretaceae	Atundi
Mimosa pudica	Mimosaceae	Lajkuli
Cucuma aromatica	Zingiberceae	Bana Haladi
Andrographis paniculate	Acanthaceae	Bhuinimba

8.5.3.8 MAA MAHESWARI THAKURANI SACRED GROVE, RAJANPAL :

Maa Maheswari Thakurani sacred grove is located in village Rajanpal under Kishorenagar block of Angul District. It is situated at the foot of Northern R.F and about 12 Km from Handapa Forest Range office and 34 Kms from Kishorenagar. In the east of the grove, a perennial stream flows and in the west side, Rajanpal village is situated. The other two sides are covered with Forest. Initially the deity was worshipped in an open space stimulated with stones and in course of time a mandap was constructed in the grove. It is located between N 21 01'48" to E 84 44'53.7 with an area of 1.0 ha. The sacred grove is surrounded with dense forests with varied degree of ecological and socio-cultural dimensions. Last year Handapa Forest Range has planted neem, Ashok, Bahada, Anla, Raktachandan, Pestababam, Boula, Radhachuda and Chandan etc. around the grove.

According to the villagers, the deity Maa Maheswari Thakurani pitha was established long before the village was set up. No body knows when and how the deity was established here. Initially the grove was on an open space under a tree. Village priest named Biseswara Mahapatra worship the deity.

The villagers of Rajanpal manage the sacred grove with the great passion and sanctity through protection. The community beliefs that its protection will in return provide safety to them from evils. People strongly belief that MAA Maheswari Thakurani looks after the welfare and well being of the local people. Villagers feel that village would be protected by the deity against famine and epidemic diseases.

In addition to the daily worship of MAA Maheswari, festivals like Dussehera, Pusha Purnima, Pana Sankrati, Bayani puja were observed in the deity place of sacred grove. Thousands of people from local community have gathered during festival period. During these rituals, sacrifice

The villagers, in a meeting have constituted a Managing Committee with 10 members for proper management of the grove, various functions and rituals of the deity. 10 members are nominated in the managing committee. As per the decision in the committee meeting; they will sit twice a month to discuss the issues for development of the sacred grove and to sort out solutions for eradication of the problems.

The villagers have decided to take up the following activities for overall development of the sacred grove. Construction of compound wall around the sacred grove. To prevent trespassing, grazing and to protect the newly planted seedlings inside the pitha. Increase the area of mandap: To provide a good platform for worship.

Levelling of sacred grove site:

Herbal Plantation inside the pitha: To increase the aesthetic and ornamental view of the pitha and to check soil erosion.

Sl.No	ACTIVITIES	Amount in Rs
1	Barbed wire fencing	10,000.00
2	Construction of mandapa	10,000.00
3	Construction of signboard	5,000.00
4	Conducting meeting	5,000.00
5	Planning	5,000.00
6	plantation	6,000.00

BIODIVERSITY ASSESSMENT :

Species present:

Name of the plant	Family	Local Name
Shorea robusta	Dipterocarpaceae	Sal
Tectona Grandis	Verbenaceae	Teak
Syzigium Cumini		Jamun
Semicarpus anacardium	Anacardiaceae	Bana bhalia
Careya arborea		Kumbhi
Sterculia		Girdhini
Solanum torvum	Solonaceae	Dengavegi
Sida rhombilia	Malvaceae	Bajramuli
Holarrhen pubescens	Apocynaceae	Pita kurei
Combretom decandrum	Combretaceae	Atundi
Mimosa pudica	Mimosaceae	Lajkuli
Cucuma aromatica	Zingiberceae	Bana Haladi
Andrographis paniculate	Acanthaceae	Bhuinimba

Species planted: 100 plants of different species are planted in the sacred grove.

8.5.3.9 MAA MAHESWARI PIDHA SACRED GROVE, NUAGARH :

Maa Maheswari sacred grove is located in village Nuagarh under Athmallik block of Angul District. It is situated near the bank of Sindhol Jhor Nala and about 05 Km from Athmallik Block. Initially the deity was worshipped in an open space stimulated with stones and in course of time a mandap was constructed in the grove. It is located between N 20 46' 14.1" to E 84 33'7.2"with an area of 0.26 ha. The sacred grove is surrounded with scattered forest with varied degree of ecological and socio-cultural dimensions. Village Prist (Dehury) worship the deity with traditional institutional mechanism in the management of the deity.

According to the villagers, the deity Maa Maheswari Pidha was established long before the village was set up. During the period of King Mahendra Deo Samanta i.e. 1877-1900, it was brought by the King from Handapa to Dhandatopa and then to Nuagarh. Now village priest Sri Sweta Nayak worship the deity.

The villagers of Nuagarh manage the sacred grove with the great passion and sanctity through protection. The community beliefs that its protection will in return provide safety to them from evils. People strongly belief that MAA Maheswari Pidha looks after the welfare and well being of the local people. Villagers feel that village would be protected by the deity against famine and epidemic diseases.

In addition to the daily worship of MAA Maheswari, festivals like Dussehera, Pusha Purnima,Bhadraba parba, Chaiti parba, Dola Purnima, Akshya Trutiya, Margasira parba were observed in the deity place of sacred grove. Thousands of people from local community have gathered during festival period. During these rituals, sacrifice of poultry bird,Goat, banana, fruits, paddy and vegetable items are offered. These rituals are performed for the well-being of the people.

The villagers, in a meeting have constituted a Managing Committee with 10 members for proper management of the grove, various functions and rituals of the deity. 10 members are nominated in the managing committee. As per the decision in the committee meeting; they will sit twice a month to discuss the issues for development of the sacred grove and to sort out solutions for eradication of the problems.In addition to its proper managemenr there are myriads of problems and issues creped with the sacred grove. Due to improper physical barriers, the cattle are trespassing the grove and destroying its plant resources. Therefore it is needed to fence around the grove to prevent trespassing, grazing and illegal collection of biomass. Due to soil erosion , grazing and biomass collection, many indigenous and herbal plants are endangered and need to be protected through regeneration. The villagers have decided to take up the following activities for overall development of the sacred grove.

Construction of compound wall around the sacred grove.: To prevent trespassing, grazing and to protect the newly planted seedlings inside the pitha. Repair of deity mandap with over head shed: To provide a good platform for worship. Construction of rest shed.: To be used for resting of devotees,meeting of the management committee and refreshment of outside visitors.

Herbal Plantation inside the pitha: To increase the aesthetic and ornamental view of the pitha and to check soil erosion.

Installation of Tube well. For drinking water facility.

Sl.No	ACTIVITIES	Amount in Rs
1	Barbed wire fencing	10,000.00
2	Construction of mandapa	10,000.00
3	Construction of signboard	5,000.00
4	Conducting meeting	5,000.00
5	Planning	5,000.00
6	plantation	6,000.00

BIODIVERSITY ASSESSMENT :

Tree Species present:

Name of the plant	**Family**	**Local Name**
Azadirachta indica	Meliaceae	Limba
Polyalthia cerasoides	Annonaceae	Patmasu
Bombax ceiba	Bombacaceae	Simili
Terminalia chebula	Combretaceae	Harida
Madhuca indica	Sapotaceae	Mahula
Syzygium cumini	Myrtaceae	Jambu
Bridelia retusa	Euphorbiaceae	Kasi
Pongamia Pinnata	Fabaceae	Karanja
Lagerstroemia parviflora		Sidha
Diospyros melanoxylon	Ebenaceae	Kendu
Aegel marmelos	Rutaceae	Bela
Careya arborea	Lecythidaceae	Kumbhi
Adina cordifolia	Rubiaceae	Kurum
Ficus bengalensis	Moraceae	Bara
Terminalia bellirica	Combretaceae	Bahada
Tamarindus indica	Caesalpinaceae	Tentuli

Shrubs, Creepers and herbs

Name of the plant	Family	Local Name
Holarrhena antidysenterica	Apocynaceae	Kurei
Streblus asper	Moraceae	Sahada
Sida spinosa	Malvaceae	Bajramuli
Phoenix sylvestris	Palmaceae	Banakhajuri

Species planted: 100 plants of different species are planted in the sacred grove.

8.5.3.10 MAA PITABALI PIDHA SACRED GROVE, PULESWAR :

Maa Maheswari sacred grove is located in village Puleswar under Athmallik block of Angul District. It is situated near the bank of Mahanadi River and about 2.5 Km from Athmallik Block. Initially the deity was worshipped in an open space stimulated with stones and in course of time a mandap was constructed in the grove by sri Rama Chandra Behera 30 years back. It is located between N 20 43' 0.8" to E 84 30'46.4"with an area of 0.,44 ha. The sacred grove is surrounded with scattered forest with varied degree of ecological and socio-cultural dimensions. Village Prist (Dehury) worship the deity with traditional institutional mechanism in the management of the deity.

According to the villagers, the deity Maa Pitabali Pidha was established long before the village was set up. During the period of King Mahendra Deo Samanta i.e. 1877-1900, it was brought by one Sri Peta Mahar of Puleswar village from Balasakhupa of Phulbani through Mahanadi River and established near the Orchard of Mahula Tree. Now village priest worship the deity.

The villagers of Puleswar manage the sacred grove with the great passion and sanctity through protection. The community beliefs that its protection will in return provide safety to them from evils. People strongly belief that MAA Pitabali Pidha looks after the welfare and well being of the local people. Villagers feel that village would be protected by the deity against famine and epidemic diseases.

In addition to the daily worship of MAA Pitabali festivals like Dussehera, Pusha Purnima,Bhadraba Parba, Chaiti Parba, were observed in the deity place of sacred grove. About 500 people from local community have gathered during festival period. During these rituals,sacrifice of poultry bird,Goat, banana, fruits, paddy and vegetable items are offered. These rituals are performed for the well-being of the people.The visitors from Athmallik while moving to Dhalpur ghat by the boat, worship the deity for their protection.

The villagers, in a meeting have constituted a Managing Committee with 10 members for proper management of the grove, various functions and rituals of the deity. 10 members are nominated in the managing committee. As per the decision in the committee meeting; they will sit twice a month to discuss the issues for development of the sacred grove and to sort out solutions for eradication of the problems.

In addition to its proper managemenr there are myriads of problems and issues creped with the sacred grove. Due to improper physical barriers, the cattle are trespassing the grove and destroying its plant resources. Therefore it is needed to fence around the grove to prevent trespassing, grazing and illegal collection of biomass. Due to soil erosion , grazing and biomass collection, many indigenous and herbal plants are endangered and need to be protected through regeneration.

The villagers have decided to take up the following activities for overall development of the sacred grove.

Construction of compound wall around the sacred grove.: To prevent trespassing, grazing and to protect the newly planted seedlings inside the Pitha.

Repair of deity mandap with over head shed: To provide a good platform for worship.

Construction of rest shed: To be used for resting of devotees,meeting of the management committee and refreshment of outside visitors.

Herbal Plantation inside the Pitha: To increase the aesthetic and ornamental view of the Pitha and to check soil erosion.

Installation of Tube well. For drinking water facility.

Sl.No	ACTIVITIES	Amount in Rs
1	Barbed wire fencing	10,000.00
2	Construction of mandapa	10,000.00
3	Construction of signboard	5,000.00
4	Conducting meeting	5,000.00
5	Planning	5,000.00
6	plantation	6,000.00

BIODIVERSITY ASSESSMENT :

Tree Species present:

Name of the plant	Family	Local Name
Azadirachta indica	Meliaceae	Limba
Holoptelia integrifolia	Ulmaceae	Dhauranja
Strychnos nuxvomica	Longaniaceae	Kuchila
Terminalia tomentosa	Combretaceae	Asan
Cassia siamea	Ceasalpinaceae	Chakunda
Butea monosperma	Fabaceae	Palasa
Lannea coromandelica	Anacardiaceae	Moi
Ficus religiosa	Moraceae	Aswatha

Shrubs, Creepers and herbs

Name of the plant	Family	Local Name
Holarrhena antidysenterica	Apocynaceae	Kurei
Butea parviflora	Fabaceae	NoiPalasa
Butea superba	Fabaceae	Latapalasa
Nyctanthes arbortristis	Oleaceae	Gangasiuli
Clerodendrum viscosum	Verbenaceae	Kharkari

Species planted: 100 plants of different species are planted in the sacred grove.

8.6 Ecotourism areas and Activities:

Most tourism in natural areas today is not ecotourism and is not therefore, sustainable. Ecotourism is distinguished by its emphasis on conservation, education, traveler responsibility and active community participation. Specifically, ecotourism possesses the following characteristics :

- Conscientious, low-impact visitor behaviour.
- Sensitivity towards, and appreciation of, local cultures and biodiversity
- Support for local conservation efforts
- Sustainable benefits to local communities
- Local participation in decision making.
- Educational components for both the traveller and local communities.

Increased tourism to sensitive natural areas without appropriate planning and management can threaten the integrity of ecosystems and local cultures. The increase of visitors to ecologically sensitive areas can lead to significant conservational degradation. Likewise, local communities and indigenous cultures can be harmed in numerous ways by an influx of foreign visitors and wealth.

There are beautiful places in the Athamallik Division that can be developed into tourist spots. The important tourist places are:

(a) Deulajhari: It is the ancient citadel of *Saivism*, located at 6 Km. away from Athamallik. The temple has been constructed amidst dense indigenous-keoda forest (locally known as Kiabana) that stands as the high walls around the temple. The uniqueness of the place lies in its hot springs that surround the temple. As per the ancient records there were eighty-four such springs. But many of these have been overshadowed in the koeda forest. Now twenty-four springs are alive. Among these, the springs bearing the names like *Agnikunda, Taptakunda, Himakunda, Amrutakunda and Labakusakunda* are prominent ones. The temperature of water in these springs varies from 40 degree Celsius to 62 degree Celsius.The temple complex covers an area of twenty-four acres of land. The presiding deity *Sidheswar Baba* adores the main temple. (Source: Angul District Gazetteer).

(b) Binikei Pitha: The pitha of Goddess Binikei is another spot of tourist attraction in the Sub-Division of Athamallik. The place is located on the bank of the river Mahanandi and is only 25 Kms. away from the Sub-Divisional headquarters. The spot is the gateway to the famous Satakosia gorge in river Mahanadi. At the back of the temple stand the towering Panchadhara hills like a crown on the head of the deity. (Source: Angul District Gazetteer)

(c) Takaba: It is another beautiful place inside the Northern RF, located 7 Km from the National Highway. There is a rest house here, it has a great potential to become a beautiful tourist place.

(d) The trekking routes can be devised inside the forest from Athamallik Division to Satkosia gorge Sanctuary in Hatidhara RF and these routes can be developed as beautiful eco-tourism routes.

(e) There are many scenic spots inside the forest, some of these spots can be developed into eco-tourism spots.

There are beautiful places in and around the Division such as Binikeyee, Jhimeichuan and Kamalpur Hill which has potential to be developed as ecotourism sites.

8.7 Social Customs:

The following social customs relevant to forests are being observed by the people of Western Orissa.

Nuakhai: The people are using Kurei leaves on the occasion of Nuakhai.

Karma: The ST communities of Western Orissa are using the branches of Mundi tree for worship of Karma Devi.

Dola Purnima: The people of Western Orissa are using Mahula & Chara to worship God Krishna & Radha.

Pusapunein: It is the harvest festival of western Odisha.

The current working plan did not codify such customs and practices that have a bearing on forestry.

8.8 Status of compliance of Forest Right Act (FRA):

The detailed information on individual and community forest rights that were given in Athmallik divisional area of Angul district is shown in the **Annexure- XV**

8.9 Other Rights and Concessions :

The right and concession of the local people will be regulated in accordance with the provisions of the Orissa Forest Act 1972 and relevant rules made there under the Govt. Policies in vogue.The concessions & rights have lost relevance with the enactment of some legislation.

They are

1. PESA Act.
2. Forest Rights Act
3. Odisha Gram Panchayat (MFP Administration Rules) 2002.
4. JFM resolutions of Govt. of Odisha

As per the PESA Act the ownership of the minor forest produce lies with the Gram Panchayat in scheduled areas. Similarly the forest rights act recognises the right of ownership, access to collect; use and dispose of minor forest produce which have been traditionally collected within or outside village boundaries or customary boundaries. The act also gives the righ to protect, regenerate or conserve or manage any community forest resources which have been traditionally protecting and conserving for sustainable use. As per this act the extraction of MFP from forest lands falling within the community forest rights granted, will be the right of the communities provided the management plans prescribe the sustainable level of extraction in such areas. However at present the CFR title holders or communities have not yet prepared any management plan.

As per the 2002 Rules of Odisha Gram Panchayat (Minor Forest Produce Administration). The Govt. had liberalised the control on extraction of MFP of 68 items and placed some powers to regulate procurement and trading of MFP. Therefore the GPs had the power to register traders & issue permits for extraction & transport of MFP witting their area no matter the kind of forest involved. However it is to be understood here that there was no method of controlling the extraction within the sustainable limits. The working plan prescriptions could not be enforced on the Gram Panchayats. Also no information was available on the number of traders registered, the quantity of MFP extracted, yearly etc. as such reports were not supplied to the DFO.

As per the JFM resolutions and the current being the 2011, of the Govt. of Odisha, the VSS had the right to collect & use sell the MFP items from these forest area as per their micro plan. The Micro plan shall detail out the various MFP items that can be collected. This shall be done with due regard to the carrying capacity, productivity and biodiversity of the local eco-system. The draft micro plan prepared by the executive committee will be scrutinized by the Forest Range Officer from the technical, financial and legal point of view. After that the same shall be placed before the General Body for deliberation and approval.

As per the Joint Forest Management Resolution,2011; the VSS/EDC shall be entitled to the usufructuary benefits from the assigned forests as under :-

(a) Usufructs like fallen leaves, fodder grasses, thatch grass, broom grass, fencing materials, brushwood, fallen lops, tops, and twigs to be used as fuel shall be available to the members free of cost.

(b) All intermediate yields in the shape of small wood, poles, firewood etc as may be obtained as a result of silvicultural operations and bamboo harvested in VSS/EDC assigned area shall be made available to the VSS/EDC members in a manner as nmay be decided by the EC. If sold at a price, the funds so obtained shall be deposited in the VSS/EDC account.

(c) In case of Kendu leaves and specified forest produce other than bamboo, if any, the VSS will have the right to collect the same from the assigned forest but these items will be disposed of as per the prevaililg provisions of Government and practices.

(d) While maintaining the forest cover in perpetuity, if any major harvest or final felling occurs in the assigned forest, the same shall be taken up by the forest department as per the prescription of the working plan/ duly approved micro plan. In case of natural calamities, harvesting of wind-fallen trees shall be treated as final harvest. Priority will be given to the members of the VSS/EDC for salvaging and harvesting work. Valuation of the produce so obtained shall be done and information shared with the VSS/EDC and the produce will be sold/disposed of by the forest department or by the agents of the forest department. The Vss/EDC will receive 50% share of the sale price after deduction of proportionate harvesting cost and this will be deposited in the "VSS account" . The VSS may also opt for 50% of the forest produce so harvested if it is for their bonafide domestic use and they agree to pay the proportionate cost of harvesting.

(e) In case of village woodlots created and maintained by the VSS/EDC on non-forest land, all usufructs including interim and rotational harvests shall go to the VSS/EDC.

(f) In the event of a natural calamity occurring in the village there may be a demand for house building materials and other forest produce from the assigned forest. In such cases, the VSS/EDC may go for harvesting the required quantity of timber or other forest produce as a deviation to the micro plan, with due approval of the Divisional Forest Officer concerned.

(g) The EC shall be responsible for the distribution of the usufructuary benefits equitably among the members of the VSS. Need of the group or community , who do not have any livelihood support other than depending on the forests, should be specially considered.

(a) In cases where member/ a group of members of the VSS/EDC play a major role in the collection of intelligence, detection and seizure of illegal forest produce in transit the concerned VSS/EDC shall be entitled to the prescribed percentage of the sale price of the forest produce as per Rule 4(3) of the Orissa Rewards for Detection of Forest Offences Rules;2004. Such amount shall be deposited by the DFO in the "VSS account/EDC account" after disposal of the seized produce following due procedure of law.

(b) All forest produce requiring permits for transit as per provisions of Orissa Timber and Other Produce Transit Rules. 1980 shall be removed from the assigned forest area in accordance with a permit to be issued jointly by the President and the Secretary in the prescribed format(Form-4). The permit shall be valid only within the limits of the area to which the VSS members belong. In case of transportation outside the above limit, the permit will be issued by the competent forest officer on receipt of application from VSS/EDC..

As per the above discussion it is now legitimate for communities to collect, use or sell the MFPs from their forest areas that they were traditionally managing or within their Gram jurisdiction. The collection or judicious use of these rights within the sustainable levels, has also been placed with the communities itself through a management plan. The major hurdle at this juncture is that the preparation of management plan and decision of sustainable levels is a scientific process where support of the communities are to be ensured.

8.10 Dependency of local people on NTFPs:

8.10.1 : Government of Orissa. Forest and Environment Department RESOLUTION. No.5503/F&E

Dated 31st March 2000. Bhubaneswar:

1.Non-Timber Forest Produce (NTFP) has traditionally been perceived as an important source of forest revenue. Accordingly the policies relating to NTFP over the years have generally tended to aim of maximisation of revenue. However, NTFP is an important source of livelihood of tribals and the rural poor. These gatherers of NTFP, majority of whom are women, have limited access to the market, and their primary concern is getting a fair price for the NTFP gathered by them and being able to dispose off the produce gathered. The prevailing system does not adequately provide these facilities to the primary gatherers. At the same time, it is also equally important that collection of NTFP must be on non-destructive basis so that sustainability of forests and long term sustainability of the NTFP based livelihood can be reasonably ensured.

2. The State Government have had under their consideration proposals for formulation of an appropriate policy on Non-Timber Forest Produce, keeping in view the consideration outlined in the preceding paragraph. While formulating the policy the provisions of the Panchayats (Extension to scheduled areas) Act, 1996 have also to be kept in view. The term 'minor forest produce 'has not been defined. Under the policy of Joint Forest Management, the local communities are being closely involved as partners of Forest Department in the management of degraded forests; and the members of the Vana Samrakshyana Samiti are entitled to share of the usufructs, including the entire NTFP gathered from such a forest area. Considering all aspects of the matter, Government have been pleased to approve of the following policy guidelines for streamlining the system of collection and disposal of various Non-Timber Forest Produce items :-

Minor Forest Produce.

3 (a). The items of Non-Timber Forest Produce listed in Table No 8.3 will be treated as Minor Forest Produce (MFP) and the term MFP will only mean and include items listed in Annexure-'A'. The list of items of NTFP to be treated as MFP may however be modified by Government from time to time, Gram Panchayat/Gram Sabha in the scheduled areas will have the ownership over MFP produced within its territorial jurisdiction, i.e. in respect of the MFP produced in and collected from the Government lands and forest lands within the limits of the revenue villages comprising the Gram Panchayat. Under law, ownership of MFP in non-scheduled areas is not vested in Gram Panchayats. Gram Panchayats both in the scheduled and non-scheduled areas will however, have the authority to regulate purchase, procurement (as distinct from collection by primary gatherers) and trading in MFP in accordance with the policy outlined in the succeeding paragraphs.

3 (b). No Gram Panchayat, whether situated within or outside the scheduled area will have ownership over MFP produced in Reserve Forests, in forest areas under Wildlife Sanctuaries and National Parks which are outside the limits of revenue villages. The Gram Panchayats will not therefore have the right to grant lease or licence to any individual or agency for collection of Minor Forest Produce from any Reserve Forest or Sanctuary or National Park. However, members of Vana Samrakshyana Samitis, and tribals, artisans, etc. as part of their customary rights will be free to collect Minor Forest Produce from forest areas excluding sanctuaries and National Parks. When any such MFP collected from forest areas is brought to a village, i.e. into the territory within a Gram Panchayat, it will come under the Gram Panchayat's power to regulate procurement and trading. Where Vana Samrakshyana Samiti has been formed, the Samiti and its members will have priority over the Gram Panchayat in the matter of collection and disposal of Minor Forest Produce of the respective forest area.

3(c). Any person desirous of purchasing MFP from primary gatherers or trading in MFP so purchased shall apply for registration to the concerned Gram Panchayats and the Gram Panchayat may register such dealers or traders for a season from the first day of October to the

last day of September of the following year. Dealers and Traders will have to seek fresh registration for the next season. Gram Panchayats shall make all efforts to promote free competition in procurement of MFP by engaging as many dealers for each item of Minor Forest Produce as reasonably practicable. The Gram Panchayat shall also levy an annual registration fee from such dealers or traders at such rate as may be determined by the Gram Panchayats will have to furnish a monthly return to the concerned Range Officer indicating the item of MFP procured quantity procured and the GP from which procurement was made during the month. No person will be allowed to operate as a Dealer/Trader in MFP in any area without being registered as such by the concerned GP.

3 (d). The collection of MFP by the primary gatherers will be subject to reasonable control to be exercised by the DFO in accordance with the provisions of law and sound silvicultural principles laid down in the Forest Working Plan which shall be given publicity in advance in the adjoining GPs.

3 (e). The Government agencies like Orissa Forest Development Corporation; Tribal Development Co-operative Corporations etc. may also register themselves with one or more Gram Panchayats for procurement and trading in one or more items of Minor Forest Produce.

3 (f). A Gram Panchayat may cancel the registration of any dealer/trader or may refuse to grant registration for the subsequent seasons if after summary enquiry in course of which the affected party shall be given an opportunity to show cause it is satisfied that the dealer/trader has procured any MFP from the primary gatherers at a rate lower than the minimum procurement price fixed for that item of MFP under para-5 of this resolution for the relevant year.

3 (g). No lease shall be granted by Government in respect of any Minor Forest Produce nor shall it levy any royalty on these items after commencement of this Resolution. No Forest Department Transit permit will be required thereafter for transport/movement of any Minor Forest Produce within the State).

Other items of NTFP:

4 (a). The Trade in kendu leaf will continue to be directly controlled by the State Government as there are well laid down statutory provisions for control of trade in this item. Sal Seed which is the one NTFP items notified as a specified forest produce under the Orissa Forest Produce (Control of Trade) Act 1981 will also be dealt with in accordance with the provisions of law by Government keeping the overall interest of the trade, the industries and the gatherers in view.

4 (b). Certain items, namely Sal leaves, gums and resins of different trees and climbers and roots of various species which have medicinal or other uses will not be leased out, as the collection of these items on commercial scale has adverse impact on the sustainability of the particular species and the forest. In particular localities, however, based on sound assessment of silvicultural availability and enforcement of appropriate collection procedure, any of these lease-barred items may be allowed to be collected either directly by field organisation of Forest Department or a Government undertaking.

4 (c). The remaining items of NTFP as per the list of Table. No 8.4 , which may be modified by Government from time to time, will be allowed to be procured and traded by the dealers who have been registered for the purpose under this Resolution by the concerned Divisional Forest Officer. Individuals, Societies, Co-operatives, Government Undertakings and Corporations may be registered as a dealer for the above purpose. Such registration shall ordinarily be granted by the Divisional Forest Officers for a season (from the first day of October to the last day of September of the following Calendar year) to applicants seeking such registration, unless there are valid reasons for refusing registration. The DFO will endeavour to promote competition among the traders and dealers by registering as many dealers as reasonably practicable for a specified area. For each items, as many dealers as may come forward can be engaged for each Forest Division/Range. OFDC, TDCC, Co-operative Societies like LAMPS etc. will also be eligible to register themselves with the DFOs and should be encouraged to engage themselves in trading in these items. The Vana Sarankshyana Samiti, Mahila Samiti, recognised groups of primary gatherers may also get themselves registered for this purpose. The fees to be paid for registration shall be prescribed by Government.

4 (d). The registered dealers will be required to furnish the names of their authorized agents/ nominees and the names of their collection and storage centers to the concerned Divisional Forest Officers, and will also record the daily transactions in prescribed formats. The dealers will have to enter into on agreement with the concerned DFOs under which the dealers will be responsible for achieving a minimum target of procurement to be fixed by the Divisional Officer, of a particular item during a collection season. If the collection method of any particular item in any particular area is considered to be harmful or injurious to the forest, the DFO may impose temporary ban on such collection.

4 (e). The registered dealers will have to pay royalty to the local forest Range Officer at the rate fixed for the quantity of produce collected. The rate of royalty shall ordinarily not be less than 10 percent of the minimum procurement price for the particular item, but this rate may be varied by Government from time to time*, suo muto* or on proposals submitted by the Divisional Forest Officers.

4 (f). The registered dealers will be required to take transit permits from competent Forest Officers for movement/transport of the produce out of the collection centres after setting the royalty dues, etc.

4(g) The Divisional Forest Officer may cancel the registration or refuse registration of any dealer/ trader if after summary enquiry in course of which the affected party shall be given an opportunity to show cause it is found that the dealer has procured any forest produce from the primary gatherers at a price less than the minimum procurement price fixed for the relevant year under para-5 of this Resolution or has failed to achieve the minimum target of procurement, or has failed to file the prescribed returns or has failed to settle the royalty dues in time.

5. For all NTFP items including MFP, the Committee appointed by Government in SC & ST Development Department will fix the minimum procurement price each collection season or part thereof. These procurement prices shall be announced every year ordinarily during the month of September and will be given wide publicity as decided by Government.

TABLE NO 8.3

SL.No.	Common Trade name of the item of forest produce.	SL.No.	Common Trade name of the item of forest produce.
1	Tamarind, de-seeded Tamarind, Tamarind Seed	31	Bana Kolatha.
2	Mahua Flower	32	Gaba
3	Hill Broom	33	Basil
4	Thorn Broom (Jhadu or Ghoda Lanji)	34	Makhana seed
5	Phula Jhadu.	35	Tala Makhana seed
6	Broom Grass	36	Baidanka Seeds
7	Nux Vomica (Kochila seeds)	37	Baghanakhi Seeds
8	Harida.	38	Kamala Gundi Fruit.
9	Bahada.	39	Landa Baguli.
10	Anla	40	Bela.
11	Soap Nut (Ritha Phala)	41	Chireita (Bhui Neem)
12	Marking Nut (Bhalia)	42	Khajuripata
13	Cleaning Nut (Nirmala)	43	Rohini Fruit
14	Honey	44	Bhursunga Leaves.
15	Siali Leaves.	45	Rasna Root.

16	Sabai Grass	46	Phenaphena Fruit.
17	Mango Kernel	47	Sidha Fruit.
18	Thatch Grass.	48	Sathabari.
19	Simul Cotton.	49	Katha lai
20	Arrow Root (Palua)	50	Atundi Lai
21	Dhatuki Flower.	51	Khelua Lai
22	Putrani	52	Suam Lai
23	Sikakai	53	Eksira Fruit
24	Jangal jada or Gaba	54	Katha Chhatu (Mushroom)
25	Palasa Seed	55	Mat Reed (Sapa Masina Grass)
26	Suaku Seed	56	Ananta Mula.
27	Indra jaba (Korai Seed)	57	Antia Pata.
28	Gila (Seed and Coat)	58	Nageswar Flower
29	Benachera.	59	Mabjad Kendu.
30	Banahaladi.	60	Atundi Fruit.

TABLE NO 8.4

Mahula Seed
Kusum Seed
Karanja Seed
Neem Seed
Char Seed
Chakunda Seed
Babul Seed
Any other item(s) as may be notified by Government.
Items covered under Para – 4 (b)
Sal leaves
Sal resin (Jhuna)
Gum (Dharua Gum, Babul gum, Genduli gum,Bahada gum, Palas gum, Salai gum etc.
Khaira and Catechu.
Barks of trees/climbers(Sunari,Lodha, Medha,Phenohena, Arjuna barks etc.)
Roots of Patala garuda (RS roots)
Sandal wood
Tassar cocoon

8.10.2 : Government of Orissa. Forest and Environment Department RESOLUTION. No..*5F-C-62/2000. 13285/F&E., Dated Bhubaneswar the 23.08.2000.*

In partial modification of this Department Resolution No.5503/F&E., Dated 31.03.2000 in the matter of policy on procurement and trade of Non-Timber Forest Produce, the State Government have been pleased to transfer the following seven oil seed items mentioned in Table No 8.4 appended to the said Resolution for inclusion of the same as Minor Forest Produce items under Table No 8.3 to be regulated by the Gram Panchayats henceforth.

1) Mahua Seed

2) Kusum Seed

3) Karanja Seed

4) Neem Seed

5) Char Seed

6) Chakunda Seed

7) Babul Seed

The guidelines laid down in the aforesaid Resolution for disposal of the above seven oil seed items shall be treated as ineffective.

1) Mahua Seed

2) Kusum Seed

3) Karanja Seed

4) Neem Seed

5) Char Seed

6) Chakunda Seed

7) Babul Seed

In partial modification of this Department Resolution No.5503/F&E., Dated 31.03.2000 in the matter of policy on procurement and trade of Non-Timber Forest Produce, the State Government have been pleased to transfer the following seven oil seed items mentioned in Table No 8.4 appended to the said Resolution for inclusion of the same as Minor Forest Produce items under Table No 8.3 to be regulated by the Gram Panchayats henceforth.

1) Mahua Seed

2) Kusum Seed

3) Karanja Seed

4) Neem Seed

5) Char Seed

6) Chakunda Seed

7) Babul Seed

The guidelines laid down in the aforesaid Resolution for disposal of the above seven oil seed items shall be treated as ineffective.

8.10.3 : Government of Orissa. Panchayati Raj(G.P) Department Notification. No.. S.R.O. No. 934/2002 –., *Dated Bhubaneswar the 14.11.2002.*

Whereas the draft of certain rules which the State Government propose to make in exercise of the powers conferred by clause (W) of sub- Section 44 read with section 150 of the Orissa Grama Panchayats Act, 1964 (Orissa Act 1 of 1965), was published as required by sub-section (1) of section 150 of the said Act in the extraordinary issue No.1241, dated the 9th August 2002 of the *Orissa Gazette* under the notification of Government of Orissa in the Panchayati Raj (Grama Panchayat) Department No. 9570/G.P., dated the 6th July 2002 bearing S.R.O. No. 701/2002 inviting objections and suggestions from all persons likely to be affected thereby till the expiry of a period of thirty days from the date of publication of the same in the *Orissa Gazette;*

And whereas objections and suggestion received during the period specified above have been duly considered by the State Government.

Now therefore, in exercise of the powers conferred by clause (W) of sub-section (1) of section 44 read with section 150 of the said Act, the State Government do hereby make the following rules, namely: -

Short title and commence ment

1. (1) These rules may be called the Orissa Grama Panchayats (Minor Forest Produce Administration) Rules, 2002.

(2) They shall come into force on the data of their publication in the Official Gazette

2. (1) these rules, unless the context otherwise requires, -

(i) "Act" means the Orissa Grama Panchayats Act, 1964

(ii) "Form" means a form appended to these rules;

(iii) "Minor Forest Produce" means any or all of the Minor Forest Produces specified in the Schedule appended to these rules;

(iv) "Section" means section of the Act; and

(v) "Trading year" means the seasonal year commencing from the first day of October and completing on the thirtieth day of September of the following year.

(2) All other words and expression used but not defined in these rules shall have the same meaning as have been respectively assigned to them in the Act

3. Regulating procurement and trading of minor forest produce.

(1) The Grama Panchayat shall have the power to regulate procurement and trading of minor forests produce whether produced in Government lands and forest areas within the limits of the Grama or collected from Reserve Forests and brought into the Grama.

(2) In case of the forest areas where Vana Sanrakshyana Samiti has been formed the Grama Panchayats shall give priority to such Samities and its members in the matter of collection and trading of minor forest produce.

4.Registration of trades.

(1) Any person intending to procure Minor Forest Produce from the primary gatherers or to trade in minor forest produce within the limits of Grama during any trading year shall register himself as a trader in Minor Forest Produce in the Grama Panchayat.

(2) Any person intending to be registered as a trader in minor forest produce shall apply to the Grama Panchayat in form No.1. All such applications shall be placed before the Grama Panchayat immediately in its next meeting and with the approval of the Grama Panchayat the Sarpanch shall register the applicant as a trader in minor forest produce for one trading year ending next September and grant a Certificate of Registration in Form No.2 to that effect.

(3) The names of all the traders of minor forest produce registered under sub-rule (2) each year shall be recorded in a permanent Register to be maintained in Form No.3 in the Grama Panchayat.

(4) At the time of filing of application under sub-rule (2) the applicant shall deposit with the Grama Panchayats the required registration fees for each item of Minor Forest Produce applied for.

(5) No application for registration shall be entertained if the required fees has not been deposited under sub-rule(4).

(6) The fees for registration for every item of Minor Forest produce shall be such as may be notified by Government from time to time.

5. Fixation of minimum price of the minor forest produce.

(a) In the month of September every year the Panchayat Samiti shall by adopting a resolution to that affect, fix-up the minimum price of procurement of different Minor Forest Produces payable to the primary latherers during the next trading year, which shall be applicable to all the Grama Panchayats within the Block.

Provided the Grama Panchayat shall be competent to modify the minimum price so fixed under this sub-rule of sub-rule (3) by the Panchayat Samiti according to the local need by adopting a resolution to that effect.

(b) The representatives of Divisional Forest Officer, Tribal Development Cooperative Corporation, Orissa, Forest Development Corporation and Tribal Co-operative Marketing Development Federation of India Ltd, shall be invited to the meetings convened under this sub-rule or under sub-rule(3).

(2) The minimum price fixed under sub-rule (1) or sub-rule (3) shall be notified in the notice board of the Panchayat Samiti and copies thereof shall be communicated to the Collector, Divisional Forest Officer, District Panchayat Officer, Sub-Collector and all the Grama panchayats within the Block.

(1) If at any time or in any case it appears to the Collector that a Panchayat Samiti has failed to fix up the minimum price for procurement of Minor Forest produce under sub-rule (1) the Collector shall convene a Special Meeting of the Panchayat Samiti preferably in the month of October to fix-up the minimum price of procurement of Minor Forest produce.

(2) On receipt of intimation under sub-rule (2) regarding fixation of the minimum procurement price of the Minor Forest Produce fixed under sub-rule(1) or (3) the Grama Panchayat shall place the same before the Grama Sabha in its next meeting for ratification.

6. Furnishing of returns.

(1) A trader registered under these rules shall furnish a monthly return of Minor Forest Produce to the Grama Panchayat within fifteen days of the following month in Form No.3.

(2) Within one month of the closure of the trading year, the dealer shall also file an annual return of the Minor Forest Produce for the trading year in Form No.3

(3) The Grama Panchayat shall communicate a copy of the annual return received under sub-rule (2) to the Forest Range officer concerned.

7. Cancellation.

(1) If at any time or in respect of any case it appears to the Sarpanch, that a trader registered under these rules, has failed to-

(i) Pay the minimum price of procurement to the Primary gatherers fixed by the Grama Panchayat in Minor Forest Produce.

(ii) Register himself in the Grama Panchayat, or

(iii) Comply with the conditions of registration, the Sarpanch shall issue a notice to such dealer or person, as the case may be to show cause as to why the registration shall not be cancelled or action shall not be taken against him for such illegal trading.

(2) If such trader or person fails to show cause within seven days of receipt of the notice or show cause which is not satisfactory, the Sarpanch shall conduct an inquiry and after giving the traders of the person an opportunity of being heard, place his inquiry report before the Grama Panchayat in its next meeting together with the explanation, if any, received from such trader or person for its decision.

(3) On consideration of the inquiry report of the Sarpanch and the explanation of the trader if the Grama Panchayat are satisfied that circumstances specified in sub-rule (1) exist in relation to such trader or person, the Grama Panchayat shall resolve to cancel the registration of the dealer for the trading year and may also refuse to register him as trader for the subsequent trading years.

Provided that if the person is engaged in the trading of minor forest produce without registering himself in Grama Panchayat the Sarpanch or Secretary of the Grama Panchayat shall lodge necessary complaint before the Divisional Forest Officer concerned for taking appropriate action against the person concerned for such illegal trade under the appropriate provisions of law.

(4) In pursuance of the decisions of the Gram Panchayat under sub-rule (3), the Sarpanch/ Secretary shall cancel the registration of the trader and in case of the person carrying an illegal trade in Minor Forest produce; the Sarpanch shall forthwith lodge the complaint with the concerned Divisional Forest Officer.

(5) If after cancellation of the registration under sub-rule (4) it appears to the Sarpanch/Secretary that the trader is still continuing his trade on the Minor Forest Produce, the Sarpanch/ Secretary shall report the matter to the Divisional Forest Officer for taking action against the person under the appropriate provisions of law.

(6) The item of Minor Forest produce seized by the Divisional Forest officer from the dealer or person shall be sold by public auction and the sale proceeds thereof be deposited under the appropriate head of Account as provided under the Orissa Forest Act.

8. Appeal.

Any person aggrieved by the decision of the Grama Panchayat under these rules may prefer an appeal under Section 133 of the Act. The appeal shall be disposed of within thirty days from the date of admission of the appeal.

9. Deemed traders.

(1) Public Sector undertakings like the Orissa forest Development Corporation, Tribal Development Co-operative Corporation and Tribal Co-operative marketing Development Federation of India Ltd., shall be deemed to have been registered under these rules.

(2) Notwithstanding the relaxation provided under sub-rule (1), the provisions of rule 6,7, and 8 shall apply to these public sector undertakings.

10. Issuance of instructions.

The Government may, from time to time, issue such instructions, as occasion may require for,-

(a) Smooth implementation of these rules and

(b) Removal of any doubt or difficulties arising out of implementation of these rules.

SCHEDULE

LIST OF MINOR FOREST PRODUCES

1. Tamarind, de-seeded Tamarind,Tamarind . Seeds
2. Mahua Flower
3. Hill Brooms
4. Thorn Broom (Jhadu or Ghoda lanji)
5. Phula Jhadu
6. Broom Grass
7. Nux Vomica(Kochila Seseds)
8. Harida
9. Bahada
10. Anla

11. Soap Nut (Ritha Phala)
12. Marking Nut (Bhalia)
13. Cleaning Nut (Nirmala)
14. Honey
15. Siali leaves
16. Sabai grass
17. Mngo Karnel
18. thatch Grass
19. Simul Cotton
20. Arrow Roots(Palua)
21. Dhatuki Flowers
22. Purtani
23. Sikakai
24. Jungal Jada or Goba
25. Palasa Seeds
26. Siali Seeds
27. Indra Jaba(Korai Seeds)
28. Gila (Seed and Coat)
29. Benachera
30. Ban Haladi
31 Gaba
32. Basil
33. Bana Kolatha
34. Makhena Seed (Kanta Padma)
35. Tala Makhana Seed
36. Baidanka Seeds

37. Baghanakhi Seeds
38. Kamala Gundi Fruits
39. Landa Baguli
40. Bela
41. Chiraita(bhui Neem)
42. Khajuripata
43. Rohini Fruit
44. Bhurusunga Leaves
45. Phenephena Fruits
46. Rasana Root
47. Sidha Fruit
48. Setabari
49. Katha Lai
50. Aundi Lai
51. Khelua Lai
52. Suama Lai
53. Eksira Fruit
54. Katha Chhstu(Mushroom)
55. Mat Reed(Sapa Masina Grass)
56. Anania Mula
57. Antia Pata
58. Nageswar Flower
59. Mankada Kendu
60. Mahula Seed

62 Kusum Seed
63 Karanja Seed
64. Neem Seed
65 Char Seed
66 Chakunda Seed
67 Baul Seed
68 Baibiranga Seed

8..10.4 Procurement Price of N.T.F.P for the year 2004-05 :

PROCUREMENT PRICE OF N.T.F.P FOR THE YEAR 2004-05		
Sl. No	**Name of items**	**Procurement price (quintal)**
1	Tamarind	770
2	De-seeded tamarind	1540
3	Tamarind seed	275
4	Hill broom	990
5	Nuxvomica	440
6	Harida	742
7	Bahada	632
8	Anla	770
9	Marking nut (Bhalia)	330
10	Honey	8800
11	Mushroom	6600
12	Khajuri Patra (Patia)	3.5 Per Bani
13	Forest Bela	330
14	Sal Leaf Plate	9 Per 100 Pc
15	Chireita	440
16	Semal cotton	3300
17	Kusum seed	770
18	Neem seed	880
19	Karanja seed	880
20	Mohua seed	7.50 per Kg
21	Mohua flower (fresh)	8.00 Per Kg
22	Mohua flower (dry)	12.50 Per Kg
23	Babul seed	550
24	Chakunda seed	770
25	Mango Kernel	385
26	Mankara Kendu	330
27	Bee wax	5500
28	Char seed	5500
29	Sidha Fruit	330
30	Atundi	330

31	Siali leaves	660
32	R.S Roots	4400
33	Char gum	275
34	Dhaura gum	990
35	Genduligum Gr.I	9900
36	Cleaning Nuts	605
37	Kusumi Lac	2750
38	Thorn grooms	3300
39	Kathalei	2.75 Per Pana
40	Sabal grass	660
41	Atundi fruits	660
42	Phen/aphena frouits	330
43	Broom grass	250
44	Antia fibre	330
45	Siali fibre	990
46	Dhatiki flower	990
47	Sahada Gum	990
48	Cane	2.5 Per Piece of > 1" dia
49	Soapnut	935
50	Eksiranut	275
51	Swam climber	1320
52	Thatch grass	220
53	Siali seeds	660
54	Mat seed	1.7 Per Panel
55	Falash seed	605
56	Gillo seed	605
57	Basil seed	330
58	Bana Tulasi	770
59	Sikakai	1650
60	Jungle jada	495

61	Indra Jaba	990
62	Bena root	660
63	Bana Haladi	715
64	Bana Kolathi	715
65	Chakunda seed	770
66	Makhan seed	990
67	Talmakhan seed	605
68	Nageswar seed	605
69	Baidanka seed	330
70	Baghanakhi seed	495
71	Ananta mula	440
72	Polanga seed	550
73	Kamalagundi fruit	605
74	Landabaguli	550
75	Rohini fruit	220
76	Curry leaves	550
77	Bhanda tesselete	330
78	Paturani	550
79	Asparangua (fresh)	2200
80	Palasa Atha	990
81	Babul Atha	990
82	Siali Atha	990
Source: DFO, Athmallik		

8.10.5 Mi**nimum Procurement Price of N.T.F.P for the year 2015-2016 :**

Table-8.5 PROCUREMENT PRICE OF N.T.F.P FOR THE YEAR 2015-16		
Sl. No	**Name of items**	**Procurement price (quintal)**
1	De-seeded tamarind	2000
2	Tamarind seed	2000
3	Hill broom	1000
4	Nuxvomica	500
5	Harida	500
6	Bahada	500
7	Anla	500
8	Marking nut (Bhalia)	500
9	Honey(unprocesd)	500
11	Katha chatu	500
12	Khajuri Patra (Patia)	500
13	Forest Bela	200
14	Semal cotton	500
15	Kusum seed	200
16	Neem seed	200
17	Karanja seed	200
18	Mohua seed	10.00 per Kg
19	Mohua flower (fresh)	10.00 Per Kg
20	Mohua flower (dry)	20.00 Per Kg
21	Babul seed	200
22	Chakunda seed	200
23	Mango Kernel	200
24	Mankara Kendu	200
25	Char seed	200
26	Sidha Fruit	100
27	Atundi	100
28	Siali leaves	200
29	Thorn grooms	500
30	Kathalei	100

31	Sabai grass	500
32	A tundi fruits	100
33	Phenaphena fruits	100
34	Broom grass	500
35	A ntia fibre	100
36	D hatiki flow er	200
37	T hatch grass	500
38	S iali seeds	200
39	palash seed	200
40	G illo seed	100
41	B ana T ulasi	200
42	S ikakai	200
43	J ungle jada	200
44	Indra Jaba	200
45	B ena root	200
46	B ana H aladi	200
47	B ana K olathi	200
48	T almakhan seed	200
49	N ageswar flow er	200
50	B aidanka seed	200
51	B aghanakhi seed	200
52	A nanta mula	200
53	K amalagundi fruit	200
54	L andabaguli	200
55	R ohini fruit	200
56	C urry leaves(B hursunga)	500
57	P aturani	200
58	B adhun	500
59	R itha fruit	500
60	K ataka	200
61	P alua	1000
62	K antapadm a	200
63	B huinneem	200
64	R asna	200
65	S atabari	200
66	E ksira fruit	200
67	H ansalata	100
68	K helualoi	100
S ource: P anchayat R aj D epartm ent resolution N o 18193 dated 16.11.2015.		

8.10.6 Mi**nimum Procurement Price of N.T.F.P fixed by Kishorenagar block for the year 2016-2017 :**

The minimum procurement price fixed in the Kishorenagar block in its meeting dated 19.4.2017 is furnished as below.

Sl. No	MFP Items	Rate per Kg
1	Mahua flower	30/
2	Siali leaves	30/
3	Siali loi	50/
4	Amla	120/
5	Bahada	120/
6	Sal leaves	30/
7	Sal seed	30/
8	Honey	300/
9	Jhuna	150/
10	Mushroom(forest)	100/
11	Tamarind	30/
12	Harida	100/

It is observed that the panchayat samities are fixing minimum prices of certain MFPs which are not transferred to the department. This need to be stopped.

8.10.7 Registration status of gatherers, traders and other stakeholders:

Status of registration of traders in the concerned gram panchayats is highly irregular. There is no control on the flow mechanism. Procurement price is not fixed timely. In absence of market linkage, there is distress sale. Frequent monitoring is highly essential.

8.10.8 Existing regulation mechanism on transit storage and trade of NTFPs:

Although the regulation mechanism on transit storage and trade of NTFPs are prescribed; it is hardly followed. This need to be ensured to have effective control on harvesting and quantify tangible benefits.

8.11 Other aspects: There are no grazer community in the locality. There is no impact on the forest by grazer community from outside.

CHAPTER-9

9 Adequacy of Policy, Legal and Institutional framework.

9.1 Existing policy and legal framework and their compliance

9.1.1 : National Forest Policy-1988 : The principal aim of Forest Policy must be to ensure environmental stability and maintenance of ecological balance including atmospheric equilibrium which are vital for sustenance of all life forms, human,animal and plant. The derivation of direct economic benefit must be subordinated to this principal aim.

9.1.1.2: Essential of Forest Management :

* Existing Forests and Forest lands should be fully protected and their productivity improved.

* Diversion of good and productive agricultural lands to forestry should be discouraged in view of the need for increased food production.

* Provision of sufficient fodder, fuel and pasture, specially in areas adjoining forest, is necessary in order to prevent depletion of forests beyond the sustainable limit.

* Minor Forest produce provides sustenance to tribal population and to other communities residing, in and around the forests. Such produce should be protected, improved and their production enhanced with due regard to generation of employment and income.

* Diversion of Forest land for any non-forest purpose should be subject to the most careful examinations by specialists from the stand point of social and environmental costs and benefits.

9.1.2 : The Biological Diversity Act 2002 and Rules 2004 :

The Biological Diversity Act 2002 is a law meant to achieve three main objectives ;

- The conservation of biodiversity.
- The sustainable use of biological resources.
- Equity in sharing benefits from such use of resources.

It is keeping this in mind that we need to look at some provisions directly relevant to local communities, the most critical of them being the Biodiversity Management Committee (BMC), Section 41 of the Act states : Every local body shall constitute a Biodiversity Management Committee (BMC), within its area for the purpose of promoting conservation,sustainable use and documentation of biological diversity including preservation of habitats, conservation of land races, folk varieties and cultivars, domesticated stocks and breeds of animals and microorganisms and chronicling of knowledge relating to biological diversity.

9.1.3 : Panchayats (Extension to the Scheduled Areas) Act 1996 :

The 73rd amendment Act 1992 had made constitutional provisions for the three tier panchayats all over the country. The salient provisions of PESA Act are :

- In the Scheduled areas, every village will have a **Gram Sabha** consisting of persons whose names are included in the electoral rolls for the Panchayats at the village level.
- In the scheduled areas, there will be a **minimum** of 50% seats reservation for Scheduled Tribes (STs) at all the tiers of Panchayats.
- If the area has different tribal communities, the reservation of different tribal communities shall be on the basis of proportion to their population.
- The chairpersons at all levels of the Panchayats in Scheduled areas shall be reserved for STs.
- If there are no ST members at intermediate or district level panchayats, the state government shall nominate such underrepresented STs by **maximum of one-tenth** of the total elected members of the Panchayats.
- Every legislation on the Panchayats in scheduled area shall be in conformity with the customary law, social and religious practices and traditional management practice of the community resources.

Gram Sabha and Panchayat have right to regulate the :

- Ownership of minor forest produce;
- To prevent alienation of land;
- To manage village markets.
- To exercise control over money lending.
- To exercise control over institutions and functionaries in all social sectors.
- To control over local plans and resources for such plans including tribal sub-plans;
- Planning & management of minor water bodies shall be entrusted to panchayats at appropriate level.

Thus PESA Act has been an important legislative framework to be enacted by the state legislatures for the tribals to have their control and rights over natural resources and conserve and preserve their identity and culture and that too in a participatory manner through the institution of **Gram Sabha**.

9.1.4: The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act,2006 & Rules,2008 :

Notwithstanding anything contained in any other law for the time being in force; and subject to the provisions of this Act; the Central Government hereby recognises and vests forest rights in-

- The forest dwelling Scheduled Tribes in States or areas in states where they are declared as Scheduled Tribes in respect of all forest rights as mentioned in Section 3 of the said Act.

- The Other traditional forest dwellers in respect of all forest rights as mentioned in Section 3 of the said Act.

NB: Other traditional forest dwellers means any member or community who has for at least three generations prior to the 13th day of Decemberm2005 primarily resided in and who depend on the forest or forest land for bona fide livelihood needs. Generation means a period comprising of twenty-five years.

- Notwithstanding anything contained in the Forest(Consrevation)Act,1980, the central Government shall provide for diversion of forest land for the following facilities managed by the Government which involve felling of trees not exceeding seventy-five trees per hectare,namely;(a) school, (b) dispensary or hospital, (c) anganwadis, (d) fair price shops,(e) electric and telecommunication lines;(f) tanks and other minor water bodies;(g) drinking water supply and water pipelines;(h) water or rain water harvesting structures;(i) minor irrigation canals;(j)non-conventional source of energy;(k) skill upgradation or vocational training centres; (l)Roads and (m) community centres;

Provided that such diversion of forest land shall be allowed only if,

- The forest land to be diverted for the purposes mentioned in this sub-section is less than one hectare in each case; and

- The clearance of such developmental projects shall be subject to the condition that the same is recommended by the Gram Sabha.

9.1.5: The Orissa Forest Act,1972.

9.1.6: The Forest (Conservation) Act,1980 &Rules,2003.

9.1.7: The Orissa Forest (Detection,Enquiry and Disposal of

Forest Offences) Rules,1980.

9.1.8: The (Orissa Rewards for Detection of) Forest Offence Rules,2004.

9.1.9 : The Orissa Saw Mill and Saw Pits (Control) Act,1991 & Rules,1993.

9.1.10: The Orissa Timber and other Forest Produce Transit Rules,1980.

9.1.11 : The Wild Life(Protection) Act,1972 & Rules, 1974.

9.1.11 : The Wild Life(Stock Declaration) Rules,1974.

All the Forestry Activities undertaken in Athmallik Forest Division is accordance with National Forest Policy 1988 and in accordance with all the Forest laws in operation.

9.2 Status of approved working plan and compliance:

9.2.1 Summary of prescription of approved working plan:

The Summary of prescription of approved working plan is furnished in **Table No.9.1**.

Table No.9.1. Summary of prescription of approved working plan

Chapter	Heading	Prescriptions
Basis of proposal	1.General Objectives	
		1.Conservation of flora and fauna.
		2. Check soil erosion.
		3. Manage the forests systematically.
		4.Biodiversity Conservation
		5. Restocking of degraded areas.
		6.To meet the needs of the local people
		7. Increasing employment opportunities to the local people
		8. Protection of Traditional Knowledge
		9.To provide sustained supply of timber, bamboo and NTFP
	2. Constitution of Working Circles	1.The Selection Working Circle
		2. The Rehabilitation Working Circle
		3. The Plantation Working Circle
		4. Protection Working Circle
		5. Bamboo (Overlapping) Working Circle
		6. NTFP (Overlapping) Working Circle
		7. The Wildlife (Overlapping) W. Circle
		8. The JFM (Overlapping) Working Circle
	3. Total Area	59818 ha
	4. Period of Plan	2006-2007 to 2015-2016

Table No.9.1. Summary of prescription of approved working plan		
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		4. Protection Working Circle
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		6. NTFP (Overlapping) Working Circle
		7. The Wildlife (Overlapping) W. Circle
		8. The JFM (Overlapping) Working Circle
	3. Total Area	59818 ha
	4. Period of Plan	2006-2007 to 2015-2016

	11. Method of Execution of Felling	1. Demarcation of Annual Coupes
		2. Marking Rules
		3. Execution of Marking & Felling
	12. Subsidiary Silvicultural Operations	1. Post felling operations
		2. Soil and Moisture Conservation measures
		3. Gap Plantations
	13. Control	Maintenance of records (Control Forms & Compartment Histories)
	14.Miscellaneous regulations	1. Grazing
		2. Fire Protection
		3. Rights and Concessions
		4. Sample plots
	15. Working Norm	As per the cost norm
Rehabilitation Working Circle	1. General Constitution	Forest blocks with abundant root stock and in various stages of degradation
	2. Special Objectives of Management	1. Improve the condition of existing forest
		2. Soil and Moisture Conservation measures
		3. Stabilization of rate of runoff during rainy and dry seasons.
		4. Restock the barren areas
		5. Improving microclimate
		6. Increase the water retaining capacity
		7. Increase the biodiversity of forest

	3. Area and Treatment Series	9149.26 ha and 5 treatment series have been constituted.
	4. Analysis and	Regeneration ,Biodiversity Survey, Soil Study
	Valuation of Crop	and Study of Vegetation
	5. Choice of Species	Preference to indigenous , NTFP, fruit bearing, fuel wood species
	6.Rehabilitaiton Cycle	10 years
	7. Method of Execution	Demarcation of Annual Rehabilitation coupes
	8. Preparation of Treatment Map	Category wise treatment prescription
	9. Rehabilitation Operations	1. Soil and Water Conservation measures
		2. Gully Plugging
		3. Vegetative barriers
		4. Contour trenches and contour bunds
		5.planting with indigenous species
	10. Control	Maintenance of records
	11.Working Norm	As per the cost norm
Plantation Working Circle	1. General Constitution	Blank patches and existing plantations
	2. Special Objectives of Management	1. Restock the blank areas
		2. Soil and Moisture Conservation measures
		3. Improve biodiversity
		4. Reduction of grazing pressure
		5.Tending operations to the existing plantations
		6. Gap plantations in the old plantations
		7. Felling of the matured teak trees

	3. Area and Planting Series	2297.21 ha of total area and 190 ha of Plantable area distributed in 9 blocks
	4. Choice of Species	Preference to indigenous , NTFP, fruit bearing, fuel wood species
	5. Plantation Cycle	10 years
	6. Method of Execution	1. Orissa Plantation Manual,1977
		2. Demarcation Annual Plantation Coupes
		3.Indication of coupes by sign boards
	7. Preparation of Site	Site Map of 1:25000 scale and an annual action plan
	8. Control	Maintenance of Plantation Journals and records
	9. Miscellaneous Regulations	1. Grazing
		2.Fire Protection
		3. People Participation
	10. Working Norm	As per the cost norm
Protection Working Circle	1. General Constitution	All encroached areas of RF blocks and all DPF blocks
	2. Special Objectives of Management	(a) Eviction Of Encroachments.
		(b) Restock the barren lands.
		© Demarcation of all PFs and resubmission of proposals for notification U/S 4(1).
		(d) Increasing the soil productivity
	3.Area Allotment	6370.03 ha in 3 protection series
	4.Execution of Operations	(1) Infrastructural Development. (2) Special force to evict encroachments.
		(3) Soil and Moisture conservation measures. (4) Resubmission of reservation proposals to FSO

	5. Control	Maintenance and checking of Compartment histories
	6.Working Norms	As per the cost norm
Bamboo Overlapping Working Circle	1.General Constitution	Confined to Talaipathar and Hatidhara Forest Blocks
	2.Special Objectives of Management	1. Sustained yield of Bamboo.
		2. Improving the condition of the bamboo crop.
		3. Meeting the demands of the local people and bamboo artisans.
		4. Employment to forest dwellers & local people
	3.Area & Cutting Series	It overlaps over an area of 21936.32 ha and two cutting series, Hatidhara South & North, have been formed.
	4. Silvicultural System	Culm Selection- cum-Clump Improvement
	5. Cutting Cycle	4 Years
	6. Yield	Regulated by number of clumps per ha
	7. Method of Execution	Demarcation of Annual coupes
	8. Cutting Operation	OFDC Would work Bamboo Coupes
		Cutting shall be done between October and June
		Supply to tenants
	9. Working of Bamboo	Cutting Rules of GOI
	10.Miscellaneous	1. Area Treatment
	Regulations	2. Grazing
		3. Fire Protection
		4. Rights and Concessions

Non-Timber Forest Produce Working Circle	1.General Constitution	All Forest Blocks of the division
	2. Special Objectives of Management	1. Regulate the collection of NTFP items
		2. Optimise the collection of NTFP items
		3. Value addition to the existing NTFP items
		4. Enhance the skills of local people
		5. Regeneration of valuable & desirable NTFP
		6. Organization of primary collectors of NTFP through village institutions.
	3. Miscellaneous Regulations	1. Marketing Research
		2. Scientific Exploitation of NTFP items
		3. Awareness to Public on minimum selling price
		4.Conservation of medicinal Plants
		5. Maintaining the carrying capacity of forest
		6.DFO should play a crucial role in new policy
		7.Sustainable method of collection.
		8.Effective implementation of new policy and study of its impact

Wild life Overlapping Working Circle	1.General Constitution	All Forest Blocks of the division
	2.Special Objectives of Management	1. Conservation and Improvement of Habitat
		2. Protection of wildlife
		3. Prevention of Wildlife related crimes
		4. Ecotourism and peoples' participation
		5. Increase in biodiversity and wildlife population
	3.Area	59818 ha
	4. Method of Execution	1. Mahanadi Elephant Reserve
		2. Reducing the man-animal conflict
		3. Construction of check dams to different nallahs.
		4. Timely payment of compensation
		5. Habitat Improvement
	5.Miscellaneous Regulations	1. Training to staff on wildlife management
		2. Protection against fire
		3. Strict implementation of Amended Act
		4. Rights and Concessions

JFM Overlapping Working Circle	1. General Constitution	All the forest areas where the VSS is functioning actively.
	2. Special Objectives of Management	(1) Involving VSS in forest management.
		(2) Making village communities equal partners.
		(3) Restock the barren lands. (4)Involving people in NTFP collection and trade.
		(5) Creating income generating activities in villages protecting the forests
	3. Area	2154.81 ha
	4. Method of Execution	(a) Demarcation of VSS areas.
		(b) Preparation of Micro plans.
		© Plantation for fuel wood and small timber needs of villages.
		(d) Creation of sustainable income generating activities.
		(e) Imparting training to VSS members and Forest Department staff.
	5. Control	Maintenance of maps and compartment histories

Miscellaneous Regulations	1.General Constitution	General prescriptions not covered earlier
	2. Forest Roads	1. Roads need maintenance.
		2. Roads to be provided with good drains
		3. Annual action plan for repair by the RO.
	3. System of Sale	1. Timber sale by OFDC/local auction
		2. Bamboo and NTFP as per Govt. Policy
	4.Buildings	1. Percentage allotment to different buildings
		2. One meeting hall and one hazat in each range
		3. Electrification/Solar lights provision
		4. Court Room for Authorized Officer
		4. New buildings construction
	5. Maintenance of Boundary	1. Interdivision boundary maintenance
		2. Planting of Tal and Khajuri in block boundaries
		3.Inspection of 10% boundary lines by DFO
	6.Fire Protection	Strengthening of watchers, peoples' participation
	7. Grazing	1. Orissa Forest (Grazing of Cattle) rules, 1980
	8. Infrastructural Development	Improving Vehicle condition, VHF network, Weapons, computerization of office etc.
	9. Check gates	New check gates at two locations
	10. Eco-tourism	Development of eco tourist spots inside the forest areas.
	11. Silvicultural Garden	Increasing allotment, improvisation of data recording and analysis
	10. Maintenance of Records and Maps	Maintenance of Control Forms and Comp. histories
Establishment & Labour	1. Establishment	Changes in the structure during reorganization
	2.Administrative Reorganization	Division of Enforcement and Afforestation staff, Additional force for strengthening of JFM and extension activities

9.2.2 Deviations in implementation of the outgoing plan :

The deviations noticed during implementation of the outgoing working plan is furnished in **Table No. 9.2** as follows.

Table No. 9.2 Deviations in implementation of the outgoing working plan

Name of the working circle	Name of the Range	Block with area proposed	Block with area taken up for plantation in Ha..
		For plantation in Ha.	
Plantation working circle.	Athmallik Range.	Hatidhara RF - 25 Ha	Mahendrapur RF-50 Ha
		Taleipathar RF-45 Ha	
	Dhandatopa Range	Kutulsingha RF-20 Ha	Dantarikhol RF-20 Ha
	Bamur Range	Ghosar RF-10 Ha	Northern RF-80 Ha
	Madhapur Rage	East Baruni RF- 30 Ha	East Baruni RF-15 Ha
		West Baruni RF-20 Ha	
	Handapa Range	Kadalimunda RF- 10 Ha	Nil
		Dantarikhol RF- 20Ha	
		Bankimundi RF- 10 Ha	
	TOTAL	190 Ha	165 Ha

The deviations are mainly due to non-availability of suitable plantation sites.

9.3 Number of forest offences

The details of forest offence cases registered & cases booked under section 56 of the OFA,1972 during the period from 1984-85 to 2003-04 are given in **Table No: 9.3 & 9.4 respectively.**

Table: 9 .3 OFFENCE CASES BOOKED IN ATHAMALLIK DIVISION								
No. Of cases				Material Seized				
Year	O.R.	U.D.	Total	Timber in Cum	Firewood in M.T.	Pole	Bamboo	K.L. in (qtl)
1984-85	1057	54	1111	138.92	4.5	440	317	1.5
1985-86	1254	32	1286	161.21	6.8	602	529	
1986-87	1150	137	1287	168.73	7.5	528	423	2.5
1987-88	870	156	1026	149.36	5.6	446	573	3.4
1988-89	853	133	986	106.45	5.32	322	528	2.5
1989-90	725	135	860	97.49	4.5	547		2.62
1990-91	1078	206	1284	158.22	6.5	314	466	3.4
1991-92	1157	224	1381	163.43	8.9	426		
1992-93	1374	260	1634	147.86	9.5	592	612	27.2
1993-94	1279	366	1645	216.9	16	628	574	62.8
1994-95	1342	303	1645	297.86	29.5	614	603	78.6
1995-96	1366	287	1653	336.03	26.5		579	2.81
1996-97	1377	296	1673	342.72	19.5		695	0.5
1997-98	1097	262	1359	345.97	21.5	1146	710	3.5
1998-99	1115	274	1389	287.78	22.5		835	
1999-00	1123	225	1348	264.84	6	468	336	2.4
2000-01	1032	420	1452	287.36	15.5	819	413	3.2
2001-02	995	230	1225	127,975	15.5	771	608	270.81
2002-03	1111	315	1426	128,675	19.5	879	644	81.28
2003-04	596	115	711	121,953	8.5	283	148	11.3
Total	21951	4430	26381	378,603	259.62	9825	9593	560.32
Source: DFO, Athamallik								

Table: 9.4 CASES BOOKED AND DISPOSED U/S 56 OF OFA, 1972								
Year	No. Of Cases Booked	No. Of Cases Disposed	Balance for Disposed	Vehicles Involved				
				Motorized	Cycle	Cart	Boat	Rickshaw
1984-85	19	19		2	--	17		--
1985-86	6	3	3	4	--	2		--
1986-87	9	3	6	4	--	5		--
1987-88	8	6	2	5	--	3		--
1988-89	24	16	8	5	--	15	3	--
1989-90	23	16	7	7	--	16		--
1990-91	25	12	13	15	--	7	3	--
1991-92	25	14	11	10	2	13	--	--
1992-93	39	24	15	7	10	22	--	--
1993-94	43	28	15	7	--	31	5	--
1994-95	38	27	11	13	2	22	1	--
1995-96	43	16	27	7	3	30	3	--
1696-97	19	13	6	3	3	9	4	--
1997-98	11	1	10	3	--	8	--	--
1998-99	20	5	15	8	--	12	--	--
1999-00	30	14	16	9	--	21	--	--
2000-01	34	17	17	6	--	28		--
2001-02	27	8	19	13	3	11	--	--
2002-03	38	14	24	21	9	8	--	--
2003-04	6	2	4	6	--	--	--	--
Source: DFO, Athamallik								

. During the present plan period the special protection measures have been carried out under various budget provision of Building a Cadre community, establishment of Control room at Division Office, Engagement of VHF Operator, Special Budget under 101-Protection Working Circle, Education and Training and engagement of Para Forest staff and Protection squad in vulnerable sites**.**

2. Effective steps have been taken to reduce the illegal smuggling of timber through intensive patrolling by field staffs and engaging Forest Protection Squads, Para forest staff, Anti-smuggling squad, Critically Endangered Area Squad, Squads under Building 'A' Cadre Scheme and Elephant squad in vulnerable areas of this Division.

3. Critically endangered area squad has been deployed in special area of Dhandatopa Range to protect flora, fauna and the Para Forest Staffs are engaged to support the staffs in protection activities.

4. Protection activities done effectively and successfully in this Division with help of Regular Forest Staffs, Para Forest Staffs, Protection Squad and VSS members. There are 11107 no. of offence cases detected against which 353 numbers of offenders arrested.

The details of forest offence cases registered and forest cases booked under section 56 of OFA,1972 during the period from 2006-07 to 2015-16 are given in **Table No: 9.5 & 9.6** respectively.

Table No: 9.5 Forest Offences Cases booked during 2006-07 to 2020-21					
Year	OR cases	UD cases	Timber seized	Persons arrested	Total
1	2	3	4	5	6
2006-07	1182	399	75.2741 Cum.	47	
2007-08	1384	242	141.0039 Cum.	33	
2008-09	1487	330	195.2198 Cum.	100	
2009-10	1270	109	255.0445 Cum.	47	
2010-11	1672	258	354.8243 Cum.	40	
2011-12	1432	260	395.538 Cum.	51	
2012-13	1308	220	440.332 Cum.	20	
2013-14	1372	142	448.457 Cum.	15	
2014-15	1501	113	89.906Cum.	28	
2015-16	1590	190	99.4715Cum.	71	
2016-17	1170	160	71.7999 Cum.	75	OR Case-1170 NosUD case-160 NosTimber-71.7999 Cum Person arrested- 75 Nos
2017-18	1090	111	38.5103Cum.	76	OR case-1090 Nos UD case No.111 Nos. Timber-38.5103 Cum. Person arrested- 76 Nos
2018-19	774	116	76.6569 Cum.	79	OR case -774 Nos UD case -116 Nos Timber-76.6569 Cum Person arrested-79 Nos.
2019-20	806	75	35.6692 Cum.	40	OR case-806 Nos. UD case-75 Nos Timber- 35.6692 Cum Person arrested-40 Nos.
2020-21	777	93	60.74627 Cum.	104	OR Case -777 Nos UD case-93 Nos Timber- 60.74627 Cum. Person arrested-104 Nos.
Total	**18815**	**2818**	**2778.454**	**826**	

Table No 9.6 Cases booked & Disposed off U/S 56 OF O.F. ACT 1972			
Year	**No. of cases booked**	**No. of cases disposed off**	**Balance for disposal**
1	2	3	4
2006-07	16	14	2
2007-08	12	7	5
2008-09	16	5	11
2009-10	15	2	13
2010-11	16	4	12
2011-12	4	1	3
2012-13	14	3	11
2013-14	13	3	10
2014-15	17	1	16
2015-16	11	0	11
2015-16	11	5	6
2016-17	13	7	6
2017-18	20	9	11
2018-19	10	2	8
2019-20	11	0	11
2020-21	9	0	9
Total	**284**	**66**	**200**

9.3.1 The forest staffs of the division are fighting with the timber smugglers to control the illicit felling. The staffs of all cadres starting from the Forest Guard to Assistant Conservator of Forests were attacked by the smugglers in this division. The details of the assault cases are given in **Table No: 9.7** From 1980 onwards, there are incidents of two deaths, 13 persons got injuries and 23 people were assaulted in the division. The record shows mainly the Forest Guards are assaulted in fighting against the timber mafias.

Table: 9.7 DETAILS OF ASSAULT CASES ON FOREST STAFF					
Sl. No	**Designation**	**Year**	**Death**	**Injury**	**Assault**
1	A. C. F	1996	–	1	--
2	Range Officer	1981	–	--	1
3		1983	–	1	–
4	Forester	1981	–	--	2
5		1985	–	--	2
6		1986	–	1	--
7		1992	–	--	1
8		1996	–	1	–
9		1997	–	--	2
10	Forest Guard	1981	–	2	1
11		1984	–	3	--
12		1986	1	--	--
13		1987	–	1	1
14		1989	1	--	--
15		1992	–	1	2
16		1994	–	--	1
17		1995	–	--	1
18		1996	–	--	2
19		1997	–	1	2
20		2000	–	1	2
21		2001	–	--	1
22	Watcher	1997	--	--	2
23	**Total**		**2**	**13**	**23**

The assult and death incidences of Forest Staff during the current plan period has reduced significantly. The details of assult and death incidences during 2006-07 to 2020-21 are given in Table No. 9. 8

Table No.9.8 Assult and death incidences of Forest Staff		
Year	**Name of staff assaulted**	**Name of staff killed**
1	2	3
2006-07	-	Trilochan Pradhan, Forester (Killed by wild elephant)
2007-08	-	-
2008-09	-	-
2009-10	-	-
2010-11	-	-
2011-12	-	-
2012-13	Narendra Ku. Nayak, F.G	-
2013-14	-	-
2014-15	-	-
2015-16	-	-
2016-17	-	-
2017-18	-	-
2018-19	-	-
2019-20	-	-
2020-21	-	-

9.4 Status of research and development:

The Silvicultural Division has a research garden in Talaipathar RF, Compartment No.1C over an area of 20 ha. This was constituted in the year 1982. In this garden the progeny trails of Teak and Gambhar are being done. The teak seeds brought from Berbera, Raigada, Purnakote and Malkangiri are grown for progeny trails. The measurements like number of plants, average diameter, and survival percentage for each year plantation are recorded in the month of January to March. Progeny trails of Gambhar, the seeds of which are brought from Bolangir are also done in the garden. Clonal Seed Orchards of Teak are also grown here. The main problem in this garden is that the comparative studies of the different experiments done in different years are not analyzed to draw specific inferences and the average height measurements are also not taken and hence it is difficult to determine the growth pattern of the species grown here. Another problem is that the matured teak trees in the garden are prone to illicit felling frequently and it is still further difficult to analyze the research observations.

The Silviculture Division has identified plus trees for Dalbergia latifolia (Hatidhara), Bombax ceiba (Hatidhara), Teak (Hatidhara 5a, 5b and 3b) and the seeds are collected from these trees.

Earlier there were seed production areas of teak in Hatidhara 5b (3.9 ha, 1993), Hatidhara 5a (1.4 ha, 1995), Hatidhara 3b (2.1ha, 1993) and Khair in West Baruni. Now a days there is no money to maintain these areas and seed collection is also not done by the Division from these areas.

There was a Preservation Plot in Northern RF, compartment no.3. But there is no maintenance like climber cutting, cleaning etc. in the plot. Hence the plot is also not looked after by the Silvicultural Division now.

9.5 Human resource capacity building efforts

Training of the staff is being done in the Division under various Schemes. This training relate to technical Forest matters, Forest Laws and Computer knowledge.The details of training imparted under different categories during the period from 2005-06 to 2015-16 is furnished **Table No. 9.9** as follows.

Table No. 9.9 DEATAILS ABOUT TRAINING TAKEN BY FIELD STAFF/MINISTERIAL STAFF/OFFICERS OF ATHMALLIK FOREST DIVISION FROM THE YEAR 2005-2006 TO 2020-21				
Years	**No. of Trainees**	**Subject**	**Duration of Training**	**Training Institution**
1	2	3	4	5
2005-06	1 Forest Guard	Refresher Course	13 days	F.R.C, Angul
	1 Forester	Refresher Course	13 days	F.R.C, Angul
	4 Forest Guard	Refresher Course	13 days	F.R.C, Angul
	4 Forester	Refresher Course	13 days	F.R.C, Angul
	2 Forest Guard	Refresher Course	13 days	F.R.C, Angul
	1 Forest Ranger	Human Resource Development State Plan Scheme	5 days	F.R.C, Angul
	2 Forester	Human Resource Development State Plan Scheme	5 days	F.R.C, Angul
	1 Forest Guard	Human Resource Development State Plan Scheme	5 days	F.R.C, Angul
	1 Forest Ranger	G.P.S, Training	3 days	F.R.C, Angul
	1 Forester	G.P.S, Training	3 days	F.R.C, Angul
Total	18 No of Trainees			
2006-07	2 Forest Guard	General Refresher Course	2 weeks	O.F.R.C, Angul
	1 Forest Ranger	Elephant Management Technique	5 days	O.F.R.C, Angul
	6 Forester	Elephant Management Technique	5 days	O.F.R.C, Angul
	2 Forest Guard	General Refresher Course for front line staff	13 days	O.F.R.C, Angul
	5 Forest Ranger	Forest Prosecution	2 days	O.F.R.C, Angul
	13 Foresters	Forest Prosecution	2 days	O.F.R.C, Angul
	2 VFW	Workshop on capacity building of Forest Officers	2 days	O.F.R.C, Angul
	2 Junior Clerk	Computer Training	13 days	O.F.R.C, Angul
	1 A.C.F	Computer Training	6 days	O.F.R.C, Angul
	2 Forest Ranger	Computer Training	6 days	O.F.R.C, Angul
	2 Junior Clerk	Computer Training	6 days	O.F.R.C, Angul
	1 A.C.F	Training of Elephant Management Technique	5 days	O.F.R.C, Angul
	3 Forest Ranger	Training of Elephant Management Technique	5 days	O.F.R.C, Angul
	1 Forest Ranger	"NTFP" Management under NAP, Harvesting, Processing & Marketing	5 days	Bhopal
	Total- 43 nos			

2007-08	1 Forest Guard	Short term training Course	5 days	O.F.R.C, Angul
	1 Forester	General Refresher Course for the front line staff	2 weeks	O.F.R.C, Angul
	1 Forest Guard	General Refresher Course for the front line staff	2 weeks	O.F.R.C, Angul
	4 Forest Guard	Practical field training	One month	Dhandatopa, Range
	1 Forester	General Refresher Course for the front line staff	2 weeks	O.F.R.C, Angul
	1 Forester	General Refresher Course for the front line staff	2 weeks	O.F.R.C, Angul
	3 Forester	Forester Training	One year	Nicholson Forest School, Champua
	1 Junior Clerk	Computer Training	4 days	O.F.R.C, Angul
	1 Forest Ranger	Wild life crime investigation and prosecution	5 days	P.C.C.F, wild life BBSR.
	Total-14 nos			
2008-09	1 Forester	Confliet resolution technique in forest management	5 days	O.F.R.C, Angul
	1 Forester	General refresher course for the front line staff	5 days	O.F.R.C, Angul
	1 Forest Guard	General refresher course for the front line staff	5 days	O.F.R.C, Angul
	1 Junior Clerk	Basic Computer application Training	6 days	O.F.R.C, Angul
	2 Forest Guard	Basic Computer application Training	6 days	O.F.R.C, Angul
	1 Sr. Clerk	Basic Computer application Training	6 days	O.F.R.C, Angul
	2 Sr. Clerk	Account Training	3 Month	MDRAFM, BBSR
	1 Junior Clerk	Basic Computer application Training	6 days	O.F.R.C, Angul
	1 Forest Guard	Basic Computer application Training	6 days	O.F.R.C, Angul
	1 Dy. Ranger	Refresher Course for front line staff	Two weeks	O.F.R.C, Angul
	1 Forester	Refresher Course for front line staff	Two weeks	O.F.R.C, Angul
	1 Forester	Refresher Course for front line staff	Two weeks	O.F.R.C, Angul
	1 Forester	Refresher Course for front line staff	Two weeks	O.F.R.C, Angul
	1 A.C.F	General refresher course for the front line staff	5 days	O.F.R.C, Angul
	Total- 16 nos			

2009-10	1 A.C.F	Conflict resolution for Forest	5 days	O.F.R.C, Angul
	1 Forester Ranger	Conflict resolution for Forest	5 days	O.F.R.C, Angul
	1 Dy Ranger	Conflict resolution for Forest	5 days	O.F.R.C, Angul
	1 Forest Ranger	Refresher Course for	5 Days	O.F.R.C, Angul
	1 Forest Guard	Refresher Course for	2 Weeks	O.F.R.C, Angul
	1 Forester	Refresher Course for	2 Weeks	O.F.R.C, Angul
	2 Dy Ranger	Refresher Course for	2 Weeks	O.F.R.C, Angul
	1 S.r Clerk	Account Training condition of service	3 months	M.D.R.A.F.M Bhubaneswar
	3 J/Clerk	H.R.D Programe	1 Weeks	O.F.R.C, Angul
	1 Forest Guard	H.R.D Programe	1 Weeks	O.F.R.C, Angul
	Total- 13 nos			
2010-11	3 Forest Guard	Refresher Course for	2 Weeks	F.T.S G.Udayagiri
	1 Forest Guard	Refresher Course for	2 Weeks	O.F.R.C, Angul
	1 Forest Guard	Refresher Course for	2 Weeks	F.T.S G.Udayagiri
	1 Forest Guard	Refresher Course for	2 Weeks	O.F.R.C, Angul
	2 Forest Guard	Refresher Course for	2 Weeks	O.F.R.C, Angul
	2 Forest Guard	Refresher Course for	2 Weeks	F.T.S G.Udayagiri
	2 Forest Guard	Refresher Course for	2 Weeks	F.T.S G.Udayagiri
	1 J/Clerk	Basic Computer Application	6 Days	O.F.R.C, Angul
	1 Forest Guard	Basic Computer Application	6 Days	O.F.R.C, Angul
	1 Forest Ranger	Thematic Course for Forest Range Officer (Charges in	6 Days	O.F.R.C, Angul
	2 Forest Guard	Refresher course on H.R.D	6 Days	O.F.R.C, Angul
	1 Forester	Basic Computer Application	6 Days	O.F.R.C, Angul
	1 A.C.F	Disaster health care and Management	5 Days	Gopabandhu Academy of Administration BBSR
	Total- 19 nos			
2011-12	1 Forest Ranger	Refresher course	1 Week	O.F.R.C, Angul
	1 Forester	Basic Computer	1 Week	O.F.R.C, Angul
	1 Forest Guard	Refresher Course	1 Week	O.F.R.C, Angul
	1 AC.F	Decentralization of Power and Development	5 Days	Gopabandhu Academy of Administration BBSR
	1 Forest Ranger	Combating Flood	5 Days	Gopabandhu Academy of Administration BBSR
	1 AC.F	Gender Issues	5 Days	Gopabandhu Academy of Administration BBSR
	Total- 06 nos			

2012-13	1 Forest Guard	Refresher Course for front line staff	F.T.S, G. Udayagiri
	1 Forest Guard	General refresher course under HRD	O.F.R.C, Angul
	1 Forester	Basic Computer application training course under HRD	O.F.R.C, Angul
	1 Forest Ranger	General Refresher Training course under HRD	O.F.R.C, Angul
	1 Forest Ranger	General Refresher Training course under HRD	O.F.R.C, Angul
	1 Forest Guard	Forest Guard Training	O.F.R.C, Angul
	1 Forest Ranger	HRD Programme	O.F.R.C, Angul
	1 Dy. Ranger	General Refresher	O.F.R.C, Angul
	1 Forest Ranger	General Refresher	O.F.R.C, Angul
	1 Sr. Clerk	Basic Computer Training	O.F.R.C, Angul
	2 Forester	Basic Computer Training	O.F.R.C, Angul
	1 Forest Guard	General Refresher Course	O.F.R.C, Angul
2013-14	1 Sr. Clerk	Account Training	MDRAFM, BBSR
	1 Forester	Refresher course for front line staff	O.F.R.C, Angul
	1 Forest Guard	Refresher course for front line staff	F.T.S. G. Udayagiri
	Total- 03 nos		
2014-15	1 Forester	Refresher course for untrained promote Forester	O.F.R.C, Angul
	1 Forest Guard	Training on medicinal plantation	O.F.R.C, Angul
	1 Forest Guard	Refresher course for Frontline staff	N.F.T.S, Champua
	1 Forest Guard	HRD, Programme	O.F.R.C, Angul
	Total- 04 nos		

2015-16	1 Forester	HRD, Programme	O.F.R.C, Angul
	1 Forest Guard	HRD, Programme	O.F.R.C, Angul
	1 Forester	Development of in house IT professional recourses for Forest Divisions of Odisha	Gopabandhu Academy of Administration BBSR
	1 Sr. Clerk	Account Training	MDRAFM, BBSR
	1 Sr. Clerk	Basic computer application training course	O.F.R.C, Angul
	2 junior Clerk	Basic computer application training course	O.F.R.C, Angul
	1 Forest Ranger	Phase-IV Monitoring Training programme	Imparted by scholar and field biologist at korab
	1 Dy. Ranger	Phase-IV Monitoring Training programme	Imparted by scholar and field biologist at korab
	4 forester	Phase-IV Monitoring Training programme	Imparted by scholar and field biologist at korab
	9 Forest Guard	Phase-IV Monitoring Training programme	Imparted by scholar and field biologist at korab
	1 A.C.F	Disaster Management Advance planning and preparedness for tracking flood & cyclone	G.A.A, BBSR
	1 Forest Ranger	Good Governance issue and challenges	G.A.A, BBSR
	1 Forest Ranger	Cyclone Risk mitigation Management	G.A.A, BBSR
	1 Forest Ranger	Disaster Management Advance planning and preparedness for tracking flood & cyclone	G.A.A, BBSR
	1 Forest Ranger	Forest Personnelon GPS PDA devices	Deras under chndaka (WL) Division
	1 Forester	Forest Personnelon GPS PDA devices	Deras under chndaka (WL) Division
	Total- 16 nos		

2016-17	1 Forest Guard	HRD Programme	F.T.S. G. Udayagiri
	1 Forest Guard	Basic computer application course	N.F.T.S, Champua
	1 Forester	HRD Programme	O.F.R.C, Angul
	1 Forest Guard	HRD Programme	O.F.R.C, Angul
	1 dy. Ranger	HRD Programme	O.F.R.C, Angul
	1 Forest Guard	HRD Programme	F.T.S, G.Udayagiri
	1 Forest Guard	HRD Programme	F.T.S, G.Udayagiri
	1 forester	Basic computer application Training course	O.F.R.C, Angul
	1 Junior clerk	Training Course	O.F.R.C, Angul
	1 Forest Guard	Refresher course for front line staff	OFRC, Angul
	1 Forest Guard	Refresher course for front line staff	OFRC, Angul
	1 Forest Ranger	Work shop on strengthening wild life law enforcement and conservation in india	Crime branch conference hall Buxi Bazar.
	Total- 12 nos		

2017-18	1 No Jr. Clerk	Human Resourse Devlopment Programme	OFRC, Angul.
	3nos Forest Guard	Induction Course	OFRC, Angul.
	1 No Dy. Ranger	One week Short Term Refresher Course	OFRC, Angul.
	1 No Forester	One week Short Term Refresher Course	G.Udayagiri
	1 No. Forest Guard	One week Short Term Refresher Course	G.Udayagiri
	6 Nos. Forester	Training of Untrained Promotion Promotee Foresters	FTS, Ghatkia, bhubaneswar
	1 No Forest Guard	Human Resourses Development Programme	FTS, Ghatikia, Bhubaneswar
	1 No. Jr. Clerk	Account Training (Financial Management at Microlevel)	MDRAFM, Bhubaneswar.
	Total-15 Nos		

Year	No. of Trainees	Subject	Training Institution
1	2	3	5
2018-19	1no. Jr. Clerk	Accounts Training (Financial Management at Microlevel)	MDRAFM, Bhubaneswar.
	1no Forest Guard	Induction Course Training for Forester	FTS, Ghatkia, Bhubaneswr.
	2Nos. Forest Guard	Induction Course Training for Forest Guard	FTS, G.udayagiri
	2Nos. Jr.Clerk	Accounts Training (Financial Management at Microlevel)	MDRAFM, Bhubaneswar.
	2Nos. Forester	Circle Level Training	OFRC, Angul.
	4Nos Forester	Circle Level Training	OFRC, Angul.
	4Nos Forester	Circle Level Training	OFRC, Angul.
	2Nos. Forest Ranger	Circle Level Training	OFRC, Angul.
	4Nos Forester	Circle Level Training	OFRC, Angul.
	4Nos. Forest Guard	Circle Level Training	OFRC, Angul.
	4Nos Dy. Ranger	Circle Level Training	OFRC, Angul.
	4Nos. Forester	Circle Level Training	OFRC, Angul.
	4Nos. Forest Guard	Circle Level Training	OFRC, Angul.
	3Nos. Jr. Clerk	Circle Level Training	OFRC, Angul.
	4Nos Dy. Ranger	Circle level Training	OFRC, Angul
	4Nos. Forest Guard	Circle level Training	OFRC, Angul
	3Nos. Jr. Clerk	Circle level Training	OFRC, Angul
	1No Jr. Clerk	Accounts Training (Financial Management at Microlevel)	MDRAFM, Bhubaneswar.
	1No. Jr. Clerk	Accounts Training (Financial Management at Microlevel)	MDRAFM, Bhubaneswar.
	Total-54		

Year	No. of Trainees	Subject	Training Institution
1	2	3	5
2019-20	1No ACF 2No. Dy. Ranger 2Nos Forester 2Nos. Forest Guard	Programme expenditure Scheme	OFRC, Angul
	1No ACF 2Nos Forester 1no Dy.Ranger 2nos.Forester 2Nos Forest Guard	-do-	OFRC, Angul
	1No ACF 2Nos Forester 1no Dy.Ranger 2nos.Forester 2Nos Forest Guard	Cicle level Training & Capacity building under CAMPA APO,2017-18	OFRC, Angul
	1No. ACF	Community Forestry and JFM	CASFOS,Coimbtore
	1No ACF	Legal Issue Forestry and wildlife	CASFOS,Coimbtore
	1No. ACF	Organic firming techique	Sunabeda
	1No Jr. Clerk	Accounts Training (Financial Management at Microlevel)	MDRAFM, Bhubaneswar.
	1No. Jr. Clerk	Accounts Training (Financial Management at Microlevel)	MDRAFM, Bhubaneswar.
	1No. Jr. Clerk	Accounts Training (Financial Management at Microlevel)	MDRAFM, Bhubaneswar.
	INo Forester	Plant Taxonomty &plant Identification	Prasarvarti National Academy of Boad casting & mulitimedia (NABM) All India Radio and Doordarshan , Chandasekharpur , BBSR

1	2	3	5
Year	**No. of Trainees**	**Subject**	**Training Institution**
2019-20	1No. ACF	Ecosystem Approch to Forest Mangement newly promoted SFS Officers and Sr. FROs	CASFoS, Deharadun
	1No Dy. Ranger	WL protection Act 1972 &other Reevant Act for (WL) Offences.	-do-
	1No Forest Guard	Forest Fire & Prevention measures	-do-
	1No Forest Ranger	Forest Relevant Acts Rules & Implenention	-do
	1No Dy. Ranger	OFA1972 7 other relevant Act forest offences	-do-
	1No ACF	HRMS newly promoted SFS Officers and Sr. FROs	CASFoS, Deharadun
	1No Dy. Ranger	VSS & People Particpation in forest Mangement	FRS, Division, Cuttack
	1No Forester	Nursurry Techniques	-do-
	1No Forest Guard	Forest fire protection and prevention measures	FRS, Cuttack.
	1No FG	Nursurry Techniques	FRS, Division, Cuttack
	1No,Fr	Survey & Mapping of Forest Resources	-do-
	1No, FG	Survey & Mapping of Forest Resources	-do-
	1No FG	Forest Act1972 & other relevant Act for forest Measures	FTS, Bhubaneswar
	1No Fr	SMC Measures	FTS, G.Uduagiri
	1No, FG	Forest Act1972 & other relevant Act for Forest offences	NFTS, Champura

Year	No. of Trainees	Subject	Training Institution
1	2	3	5
2019-20	1No Fr	GPS&GIS application in Forestry	NFTS, Champua
	1No Fr	Detection enquiry & Prosecution in Forest Resources	NFTS, Champua
	1No FG	GPS & GIS application Forestry	FTS, G.Udayagiri
	1No,ACF	HRMS for newlyproted SFS Officer &Sr.FRO	Central Academy From State Forest Service , Dehradun
	1No FG	Forest Fire Protection	Prasarvarti National Academy of Boad casting & mulitimedia (NABM) All India Radio and Doordarshan , Chandasekharpur , BBSR
	1No FG	Refresher Course on Forestry	-do-
	1No FG	GPS&GIS application in Forestry	-do-
	1No, FG	-do-	-do-
	1No, Fr	Nursurry Techniques	-do-
	1No Dy. Ranger	Forest Fire & Disaster Prepardness	-do-
	1No FG	Orissa Forest Act.1972	FTS G.Udayagiri
	1No,FG	Refresher Curse on Forestry	NFTS, Champua
	1No FG	SMC Measures	NFTS, Champua
	1No Fr	GPS-GIS application	FTS, Bhubaneswar.
	1No FG	-do-	-do-
	1No FG	Detection enquiry & Prosecution in Forest Resources	FTS, G.Udayagiri

Year	**No. of Trainees**	**Subject**	**Training Institution**
1	2	3	5
2019-20	1No Fr	Forest Fire & Disaster prepardness	Prasarvarti National Academy of Boad casting & mulitimedia (NABM) All India Radio and Doordarshan , Chandasekharpur , BBSR
	1No FG	GPS&GIS application in Forestry	-do-
	1No FG	GPS&GIS application in Forestry	-do-
	1No Fr	Survey & Mapping of Resourses	-do-
	1NoFG	Plant Taxonomy & plant identification	-do-
	1No FG	Forest fire protection	-do-
	1No Fr	Induction Course Training	FTS, Ghatkia
	Total-68Nos		

Year	No. of Trainees	Subject	Training Institution
1	2	3	5
2020-21	1No, Fr	Themetic Course for the front line staff	OFRC,Angul
			Online training
	1No, Dy. Ranger	-do-	-do-
	1No, FG	Nursurry Technique under CAMPA Capacity Building	Virtual Mode
	1No, ACF	Investigation of wildlife crimes in collaboration with BPR&D at CDTI, Jaipur	Virtual Mode
	1No, FR	-do-	-do-
	1No, Forest Ranger	Conflict Mangeent and Emotional intelligence	Gopabandhu Academy of Administration , Bhubaneswar.-
	Total-06Nos		

ABSTRACT

YEAR	NO. OF TRAINEES
2005-2006	18 Nos
2006-2007	43 Nos
2007-2008	14 Nos
2008-2009	16 Nos
2009-2010	13 Nos
2010-2011	19 Nos
2011-2012	06 Nos
2012-2013	12 Nos
2013-2014	03 Nos
2014-2015	04 Nos
2015-2016	16 Nos
2016-2017	12 Nos
2017-18	15 Nos
2018-19	54 Nos
2019-20	98 Nos
2020-21	6 Nos

9.6 Forest Resource Accounting:

9.6.1 Tangible Benefits:

The tangible benefits obtained from Forest include the Timber & Fire wood extracts and NTFP produce. During the period of field work, the values of different NTFPs has been obtained during Socio Economic Survey of fringe villagers.

9.6.1.1 Siali Fibre:

Siali Fibre is being collected from the forest for its use in kendu leaf bundling. The details of kerries collected, production in quintals and amount paid towards royalty is furnished in **Table No. 9.10** as below.

TABLE No. 9.10 Production of siali fibre

YEAR	No of Kerries	PRODUCTION			Rate per Kerrey In Rs	Royality paid in Rs
		Quintal	Kg	Grams		
2005-06	35458	120	55	720	9	3,19,122.00
2006-07	39749	135	14	660	9.5	3,77,616.00
2007-08	39459	134	16	60	12.6	4,97,183.00
2008-09	42361	144	2	740	12	5,08,332.00
2009-10	43697	148	56	980	15	6,55,455.00
2010-11	27495	93	48	300	15	4,12,425.00
2011-12	29469	100	19	460	18.6	5,48,123.00
2012-13	41946	142	61	640	18.6	7,80,196.00
2013-14	35855	121	90	700	24.9	8,92,790.00
2014-15	35162	119	55	80	24.9	8,75,534.00
2015-16	25429	86	45	860	24.9	6,33,182.00

TABLE No.9.11 Production of kendu leafs			
YEAR	**Purchase Price of KL in Rs**	**No of Pluckers**	**Production in Qtl.**
2005-06	2,56,58,861.10	27380	15742.2
2006-07	2,80,56,000.00	27615	18132
2007-08	3,15,96,728.00	25757	17714.4
2008-09	3,57,92,951.00	26058	18469.8
2009-10	4,13,70,924.00	27670	19932
2010-11	3,15,44,331.00	27123	11997
2011-12	4,11,26,758.00	26851	13425
2012-13	7,34,24,613.00	27631	17585.4
2013-14	7,41,44,568.00	35035	15188.4
2014-15	7,03,41,042.00	31877	11112.6
2015-16	5,99,65,444.00	28329	
2016-17	42446873	22378	10221.6
2017-18	56649160	24406	10054.2
2018-19	46577760	28565	7692.6
2019-20	31692500	19690	5406
2020-21	29973260	20617	5373.6
Total	**207,962,244.10**	**426982**	**38748**

9.6.1.2 Kendu Leaf:

Athmallik Kendu leaf Division is working for collection of kendu leaves. The purchase price of Kl,No of pluckers, Mandays generated and production in Quintal in respect of Athmallik Civil Sub-Division is furnished In **Table No. 9.11** as below.

9.6.1.3 Timber & Firewood:

The timber and firewood delivered during the previous plan period is furnished in **Table.No. 9.12** as follows.

Table. No. 9.12 Timber and firewood delivered to OFDC Ltd.			
Year	Total Round Timber in cum	Fire Wood in qtl.	Royalty received in Rs.
2006-07	2106.85	1436.25	Rs.8220038/-
2007-08	1731.91	1057.5	Rs.7098489/-
2008-09	513.9675	208,00	Rs.3232154/-
2009-10	1171.9218	406	Rs.4001497/-
2010-11	1009.5762	388	Rs.3401879/-
2011-12	1198.994	418	Rs.4635120/-
2012-13	1604.008	567.75	Rs.5847060/-
2013-14	791.764	461.5	Rs.39,09,606
2014-15	956.758	541	Rs.42,11,334
2015-16	781.344	7293	45,69,519/-
2016-17	91.092	182	7,69,836/-
2017-18	664.917	7735	45,96,433/-
2018-19	1484.392	8425.729	1,01,87,601/-
2019-20	1341.4955	5968.482	80,25,126/-
2020-21	701.8829	4550	37,79,555/-
Total:	16150.8729	39638.211	Rs.55789.0839/-

9.6.1.4 Bamboo: The bamboos produced during the previous plan period is furnished in **Table.No. 9.13** as follows.

Table.No. 9.13 Production of Bamboos

Year of working	Name of the coupe	Production (industrial Bamboo) (in MT)			Production (Commercial Bamboo) (in No.)	Royalty paid by OFDC, Ltd.	Reason for No working
		Salia	Daba	Total			
1	2	3	4	5	6	7	8
2006-07	Hatidhara (S&N) BCB	No. Working	-	-	-	-	During 2006-07 offered to OFDC, Ltd but surrender due to un-productive and un-economical.
2007-08	Hatidhara (S&N) BCC	710.120 MT	-	710.120 MT	1961 nos	-	
2008-09	Hatidhara (S&N) BCD	-	-	-	10933 nos	-	
2009-10	Hatidhara (S&N) BCA	No Working				-	During 2009-10 offered to OFDC, Ltd, Anugl for taking delivery but the OFDC, Ltd have not taken delivery of the coupes.
2010-11	Hatidhara (S&N) BCB	-	-	-	3862 nos	-	
2011-12	Hatidhara (S&N) BCC	-	-	-	8473 nos	-	
2012-13	Hatidhara (S&N) BCD	No working	-	-	-	-	During 2012-13 offered to OFDC, Ltd, Anugl to work out but the OFDC, Ltd have not taken delivery of the coupes.

2013-14	Hatidhara (S&N) BCA	No working	-	-	-	-	Delivered during 2013-14 but surrendered due to non-economic vide his Memo No. 835 dt. 20.12.2013
2014-15	Hatidhara (S&N) BCB	No Working	-	-	-	-	Delivered during 2014-15 but the OFDC, Ltd surrender due to there is no potentiality for commercial exploitation of Bamboo from these coupes.
2015-16	-	-	-	-	-	-	Due to expired of Revised Working Plan for the period 2006-07 to 2015-
2016-17	-	-	-	-	-	-	-do-
2017-18	HatidharaSouth Coupe-A HatidharaNorth Coupe-A	-	-	-	-	-	Due to the said forest block have been included in Satkosia Tiger Reserve.
2018-19	HatidharaSouth Coupe-B HatidharaNorth Coupe-B	-	-	-	-	-	-do-
2019-20	HatidharaSouth Coupe-C HatidharaNorth Coupe-C	-	-	-	-	-	-do-
2020-21	HatidharaSouth Coupe-D HatidharaNorth Coupe-D	-	-	-	-	-	-do-
	Total	**710.12**		**710.12**	**25229**		

9.6.1.5 NTFPs: No recorded information is available as regards to the collection of NTFPs. During socio-economic survey of fringe villages, some trends was available. All possible effort has to be made to quantify the collection of various NTFPs.

9.6.2 Intangible benefits:

No effort has been made to quantify intangible benefits. Progressive and positive efforts should be made to quantify intangible benefits i.e carbon sequestration, study on water table, analysis of water quality, Surface flow level of water level, Pollution level, physical parameters etc.

9.7 Budgetary allocations to the forestry sector :

The data on budgetary allocations to the forest sector of Athmallik Forest Division is provided in **Table No. 9.14** as below.

TABLE NO.9.14 Budgetry allocations to the Forestry sector

Year	Establishment Expenditure		Total Establishments	Works Expenditure					Grand total (Works + establishments)
	Salary	Others		2406-Non Plan	2406-State Plan	2406-Central Plan	2406-C.S Plan	Total works	
1	2	3	4	5	6	7	8	9	10
2006-07	7849692	527955	8377647	1949999.1	0	50000	110000	2108999.1	10487646.1
2007-08	8928811	682604	9611415	4282660	5274330	902500	300000	10759490	20370905
2008-09	12698572	583376	13281948	4448460	6979700	510000	747000	12685160	25967108
2009-10	14608719	556784	15165503	3812330	7132520	100000	0	11044850	26210353
2010-11	15274049	225300	15499349	2568330	10953230	383330	503500	14409390	29908739
2011-12	14704984	481000	15185984	2849580	2088800	40000	1426600	6404380	21590364
2012-13	17238237	747000	17985237	2612225	19057664	275000	270625	22215514	40200751
2013-14	21329754	875357	22205111	2061000	8825362	283000	218950	11388312	33593423
2016-17	28444826	775988	29220814	5165159	20659111	–	1105000	26929270	56150084
2017-18	32699049	1172696	33871745	5183520	21573278	–	–	26756789	60628543
2018-19	353199927	1683224	37003151	4343360	27840035		-	32183395	69918546
2019-20	37887840	1663000	39550840	3265000	20156466		13341965	36763431	76314271
2020-21	-	-	-	1637000	29617830	-	4182000	35436830	35436830
Total-	**564864462**	**564864462**	**1129728924**	**44179628.1**	**180157832**	**2483795308**	**17523965**	**249086819**	**506777573.1**

The budgetry allocation in afforestation activities during the last plan period is furnished in **Table No. 9.15**as below.

Table No. 9.15 Budgetry allocation to afforestation activities

Year (2004 to 2020-21) (Year wise)	Scheme	Area cover under (in Hectare)				No. of seedling planted	Amount spent (In lakhs)	Amount spent (in lakhs)
		AR	ANR (with Gap)	ANR (without Gap)	Total			
2	3	4	5	6	7	8	9	10
	4406-COL-NP-Compensatory Affn.							
	CATP, RDF& Gap Planting	0	208	0	208	0.624	15.60288	15.60288
2004-05	CA, RDF & Gap Planting	0	103.08	0	103.08	0.30924	7.3536	7.3536
2005-06	4406-COL-NP-Compensatory Affn.Manjore MIP CATP, RDF	0	150	0	150	0.45	11.5575	11.5575
2006-07	4406-COL-NP-Compensatory Affn.Manjore MIP CATP, RDF	0	200	0	200	0.6	18.863	18.863
	4406-COL-SP-Economic Plantation/ RDF	0	150	0	150	0.45	12.69	12.69
	2406-State Plan-Silvi.-reserch under 12th F.C	0	200	0	200	0.8	13.45613	13.45613
2007-08	-do-	45		0	45	0.68	8.5813	8.5813
	N.B.M	25		0	25	0.085	3.49416	3.49416
2008-09	F.D.A		1250	0	1250	2.5	63.125	63.125
	OBDP	20			20	0.08	2.25	2.25
	Compensatory Affn.Manjore MIP CATP, RDF		642		642	1.284	20.3118	20.3118
2009-10	4406-COL-NP-Compensatory Affn.	152	0		152	2.432	30.38	30.38
	State CAMPA Block Plantation	140	0		140	2.24	53.0891	53.0891
	OBDP	20	0		20	0.08	1.25	1.25
2010-11	N.B.M	25	0		25	0.10425	1.268	1.268

	2406-State Plan-13th F.C Block Plantation outside forest area	40	0		40	0.64	30.3	30.3
	Inside Block Plantation	50	0		50	0.08	37.875	37.875
	N.B.M	25	0		25	0.10425	1.58	1.58
2011-12	OBDP	20	0		20	0.08	1	1
	2406-State Plan-13th F.C Block Plantation outside forest area	40	0		40	0	5.33911	5.33911
	Inside Block Plantation	100	0		100	0	12.0992	12.0992
	OBDP	20	0		20	0	0.54171	0.54171
	N.B.M	50	0		50	0	3.4218	3.4218
	Phadi house	25	0		25	0	1.74528	1.74528
	MGNREGS	550	0		550	0	23.01992	23.01992
2012-13	MGNREGS	400	0		400	0	8.63	8.63
	2406-State Plan-13th F.C Block Plantation outside forest area	40	0		40	0.64	82.95921	82.95921
	OBDP	20	0		20	0.08	1.643	1.643
	NBM	30	0		30	0.0999	1.8	1.8
	MGNREGS	230	790		1020	5.26	71.49442	71.49442
2013-14	Elephant corridor	10	0		10	0	2.83	2.83
	OBDP	20	0		20	0.08	0.37514	0.37514
	Elephant Corridor	5	0		5	0.08	1.62	1.62
	NBM	55	0		55	0.18315	1.8951	1.8951
2014-15	MGNREGS	65	310		375	1.755	84.2687	84.2687
	2726-Elephant Corridor	10	0		10	0.176	2.83	2.83
	2829-OBDP	10	0		10	0.088	1.63241	1.63241
	JVP (OEMF)	20	0		20	0.352	3.06	3.06
	Compensatory Affn.CAMPA	182.527			182.53	0	36.14	36.14
2015-16	MGNREGS	100	725		825	0	155.5125	155.5125

2016-17	OBDP	20	0	0	20	8000	1.25	
	JVP	25	0	0	25	10000	6.665	
	NBM	30	0		30	6660	2.03125	
	CAMPA APO- 2015-16	0	300		300	60000	121.01634	
	Comp. Affn. (Safety Zone)- AR	12.18	0		12.18	41820	70.31443	
	Comp. Affn.- AR	52	150		202	113200		
	Comp. Affn.- ANR @400 plants/Ha.	0	384.4725		384.4725	153789		
	Comp. Affn.- ANR @800 plants/Ha.	0	58		58	46400		
	OMBADC	75	0		75	123500	26.2585	
	MGNREGS	20	370		390	106000	41.41357	
2017-18	OMBADC	0	150	0	150	30000		
	MGNREGS	10	160	0	170	48000	25.39082	
2018-19	CAMPA (WP)	0	500	0	500	100000	81.38888	
	MGNREGS (Pure)	20	280	0	300	88000	0.96543	
	MGNREGS (GMM)	6	166	0	172	98400	45.34676	
	State Plan GMM	45	150	0	160	77900	159.39839	
2019-20	State Plan GMM	8	90	0	98	30800	57.89882	
	CAMPA	0	50	0	50	10000	4.0757	
	Site Specific	0	20	0	20	12000	7.8372	
	MGNREGS Bamboo	38.8	0	0	38.8	62080	4.21624	
2020-21	CAMPA	30	150	0	180	42000	31.80304	
	GMM	10	30	0	40	22000	31.91053	
	IGC	10	100	0	110	37100	46.3521	
	NAP	0	50	0	50	10000	3.69703	
	MGNREGS	134	450	0	584	207350	152.54034	
	Total	**3000.507**	**4333.4725**	**0**	**11392.0625**	**1545021.417**	**652.82128**	

9.8 Existence of monitoring, assessment and reporting mechanism:

The control forms has been prescribed for monitoring, assessment and reporting mechanism for all prescriptions/suggestions under respective working circles to be monitored assessed and reported on annual basis during the period of the Working Plan. Control forms should be prepared to include each of this prescription.

9.9 Public awareness and education:

Public awareness and education is being organized in Athmallik Forest Division through conduction of Essay competition, drawing competition during world environment day celebration, world forestry day, wildlife day celebration. Vanamostav celebration with the active participation of the local people. The public awareness programmes celebrated during 2010-11 to 2020-21 is furnished in **Table No 9. 16** as follows.

TABLE NO. 9.16 Forestry/Environmental awareness programmes

Year	Type of the programme	Location	Activities undertaken
2010-11	World forestry day	Division/District Hqs	Awards & prizes for outstanding contribution in the field of Forest,wildlife and
	World Environment day	Division/Range level.	Awareness programmes on global warming & climate change.
	Vanmahotsava week	Division/Range level.	Conduct of essay & debate competition in the school level and distribution of prizes & certificates.
	Wildlife week	Division/Range level.	Sit & draw competition were organized in the school level ,distribution of prizes & certificates,mobilization of public regarding wildlife and protection.

2011-12	World forestry day	Division/District Hqs	Awards & prizes for outstanding contribution in the field of Forest,wildlife and
	World Environment day	Division/Range level.	Awareness programmes on global warming & climate change.
	Vanmahotsava week	Division/Range level.	Conduct of essay & debate competition in the school level and distribution of prizes & certificates.
	Wildlife week	Division/Range level.	Sit & draw competition were organized in the school level ,distribution of prizes & certificates,mobilization of public regarding wildlife and protection.
2012-13	World forestry day	Division/District Hqs	Awards & prizes for outstanding contribution in the field of Forest,wildlife and environment.
	World Environment day	Division/Range level.	Awareness programmes on global warming & climate change.
	Vanmahotsava week	Division/Range level.	Conduct of essay & debate competition in the school level and distribution of prizes & certificates.
	Wildlife week	Division/Range level.	Sit & draw competition were organized in the school level ,distribution of prizes & certificates,mobilization of public regarding wildlife and protection.
2013-14	World forestry day	Division/District Hqs	Awards & prizes for outstanding contribution in the field of Forest,wildlife and

2014-15	World forestry day	Division/District Hqs	Awards & prizes for outstanding contribution in the field of Forest,wildlife and environment.
	World Environment day	Division/Range level.	Awareness programmes on global warming & climate change.
	Vanmahotsava week	Division/Range level.	Khandahata VSS is awarded with best VSS award at the Sub-Divisional level for forest protection & conservation during celebration.
	Wildlife week	Division/Range level.	Sit & draw competition were organized in the school level ,distribution of prizes & certificates,mobilization of public regarding wildlife and protection.
2015-16	World forestry day	Division/District Hqs	Awards & prizes for outstanding contribution in the field of Forest,wildlife and
	World Environment day	Division/Range level.	Awareness programmes on global warming & climate change.
	Vanmahotsava week	Division/Range level.	Celebrated in the important places of Athmallik Sub-Division to encourage the JFM committees on Forest protection &
	Wildlife week	Division/Range level.	Sit & draw competition were organized in the school level ,distribution of prizes & certificates,mobilization of public regarding wildlife and protection.
2016-17	Public Awareness	Madhapur	Publication of IEC material
2017-18	Public Awareness	Athmallik	Regarding Elephant &

On the occasion of celebration of World Environment Day on 5th June every year, there is provision of Prakruti Mitra & Prakruti Bandhu awards for each civil sub-divisions since 2006-07 & for each revenue block since 2020-21. Prakruti Mitra award is given for outstanding contribution in environment to a community & Prakruti Bandhu award is given for outstanding contribution in environment to an individual. A list of Prakruti Mitra & Prakruti Bandhu award winners of Athmallik & Kishorenagar Block is furnished in **Table No. 9.17** as below.

Table No.9.17 List of Prakruti Mitra & Prakruti Bandhu award winners of Athmallik & Kishorenagar Block

Year	District	Prakruti Mitra	Prakruti Bandhu
2004-05	Angul		Sri Pradipa Kumar Pradhan Rajing,Athmallik.
	Sub-Division		
2006-07	Athmallik	Kishorenagar High School, Rajkishorenagar.	
2007-08		Maheswari High School, Nakchi	
	Block		
2009-10	Kishorenagar	Hushikesh Ucha Bhyapitha, Icchapur,Kamteikolia.	
2010-11	Athmallik	Kutulusinga U.P. School, Maimura.	
	Kishorenagar		Manoj Kumar Mohapatra, Debarapali, Luhamunda.
2011-12	Athmallik	Gopinatha Jew High School, Kantapada	
2013-14	Kishorenagar	Radhakrishna High School, Jamunali.	
2014-15	Athmallik	Salopada Junior Mahavidyalaya, Thagurgarh.	Sri Biren Kumar Pradhan, At/Po Kantapada,Thagurgarh.
2015-16	Angul	Nil	Nil
2016-17			
2017-18			
2018-19			
2019-20			
2020-21			

9.9.1 Eco-clubs : To creat environmental awareness among students, Eco-clubs have been constituted in the Educational Institutes . Rs.2500/ is granted annually to each institutes to conduct environmental awareness programmes. A list of Eco-clubs of Athmallik civil Sub-Division is furnished in **Table No 9.18** as follows.

Table No 9.18 List of Eco-clubs of Athmallik civil sub-division.	
C.D BLOCK	NAME OF ECO-CLUBS
Athmallik	(1) Ambarasarmunda High School,Ambasarmunda.
	(2) Binikeyee High School,Luhasingha.
	(3) Girls High School, Athmallik.
	(4) Gopinath Jew High School,Kantapada.
	(5) Grampanchayat High School,Sapaghara.
	(6) Kanakei Ucha Bidyapitha, Pedipathar.
	(7) Kiakata High School, Kiakata.
	(8) Lunahandi High School, Athmallik.
	(9)Madhapur High School, Madhapur.
	(10) Nilakantapada High School, Nilakantapada.
	(11) Panchayat Raj High School, Maimura.
	(12) Panchayat Raj High School,Sanahulla.
	(13) Purunamanitri High School, Athmallik.
	(14)Radhakrishna High School, Tapadhol.
	(15)Radhamadhaba High School,Paiksahi.
	(16) Sastrijee High School,krutibaspur.
	(17) Thakurgarh High School, Thakurgarh.
	(18) Aida High School,Aida.
	(19) Ambapal High School,Ambapal.
	(20)Govt. High School,Phulamba,Kishorenagar.
	(21) Himiira High School,Himitira,Kishorenagar.
	(22) Hrushikesh Ucha Bidyapitha, Ichhapur.
	(23) Jagannath High School, Bileinali.
	(24) Jairat High School,Jairat,Rajkishorenagar.
	(25) Jharabereni G.P.High School,Rajkishorenagar.
	(26) Kadalimunda High School, Kadalimunda.
	(27) Kishorenagar High School,Kishorenagar.
	(28)Maa Hingulai High School, Luhamunda.
	(29)Mahanadi High School,Handapa.
	(30) Maheswari High School,Nakchi.
	(31) Oskapalli High School, Oskapalli.
	(32) Panchayat Raj High School, Kuteswar..
	(33) Panchayat High School,Angapada.
	(34) Radhakrishna High School, Jamunali.
	(35) Ramdev High School,Boinda.
	(36) Raniakata Adivasi High School, Raniakata.
	(37) Sanjamura High School,Sanjamura.
	(38) Tusar High School,Tusar.
	(39)Urukula G.P.R.K High School,Parasuanio,vrukula
	(40)Yubajyotl High School,Karunabihar,Bamur.
	(41) Jamudoli G.P High School,Kodasingha.
	(42) P.R High School,Baradakata.
	(43) Panchayat High School,Karnpal.
	(44) Panchasakha High School,Mardarbahal.
	(45) Panchayat High School,Sakasingha.
Kishorenagar	(46) Maa Maheswari High School, Boinda.

Awareness campaign should be arranged in different places of Athmallik Forest Division regarding taking up of preventive measures to save the life of wild animals who move out the Forest and enter into the village area in search of paddy and local liquor. The services of the trackers and squads engaged are to be utilised to prevent menace of the wild elephants to human habitants and also to drive back the straying animals to the nearest Forest area which needs closed monitoring. The local people as well as the field staff should be trained and proper education be imparted to keep a close watch over the vulnerable area to combat the illicit felling and removal of forest produce as well as poaching of wild life in the forest.Necessary leaflets showing the slogan for preserving the valuable forest as well as wildlife should be distributed amongst the local people and field staff of Athmallik Forest Division for publicity. The field staffs are to be educated to keep strict vigil over the forest and to save them from destruction by the unscrupulous smugglers indulged in clandestine activities.The V.S.S Members under the Jurisdiction of Athmallik Forest Division are to be suitably educated to realise the aim of preserving the Forests from destruction and to render necessary assistance to the field staff of this Division in regard to illicit felling, fire hazard and wild life poaching to arrest situation.

9.10 Adequate manpower in forest division:

9.10.1 Sactioned staff:

The sanctioned strength of Athmallik Forest Division under various posts, vacancy position as on 17.01.2017 is furnished in **Table No. 9.19** as below.

TABLE NO 9.19 Sanctioned Strength of Athmallik Forest Division				
Post Name	**Sanctioned Strength**	**Men in Position**	**Vacancy**	**Remarks**
Dy.C.F(DFO)	**1**	**1**	**0**	
A.C.F.(Affn.)	**1**	**1**	**0**	
A.C.F.(Enf.)	**1**	**1**	**1**	
A.C.F.(Admn.& Eco Tourisim)	**1**	**0**	**1**	
TOTAL	**3**	**2**	**1**	
F.R(Affn.)	1	0	1	
F.R.(Enf.)	1	2	0	
F.R.(Range)	5	3	1	
Total	**5**	**4**	**1**	
Dy,Ranger(Enf)	6	2	4	
Forester(Affn.)	12	2	10	
Forester(Enf.)	1	1	0	
Forester(Check Gate)	1	0	1	
Forester(Section)				
	18	18	0	
Total	**32**	**21**	**11**	
Forest Guard(Beat)	56	38	18	
Forest Guard(C.G)	6	0	6	
Forest Guard(Enf & Affn)	6	0	6	
Total	68	38	30	
Head Clerk	1	0	1	
Junior Accountant	7	7	0	
Junior Clerk	9	4	5	
Jr. Stenographer	1	0	1	
F.E.S	1	0	1	Abolished
Jeep Driver	2	1	1	
Dak Runner	2	1	1	
Office Chowkidar	2	2	0	
GRAND TOTAL	**140**	**81**	**59**	

Table No. 9.20 List of engagements of Forest Squad under different schemes				
Name of the Range	Scheme	Name of the squad	Nos engaged.	Period of engagement.
Bamur	Campa(WL)	Elephant squad	10 Nos	Whole year.
		Para protection squad	10 Nos	Whole year.
	Campa	Fire watcher.	10 Nos	Feb to June.
	General (Wl)	Elephant management Squad.	02 Nos	Whole year.
Handapa	Campa(WL)	Para protection squad	10 Nos	Whole year.
	Budget Head	Fire watcher.	10 Nos	Feb to July.
	Campa	Fire watcher.	10 Nos	Feb to July.
Dhandatopa	Campa(WL)	Para protection squad	10 Nos	Whole year.
	Campa	Fire watcher.	10 Nos	Feb to June.
	Intensive protection of critically endangered areas.	Protection squad	10 Nos	Whole year.
Athmallik	Campa(WL)	Elephant squad	02 Nos	Whole year.
	General plan	Elephant squad	07 Nos	Whole year.
	Campa	Fire watcher	10 Nos	Feb to June.
Madhapur	Campa(WL)	Elephant squad	05 Nos	Whole year.
		Elephant tracker	02 Nos	Whole year.
	Campa	Fire watcher	10 Nos	Feb to June.
	Budget Head	Elephant Squad	15 Nos.	Whole year.

The present staff strength is quite inadequate. It is suggested that the vacancy of the staff position should be filled up quickly with a view to smooth management of different schemes being implemented in Athmallik Forest Division and to strengthen the protection activities.

9.10.2 Temporary & seasonal staff: The position of temporary and seasonal staff is furnished in **Table. No. 9.20** as follows.

9.10.3 Rates of past and present wages: The wage rate for the period from 2006-07 to 2019-20 is furnished in **Table No 9.21** as below.

Table No 9.21 Rates of past and present wages

Year	Minimum wage rate(Rs)
2007-08	70/
2008-09	70/
2009-10	90/
2010-11	90/
2011-12	90/
2012-13	150/
2013-14	150/
2014-15	150/
2015-16	200/
2018-19	280/-
2019-20	298/-
2020-21	307/-
2020-21	308/-
2021-22	315/-
2022-23	325/-

CHAPTER-10

FIVE YEAR PLANS

10.1 GENERAL TRENDS IN FORESTRY INVESTMENT

10.1.1 The investments in forestry sector require long gestation period and most of the time these inputs are linked with the livelihood needs of the people. It is also difficult to explain the tangible benefits always in monetary terms. Since the commencement of the First Five Year Plan (FYP) in 1951, in toto Rs 85 billion has been spent by the end of the Eighth FYP in 1996-97 on forestry development activities in the whole country. In this period, afforestation activities of about 26.9 million ha have been carried out. Financial allocation to the forestry sector has increased from Rs 76 million in the First FYP to Rs 40818 million in the Eighth FYP, but it has always been less than 1% of the total plan outlay of the country. This is one of the main reasons for the continuous deterioration of forest resources. The priorities in different plan periods and the achievements are discussed in the paragraphs below.

10.1.2 The information on the expenditure in the different Plan periods in Athamallik Division is available from the 6th Five Year Plan. The details of this information are given in **Table 10.4**. The general priorities and the investments made in the whole country are also discussed below to have a better understanding of the investments trends in the forestry sector.

10.2 THE FIRST AND SECOND PLANS (1951-61)

In this decade, the focus was on the rehabilitation of the degraded forests and the creation of plantations of economically important species. In the second plan, the stress was also on the conservation of wildlife.

10.3 THE THIRD PLAN (1961-66)

The third five year plan laid special emphasis on measures to meet the long term requirements of the country and to ensure more economic and efficient utilization of the valuable forest products. The immediate objective was to increase the output from the existing forests through better techniques of timber extraction, improvement of communications and popularizing

oriented towards attaining self sufficiency in industrial timbers, fuel wood and other forest products. In order to encourage State Governments to undertake plantations of quick growing species, particularly to meet the requirements of pulp and paper, a new centrally sponsored scheme "Plantation of Quick Growing Species" was introduced. It was accepted as a matter of policy that in order to obtain higher timber yields from the forest areas under exploitation and to reduce the wastage, improved logging tools have to be used. Training of forest officers and field executives in the State Governments and of lessees and forest contractors in logging planning and efficiency studies were started with the establishment of logging training centers set up with the assistance of the United Nations Special Fund.

10.4 THE ANNUAL PLANS (1966-69)

In the three annual plan years, specific emphasis was laid on plantations of quick growing species and modernizing harvesting and plantation techniques.

10.5 THE FOURTH PLAN (1969-74)

The three main objectives laid down in this plan are:

(a) To increase the productivity of forests.

(b) To link up forestry development with various forest based industries.

© To develop forests as a support to rural economy.

Emphasis was laid on measures to meet the immediate and long term agricultural and industrial requirements. Further efforts were made at creating large scale plantations of valuable quick growing species and species of economic and industrial importance. Concerted efforts at regenerating areas, where forest produce was removed for industrial uses, were taken. The object was to achieve self sufficiency in forest products as early as possible, specially for major forest based industries such as pulp, paper, newsprint, wood panel products and matches so that the import of these items may be replaced and some sizeable exports of pulp and wood panel products built up. In the last two years

10.6 FINANCIAL ACHIEVEMENTS UPTO FOURTH FIVE YEAR PLANS

Scheme-wise details of expenditure incurred on forest development in the country is given in **Table No: 10.1.**These figures show that during 1951-69, 23 percent has been spent on economic plantations for industrial and commercial uses. The same percentage was maintained in the fourth plan period. The scheme on farm forestry –cum- fuel wood plantations accounted for 2.2 percent of the total expenditure for the period 1951-69.

Table: 10.1 SCHEMEWISE EXPENDITURE INCURRED ON DIFFERENT FORESTRY SCHEMES IN INDIA

Sl No	Scheme	1st Plan 1951-56	2nd plan 1956-61	3rd Plan 1961-66	Annual plan 1966-69	Total 1951-69	Fourth Plan 1969-74
I	State Scheme & Centrally sponsored scheme-						
1	Economic Plantation for industrial & Commercial uses	111.91	486.88	1163.16	934.01	2695.96	2014.99
2	Rehabilitation of degraded forests	16.42	199.23	380.58	229.84	826.07	322.17
3	Farm forestry-cum-fuel wood plantations			109.54	151.93	261.47	361.25
4	Development of minor forest products			151.74	148.09	299.83	107.44
5	Communications	42.27	247.65	555.98	335.5	1181.4	553.01
6	Consolidation of forests (including survey and demarcation)	14.63	61.83	199.3	194.19	469.95	367.75
7	Development of pastures and grazing			52.93	47.13	100.06	77.82
8	Nature conservation		99.52	175.07	125.32	399.91	445.32
9	Training of staff	41.75	74	178.43	136.49	430.67	147.83
10	Timber operations			285.77	246.97	532.74	554.19
11	Forest protection			107.03	62.79	169.82	115.25
12	Working Plan organization			121.55	100.9	222.45	132.91
13	Forest Research			25.61	46.64	72.25	156.27
14	Publicity			14.03	13.44	27.47	47.41
15	Establishment of statistical cell and planning cell				13.55	13.55	38.63

16	Construction of building	43.97	115.27	247.4	149.94	556.58	405.99
17	Amenities to staff and labour			48.05	14.63	62.68	31.1
18	Intensification of management				20.57	20.57	29.43
19	Cultural operation				42.89	42.89	71.33
20	Plantation of quick growing species			406.48	939.45	1345.93	1685.59
21	forest resources survey			32.11	34.47	66.58	101.92
22	Miscellaneous schemes NES	478.83	738.28	248.54	95.47	1561.12	821.79
II	Central Schemes-						
1	Forest Research Institute & Collages		41.85	17.39	27.45	86.69	101.29
2	Delhi zoological park		56.2	34.67	6.43	97.3	22.75
3	Pre investment survey of forest resources			8.17	71.54	79.71	143.14
4	Logging training project			3.06	16.19	19.25	35.44
5	Scheme-wise details not available	100				100	6.85
	Total	849.78	2120.71	4566.59	4205.82	11742.9	8898.86
Source: Report Of The National Commission on Agriculture, 1976, Part IX, Forestry							

10.7 The Fifth Plan (1974-79)

The primary objective in the fifth plan is to take up a dynamic programme of production forestry, aiming at clear felling and creating large scale man made forests with the help of institutional financing. The second important objective is to develop farm forestry and to improve degraded forests so as to increase the fuel and timber supply in the rural areas. A network of State Forest Corporations is proposed to be created for the establishment and management of man-made forests and forest based industries. Special efforts were proposed to be made to prepare a number of projects in various States, for immediate and long term benefits in terms of increased raw materials for industries and additional revenues at different levels of investment.

10.8 THE SIXTH PLAN (1980-85)

In this plan the emphasis was on increasing the productivity through proper land and water management. It was also felt that the preservation of the genetic and species diversity is essential for the management of the ecosystem and for the sustainable utilization of the resources, this helps in a big way for the future survival and development of the people. The necessity for constitution the Biosphere Reserves was also felt.

10.9 THE SEVENTH PLAN (1985-90)

10.9.1 The basic approach to the Seventh Plan would thus be sustainable development in harmony with the environment Most of the programmes for environmental management deal with pre-planning for eliminating or at least minimizing environmental degradation. One of the major objectives of the Eco-development programme is the restoration of already degraded eco-systems through practical field schemes such as land reclamation, afforestation, cleaning of water bodies, etc. The programme is also geared towards arresting further damage to eco-systems and the promotion of a conservation based development strategy

10.9.2 In this Plan period, it was decided to lay emphasis on Research and Training aspects also, hence the Botanical Survey of India (BSI), Zoological Survey of India (ZSI) are reoriented to deal with the lower forms of the life like fungi, bacteria, invertebrates, etc. Man and Biosphere Programme were also oriented towards the ecosystem development.

10.9.3 Implementation of the Biosphere Reserves Programme will start in the Seventh Plan with the Department of Environment acting as the nodal agency. The conservation programmes in the Reserves will be supplemented by a strong component of research studies on the living and non-living resources, rare and endangered species, socio-economic interactions with local/ surrounding populations and ethnobiological relationships

10.6.4 Eco-development programme like restoration of already degraded eco-systems through practical field schemes such as land reclamation, afforestation, cleaning of water bodies, etc. would be strengthened in this Plan Period.

10.9.5 Review of the Seventh Plan

10.9.5.1 Seven Biosphere Reserves have been set up for preserving the genetic diversity in representative ecosystems. Ecological restoration work has been undertaken in fragile areas. Schemes have been initiated on breeding of plants and commercial utilisation of medicinal plants. A national environmental awareness campaign initiated in 1986 was continued. It has covered a wide spectrum of the population through different media, and involving more than 200 non-governmental organizations.

10.9.5.2 Forest and Wild Life Policy

(a) A "National Forest Policy 1988" was formulated in December 1988 with the principal aim of ensuring environmental stability and maintenance of ecological balance. The Forest Conservation Act, 1980 was amended in 1988 to facilitate stricter implementation and to plug certain loopholes.

(b) Implementation of the 10-point National Wildlife Action Plan (NWAP) has started. The Wildlife Institute of India has published a comprehensive report incorporating a workable biogeographic classification system.

10.9.5.3 Afforestation Programme

In the Seventh Plan there was considerable increase in the total area brought under afforestation programme. Block plantations, strip plantations and farm forestry were carried out. Plan funds were made available through Forest Departments in the States. These were further supplemented in 15 States with new projects which received external assistance. While the total afforestation during the Sixth Plan period was only 4.65 million ha, the coverage in the Seventh Plan was 8.87 million ha. A number of programmes of afforestation were taken up to secure people's participation. Under this scheme, priority was given to:

i. Establishment of decentralized nurseries and school nurseries;

ii. Block plantation specially on community land and lands of SC/ST and people living below the poverty line;

iii. Pasture development through people's institutions and involvement; and

Social forestry projects that were initiated in 1981-82 for periods ranging from five to eight years continued in the Seventh Plan. They envisaged tree planting and afforestation of 19, 84,600 ha. of wastelands with a total investment of Rs. 911.73 Crores. These projects were assisted by several external agencies, including the World Bank, United States Agency for International Development and Overseas Development Agency of United Kingdom, etc.

Under the National Rural Employment Programme (NREP) and Rural Landless Employment Guarantee Programme (RLEGP) carried out by the Department of Rural Development, 25% of the funds were specifically earmarked for the social forestry component, during the first four years of the Seventh Plan. The afforestation component under these programmes was implemented by the State Forest Departments mainly on government and community lands, road sides and canal embankments. Since the availability of community lands was limited, afforestation was also carried out on degraded forest lands. Bulk of the funds for the forestry sector came from the Rural Employment Schemes under the social forestry component. The area afforestated in successive five year plans and the amount spent is given in **Table No: 10.2.**

Table: 10.2 Progress of Afforestation through successive Plan periods

Sl No.	Five Year Plan Period	Area afforested in Plan Period (lakh Ha.)	Cumulative (lakh Ha.)
1	First	0.52	0.52
2	Second	3.11	3.63
3	Third	5.83	9.46
4	1966-69	4.53	13.99
5	Fourth	7.14	21.13
6	Fifth	12.21	33.34
7	1979-80	2.22	35.56
8	Sixth	46.5	82.06
9	Seventh	88.7	170.76

10.10 THE EIGHTH PLAN (1992-97)

The major objectives for this Plan are:

1. To protect the natural environment;
2. To regenerate and restore degraded ecosystems and increase their productivity and to generate employment through these activities;
3. To decentralise control over nature and natural resources;
4. To develop and share an understanding of nature and natural processes;
5. To formulate a national policy for environment and an appropriate institutional and legal framework in support of the policy;

1. To ensure co-ordinated and integrated Governmental action aimed at conserving nature and sustainable use of natural resources;
2. To make individuals and institutions more accountable to the people for their actions impinging on environment and ecosystem; and
3. To monitor the state of environment.

10.10.1 National parks and sanctuaries would be further strengthened. Stress will also be laid on eco-development, especially around protected areas, so that the human population in these areas is not deprived of the basic life support resources and continue to participate in the protection of the environment.

10.10.2 An important task before the Government is the formulation of a comprehensive national policy on nature and natural resources. To be effective it must be evolved in consultation with the people. The policy must also spell out the position regarding environmental needs of the society in general and the rights of the weaker sections such as, tribals, nomads, women and children, especially in terms of giving access to and control over natural resources, in particular. The total investment in forestry sector is given in **Table No: 10.3** and the percentage of investments is depicted in the graph**.** From the graph it is evident that the percentage of investments has increased from 0.32 percent in the First Plan to just about 1 percent in the 7th Plan. Again in the 8th Plan the investments are below one percent of the total plan outlay.

10.10.3 Review of Eighth Plan

10.10.3.1Bio-diversity Conservation

The scheme on Bio-diversity Conservation was initiated during 1991-92 to ensure proper coordination among various agencies concerned with the issues relating to conservation of biological diversity and to review, monitor and evolve adequate policy instruments for the same. The Convention on Biological Diversity (CBD) was signed by 168 countries, including India, during the Rio meetings. India has since ratified the Convention.

10.10.3.2 During the Eighth Plan, considerable attention was given to make the pollution control laws more effective and to bring umbrella legislation for protection of environment. A number of Central and State executive authorities have been delegated powers for effective implementation of the Environment Protection Act. The Air (Prevention and Control of Pollution) Act - 1981 and the Water (Prevention and Control of Pollution) Act - 1974 have been amended to bring certain provisions of the Acts at par with those of the Environment (Protection) Act - 1986.

10.10.3.3 During the Eighth Plan, a Centrally Sponsored Scheme 'Modern Forest Fire Control Methods in India' was continued. The scheme was launched during the Seventh Plan with UNDP assistance as a pilot project in Uttar Pradesh and Maharashtra mainly to protect forests from fire. The Project was implemented in 13 states during Eighth Plan.

10.10.3.4 Afforestation of Degraded Forests

The National Afforestation and Eco-Development Board was created at the time of the bifurcation of the erstwhile National Wasteland Development Board, then under the Ministry of Environment and Forests in July, 1992. Areas adjoining forests and fragile eco-systems were brought under the National Afforestation and Eco-Development Board (NAEB), while other wastelands were covered under the newly created National Wasteland Development Board in the Department of Wasteland Development in the Ministry of Rural Areas and Employment. An outlay of Rs. 461 crore was finally allocated to the NAEB for reclaiming degraded forest area adjoining forests during the Eighth Plan. Some of the schemes of NAEB are:

(i) Integrated Afforestation and Eco-Development Projects (IAEPS) Scheme

(ii) Fuel wood and Fodder Project Scheme

(iii) Non-Timber Forest Produce Scheme

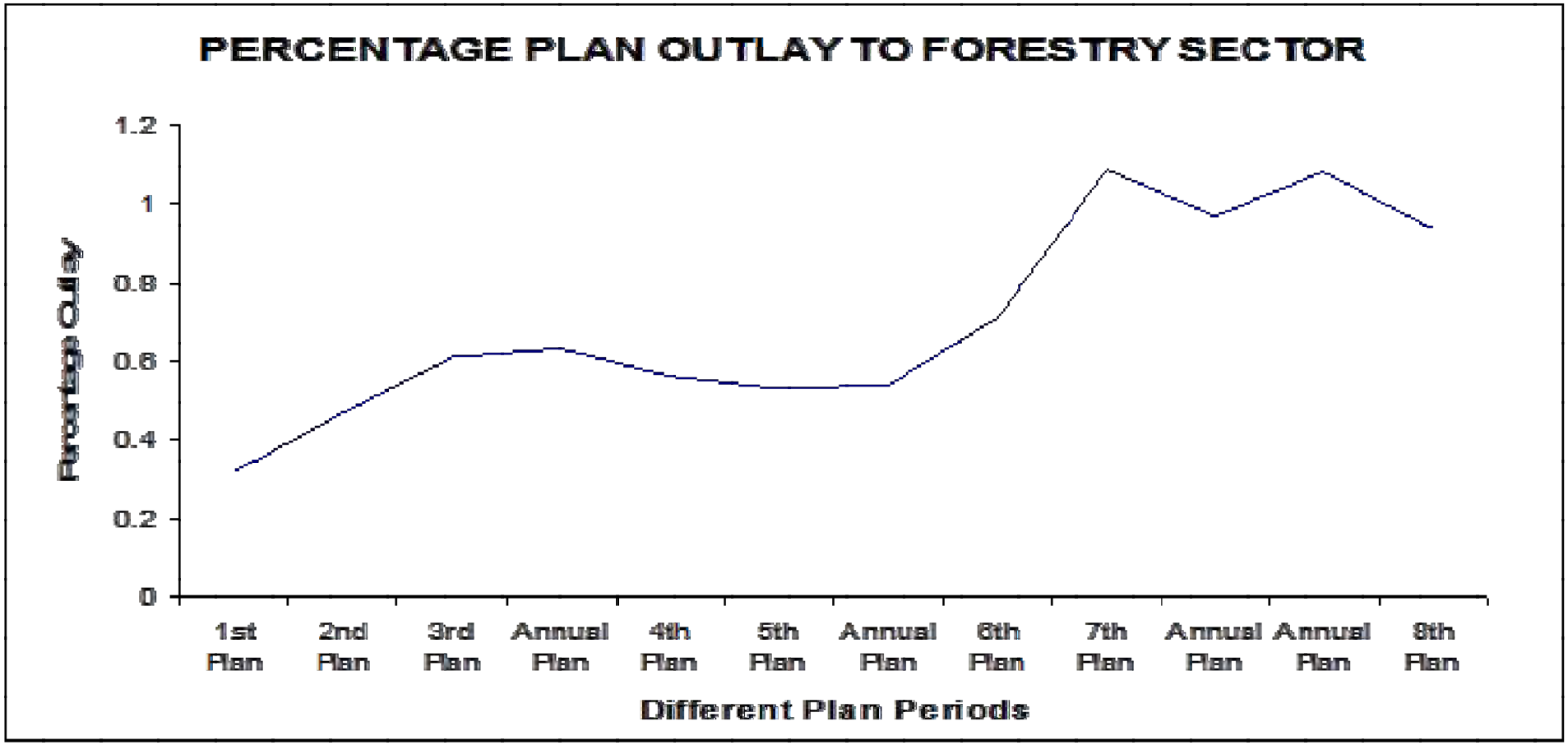
(iv) Grants-in-Aid Scheme

(v) Encouraging NGOs for taking up Afforestation and building upon peoples' movement.

Table: 10.3 INVESTMENTS IN FORESTRY SECTOR

Plan/Year	Total Plan		Agriculture Plan		Forest and Wildlife Plan		Forest Outlay
	Outlay	Actual	Outlay	Actual	Outlay	Actual	(% of total)
First Plan (1951-1956)	23 780	19 600	3 540	2 900	76	85	0.32
Second Plan (1956-1961)	45 000	46 720	5 100	5 490	212	212	0.47
Third Plan (1961-1966)	75 000	8 577	10 860	10 890	458	459	0.61
Annual Plan (1966-1969)	66 250	66 225	10 370	11 070	419	421	0.63
Fourth Plan (1969-1974)	159 020	157 790	27 280	23 200	894	938	0.56
Fifth Plan (1974-1979)	393 220	394 260	47 660	48 650	2 088	2 088	0.53
Annual Plan (1979-1980)	126 010	121 760	18 150	19 960	683	683	0.54
Sixth Plan (1980-1985)	975 000	1 092920	125 390	152 010	6 924	NA	0.71
Seventh Plan (1985-1990)	1 800 000	2 187 300	222 330	315 090	18 519	19759	1.09
Annual Plan (1990-1991)	647 170	583 690	91 420	85 420	6 299	5 764	0.97
Annual Plan (1991-1992)	723 170	647 500	100 580	90 600	7 831	7 153	1.08
Eight Plan (1992-1997)	4 341 000	-	636 420	-	40 820	39 930	0.94
Ninth Plan (1997-2002)	-	-	-	-	68 228		
Total up to 8th FYP	**9 374 620**		**1 299 100**		**85 295**		**0.9**

Source: Developing Wastelands, Ministry of Environment and Forests


PERCENTAGE PLAN OUTLAY TO FORESTRY SECTOR
Percentage Outlay
1.2
1
0.8
0.6
0.4
0.2
0
1st Plan
2nd Plan
3rd Plan
Annual Plan
4th Plan
5th Plan
Annual Plan
6th Plan
7th Plan
Annual Plan
Annual Plan
8th Plan
Different Plan Periods

10.11 THE NINTH PLAN (1997-2002)

The main objectives of this plan are:

- Empowering the people through information generation, dissemination and access
- Involving the Industry in both the private and the public sector.
- Integrating environment with decision making through valuation of environmental impacts; evolving market based economic instruments as an alternative to the command and control form of environmental regulation; appropriate pricing of natural resources based on their long-term marginal cost of supply; appropriate fiscal reforms and natural resource accounting.
- Evolving the rights for common property resources.
- Inter-sectoral coordination and cooperation.
- Ensuring scientific and technological inputs.
- Participation of people (particularly women) in the management and sharing of usufruct through Joint Forest Management.
- Involvement of NGOs for awareness building and as an interface between forest department and the people would be encouraged during the Ninth Plan.

10.11.1 The main emphasis is to be given to the participation of people in the management and sharing of usufruct through Joint Forest Management. The involvement of NGOs is also sought for building awareness and acting as an interface. The priority is also to be given to the development of villages in and around the forest areas. It is also decided to take up the survey and demarcation of existing forest area during the Ninth Plan. Efforts will be made to take advantage of various Employment Generation Schemes of Rural Development Department to supplement funds for plantation activities. Emphasis is also laid down on the research aspects like tree improvement, non-timber forest produce, agro-forestry, alternatives of timber, value addition to the various forest products, etc. The efforts will be made to empower the women by ensuring their involvement from micro-planning stage to implementation and usufruct sharing.

10.11.2 Evaluation of 9th Plan

The programmes/schemes of Ninth Five Year Plan are generally similar to those taken up during the Eighth Plan, such as Integrated Afforestation and Eco-Development Project, Fuel wood and Fodder Project Scheme, Non-Timber Forest Produce Scheme, Grants-in-Aid Scheme, Seed Development Scheme, etc. with greater focus and improved implementation on the basis of the experience gained during Eighth Plan. The Planning Commission had set up a Working Group to examine the prospects of leasing out of degraded forest lands to the private entrepreneurs/Forest Corporations. The main term of reference of the Working Group was to assess the economic, social and environmental feasibility of leasing or otherwise making degraded forest land available to the private entrepreneurs/Forest Corporations. The Working Group has submitted its report and has not recommended leasing of forest land to the private entrepreneurs either directly or indirectly through forest corporations.

10.12 THE TENTH PLAN (2002-07)

The main objectives of this plan are:

* Bringing one third geographical area under the forest cover.

* Adopting watershed approach to develop and maintain the forest cover.

* The livelihood needs of the people living adjoining to the forests would be addressed.

* JFM would be given more thrust for the regeneration of the degraded forests.

* Food for work programme would be extensively implemented in the forest pockets to ensure food security and productive employment.

* Efforts would be taken on protecting the natural forests to have a better carbon trading potential to increase the market avenues for forest protection and management.

* The conservation and protection of the medicinal plants is given priority.

* The bio-diesels coming from plants like Jatropa, pongamia etc., would be promoted to encourage the livelihood opportunities of the rural masses.

* It is also decided to merge all Afforestation programmes under National Afforestation and Eco-development Board (NAEB) into one scheme called 'National Afforestation Programme' and it would be implemented through Forest Development Agency (FDA).

10.13 THE ELEVENTH PLAN (2007-12)

Ministry of Environment and Forests had an approved out lay of 10,000 crores for the 11th 5 year plan, 2007-12 with the following objectives.

(1) In increase forest and tree cover by 5 percentage points.

(2) To attain WTO standards of air quality in all major cities by 2011-12.

(3) To treat all urban waste water by 2011-12 to clean the river waters.

(4) To increase energy efficiency by 20 percentage points.

The Ministry is currently operating thematic schemes in 22 thematic areas These schemes cover the main budgetary requirements for the Ministry. The name of the schemes and their out lays in the 11th 5 year plan and the projected budget out lays (with 20% increase) for the 12th 5 year plan are given in the Table below :

Sl.No.	Name of the Scheme	11h Plan (Rs. In Crores)	12th Plan (Rs in Crores)
	Environment & Ecology		
1	Environmental monitoring and Goverance	216	259.2
2	Poluition Abatement	235	282
3	Research Development for Conservation & Development	250	300
4	Conservation of Natural Resources & Eco-system	600	720
5	Environment Information, Education &	295	354
6	Environmental Management in Heritage,Pilgrimage & Tourist Centres including Taj protection	0.01	0.012
7	International Co-operation Activities	80	96
8	National Coastal Management programme	10	12

9	National River Conservation Plan (NRCP)	2100	2520
	Total Environment & Ecology	**3786.01**	**4543.212**
	Forestry & Wild Life		
10	Grants in aid to F & W L institutions	450	540
11	Capacity Building in Forestry sector	110	132
12	Grigarious Flowering of Muli (melacanna baccifera) Bamboos	37	44
13	Intensification of Forest Management	600	720
14	Strengthening Forestry Divisions	100	120
15	Strengthening of Wild Life Division	150	180
16	Integrated development of wild life habitats	800	960
17	Project Tiger	615	738
18	Project Elephant	81.99	98.388
19	National Afforestation & Eco-development Board (NAEB)	250	300
20	National Afforestation Programme	2000	2400
21	Social Forestry with communities (Panchayat Van Yojana)	900	1080
22	Animal Welfare	120	144
	Total forestry & Wild life	**6213.99**	**7456.788**
	Grand Total	**10000**	**12000**
	Environment, Forest & Wildlife.		

The summery of 11th plan out lay and actual expenditure (Sector wise) is reflected as below .

In Crore

2007-08	Environment	NRCD#	Forest & Wild life	NAEB@	Animal Welfare
Out lay	259.16	340	371.61	359.23	21
Expenditure	224.22	320.94	361.73	422.05	20.79

In Crore

2008-09	Environment	NRCD#	Forest & Wild life	NAEB@	Animal Welfare
Out lay	261.38	340	475	398.62	25
Expenditure	240.42	326.12	520.87	370.71	24.9

In Crore

2009-10	Environment	NRCD#	Forest & Wild life	NAEB@	Animal Welfare
Out lay	291.42	577.33	599.63	386.62	25
Expenditure	253.03	426.69	572	354.97	24

In Crore

2010-11	Environment	NRCD#	Forest & Wild life	NAEB@	Animal Welfare
Out lay	480.17	751.71	592.12	352	24
Expenditure	465.87	755.02	582.92	353.93	23.84

In Crore

2011-12	Environment	NRCD#	Forest & Wild life	NAEB@	Animal Welfare
Out lay	621.21	751.71	573.08	330	24
Expenditure	465.42	421.94	579.84	334.92	23.32

In Crore

Total (2007-12)	Environment	NRCD#	Forest & Wild life	NAEB@	Animal Welfare
Out lay	1913.34	2760.75	2611.44	1826.47	119
Expenditure	1648.72	2250.71	2617.36	1836.58	116.85

National river conservation directorate (NRCD) and National Plan for Conservation of Aquatic Eco-systems.

@ National Afforestation & Eco-development Board (NAEB), National Afforestation Programme (NAP) and Green India Mission (GIM).

10.14 Twelvth Five year Plan(2012-17)

The twelfth plan document, approved by the National Development Counsil on 27th December,2012 has the basic theme of " Faster, Sustainable, and more inclusive growth" and lays out major targets, keey challenges to meet them and the broad strategy that may be followed to achieve the stated objectives. Ministry of Environement & Forests has been allocated an out lay of 17,874 crores which works out to 0.41% of the plan allocation across various kMinistries/Departments as against a share of 0.42% or Rs. 9231 crores in the Eleventh Plan. At current prices, the enhancement in this Ministry's twelvefth plan out lay over the Eleventh plan out lay, however, works out to 109%.

Twelfth plan has identified 13 monitorable socio- economic targets for this kMinistry. These targets are as follows :

= **Environment & Climate change**

Assess and remediate 12 identified contaminated sites with potential from ground water contamination by 2017.

- Clean 80% of critically polluted stretches in rivers by 2017 and 100% by 2020.
- States to meet National ambient air quality standards in urban areas by 2017.
- To reduce emission intensity of GDP in line with the target of 20 to 25% reduction over 2005 levels by 2020.

= **Forest and livelihood**

- Greening 5 million hectare under GIM including 1.5 million hectare of degraded lands, Afforestation & Eco-Restoration of 0.9 million hectare of ecologically sensitive areas.
- Technology based monitoring of forest cover, bio-diversity and growing stock including change – monitoring on periodical basis through dedicated satellite by 2017 and establishment of open web-based national forestry and environmental information system for research and public accessibility by 2015.
- Engagement of village green guards/ community foresters for every JFM village by 2016.
- Establish forestry seed bank in forest circles and model nursery in every district with information on public portal by 2014.

- Improve forest productivity and sustainable management of bio-diversity.
- Restore and intensify forest range lands/ grazing land management and establish community grazing land around forest fringe villages.
- Build capacity of JFMCs for management of forest resources including eco-tourism.
- Revive seed orchards and silvilculture plots for various forest types of the Country as well as for enlisted species under MFPs/NTFPs including genetic improvement and establishment of clonal orchards.

= **Wild life, Eco-tourism & Animal Welfare**

- 20% of veterinary professionals in the Country will be trained in treating wildlife.
- Integrated Eco-tourism district plans covering 10% of all potential protected areas by 2017.
- Promoting participation of private sector, civil societies, NGOs, and Philanthrotists in animal welfare.
- Reducing and managing human-wildlife conflict.
- Commercialisation of permissible marine products rich in poly unsaturated fatty acids, vitamins and so on.
- Promotion of eco-tourism and participatory eco-development support livelihood of local population.

= **Eco-system & Bio-diversity**

- Restore 0.1 million hectare of wet lands/ inlandlakes/water bodies by 2017.
- Mapping and preparation of bio-diversity management plans for deserts, coastal areas, important coral zones, wet lands, mangroves and show on to be completed by 2017.
- Develop national targets and indicators related to bio-diversity and support actions to strengthen implementation of biological diversity act, 2002 and ensure bio-safety for economic and social development of local communities.
- Assess coastal bio-diversity resources, ensure sustainable management, restoration of mangroves, coral reefs and wet lands and support livelihood.

- Assess coastal bio-diversity resources, ensure sustainable management, restoration of mangroves, coral reefs and wet lands and support livelihood.

The summery of 12th plan out lay and actual expenditure (Sector wise) is reflected as below .

In Crore

2012-13	Environment	NRCD#	Forest & Wild life	NAEB@	Animal Welfare
Out lay	580.42	771.8	606.09	446.49	25.2
Expenditure	388.13	421.02	577.81	224.08	25.09

In Crore

2013-14	Environment	NRCD#	Forest & Wild life	NAEB@	Animal Welfare
Out lay	614.37	619.8	719.14	451.49	25.2
Expenditure	349.59	505.79	563.35	285.62	5.73

In Crore

2014- 15	Environment	NRCD#	Forest & Wild life	NAEB@	Animal Welfare
Out lay	678.01	632.79	713.11	432.89	23.2
Expenditure					

10.15 PLAN EXPENDITURE IN ATHAMALLIK DIVISION

10.15.1 The information on the expenditure in different five year plans is available from the 6th plan onwards and the head wise expenditure in different plan periods is given in **Table: 10.4** and the trends are depicted in the **graph**. The investments made are generally very low and most of the priority areas of the forest management have not been taken care of.

Table No: 10. 4 EXPENDITURE IN DIFFERENT PLAN PERIODS IN ATHAMALLIK DIVISION		
Name of the Five year Plan	Work head	Amount in Rs
1980-81 to 1984-85 (6th Plan)	Conservation and Development (Forest Consolidation) 4 Demarcation	16000
	102-Farm Forestry	26999.41
	513- Capital outlay	
	A. Economic Plantation	358183
	Minor Work	
	a) Road	114000
	b) Building	83000
	Advance Plan Assistance	
	Rehabilitation of degraded Forest	20000
	Reforestation of degraded forests	9993
	N.R.E.P (R.D.F)	105890.63
	D.R.D.A (E.R.R.P)	131450
	314- C&D-N.R.E.P	
	(I) Farm Forestry	7000
	(ii) Economic Plantation	5597.4
	Afforestation of degraded Forest	82300
	289- Flood relief	
	(a) Road Repair	60000
	(b) Building repair	45000
	Drought assistance	
	1. R.D.F (Trench)	5000
	2. R.D.F (Gap filling)	111482
	3. Road Repair	21842
	4. Cleaning of teak plantation	5000
	5. Fire Protection	1500
	6. Maintenance of Boundary line	6000
	7. Creation of New Forest	67000
	8. Preplanting operation for the plantation damaged due to drought	25218
	9. Water harvesting structure	21442
	Funds received from Dept. of Forest.	
	(I) Creation of new Forest	72267
	(ii) RDF	127929
	(iii) Pre-planting operation (damaged due to drought)	20940
	(iv) Water harvesting structure	3064
	(v) Improvement of Forest road	160000
	Total	1714097.44

7th Plan (1985 to 1990)	101- Forest development and consolidation	
	1. Demarcation	8000
	2. Other charges	24000
	102- Farm Forestry	26728
	513- Capital outlay	
	A. Economic Plantation	1304032.79
	Minor work	
	a. Road	45000
	b. Building	141000
	Salvaging of timber	10381.7
	N.R.E.P	565929.42
	R.L.E.G.P	1096158.61
	Total	3221230.52
(1990-1991)	101- Forest Development and consolidation demarcation	14000
	102- Farm Forestry	
	4406- Capital outlay	
	A. Economic Plantation	294370
	02. Environment Development of National park Tiger census	2000
	Total	310370
(1991-92)	101- Forest Development Consolidation and Demarcation	7500
	4406- capital outlay	
	A. Economic plantation	393000
	02- Environment Dev. National park (Tiger census)	5999.99
	J.R.Y	307248.58
	Total	713748.57

1992-93 to 1996-97 (8th Plan)	101- Forest development consolidation and demarcation	74495
	4406- Capital outlay	
	A. Economic Plantation	1182544.91
	R.D.F	193780
	070- Communication building -	
	Minor work	345000
	02- Environment Development of National Park (Tiger census)	29750
	J.R.Y	107725.38
	Silvicultural operation of bamboo	52500
	J.F.M (Micro plan)	468126
	Total	2453921.29
1997-98 to 2001-202 (9th Plan)	Promotion of Raising of economic species	10700
	Minor works Roads & Building	89804
	A. Economic plantation	341320
	R.D.F	998910
	J.F.M (Micro plan)	65450
	2000000- Other charges	75420
	3330-Elephant Management project	106875
	Total	1688479
2002-2007 (10th Plan)	0003210- A. Economic	573654.9
	0003210- R.D.F	40000
	Minor works (b) Building	30000
	0028440- Assisted natural regeneration	105000
	2000000- other charge	238780
	0003330- Elephant management project	137899.75
	Forest Deposit SGRY (D.R.D.A)	1503657.25
	2245, RACN food for work	893141.8
	SGRY Economic plantation	1130000
	Fire protection	10000
	8443- Forest Deposit Teak Nursery	129894.4

	E.A.S (D.R.D.A)	291845
	Tiger Census	9000
	Jagannath vana -Prakalpa	1579518.6
	Salvage operation	25900
	Total	6698291.7
2007-2012	**2011-12**	
(11th Plan)	2406-State Plan-13th F.C Block Plantation outside forest area-40 Ha.	3030000
	2406-State Plan-13th F.C Block Plantation Inside Block Plantation- 50 Ha.	3787500
	2012-13	
	2406-State Plan-13th F.C Block Plantation outside forest area-40 Ha.	240000
	2406-State Plan-13th F.C Block Plantation Inside Block Plantation- 100 Ha.	1209920
2012-17	**2013-14**	8295921
(12th Plan)	2406-State Plan-13th F.C Block Plantation outside forest area-40 Ha.	
2017-20		0
(13th Plan)		
Total		**36793905.07**
Source: DFO, Athamallik		

The activities taken up in Athmallik Forest Division in the preceding Five-year plan i.e 11th plan(2007-12) & (2012-17) is furnished as below.

Year	Name of the Scheme	Allotment received (in Rs.)	Expenditure incurred (in Rs.)	Activities undertaken
1	**2**	**3**	**4**	**5**
2006-07	2059-Public work-Non-Plan	1160000	1160000	Maintenance of Building (Office+Res.)
	2406-Forestry & Wildlife-Non-Plan	1945000	1944999.1	Maintenance + Road+Building+ Planting etc.
	4406-COL on Fry and W.L-Non-Plan	3852000	3851999.5	CATP, RDF,VHF tower, staff qtr. etc.
	4406-COL on Fry and W.L-State Plan	0	0	0
	2406-Fry and W.L-State Plan	3000900	2970900	TWC, POL, Silvicultural Resource etc.
	2406-Fry and W.L-Central Plan	50000	50000	W.L protection, elephant management etc.
	2406-Fry and W.L-C.S.P	110000	110000	Road repair, boundary pillar etc.
	NREGS	0	0	0
	8443-Civil Deposit-109-Forest Deposit	0	0	0
2007-08	2059-Public work-Non-Plan	680000	680000	Building repair (Office+Res.)
	2406-Forestry & Wildlife-Non-Plan	4282660	4282660	Maintenance & Repair, Minor work Road & Buildings, Showing & Planting & regeneration etc.
	4406-COL on Fry and W.L-Non-Plan	2108500	2108500	Afforestation work, CATP & other forestry etc.
	4406-COL on Fry and W.L-S	678000	677999.7	Construction of building, eco plantation, RDF, soil & farm forestry etc.

	2406-Fry and W.L-State Plan	5274330	5274330	W.L Compassionate grant.
	2406-Fry and W.L-Central Pl	300000	300000	Elephant Census, Rewarded for information, Anti poaching etc.
	2406-Fry and W.L-C.S.P	902500	902500	Water storage tank, Boundary maint., office equipments etc.
	NREGS	0	0	
2008-09	2059-Public work-Non-Plan	480000	480000	Maint. of Building (Office+Res.)
	2406-Forestry & Wildlife-No	4448460	4448460	Forestry & communication, Repair & Road & Building, Showing & planting etc.
	4406-COL on Fry and W.L-N	4623380	4623380	Maintenance of CATP, Block Plantation etc.
	4406-COL on Fry and W.L-S	500000	500000	Non tribal communication & building, eco-plantation, soil & farm forestry etc.
	2406-Fry and W.L-State Plan	6979700	6979700	P.W.C, R.W.C, B.W.C, P.O.L, W.L preservation etc.
	2406-Fry and W.L-Central Pl	510000	510000	W.L preservation, elephant management, tribal area sub plan etc.
	2406-Fry and W.L-C.S.P	747000	747000	Non tribal, fire line maintenance works etc.
	MGNREGS	0	2755055	
	CAMPA	0	0	

2009-10	2059-Public work-Non-Plan	1140000	1140000	Maintenance of building (Office & Res.)
	2406-Forestry & Wildlife-No	3812330	3812330	Repair of Road & Building, Regeneration, planting, protection from fire etc.
	4406-COL on Fry and W.L-S	-	-	
	2406-Fry and W.L-State Plan	7132520	7132520	Water body, OBDP, POL, RWC,PWC, BWC etc.
	2406-Fry and W.L-Central Pl	100000	100000	Elephant management, W.L preservation, TASP etc.
	2406-Fry and W.L-C.S.P	-	-	
	MGNREGS	-	2901538	
	CAMPA	-	-	
2010-11	2059-Public work-Non-Plan	720000	720000	Maintenance of building (Office & Res.)
	2406-Forestry & Wildlife-No	2569330	2569330	As above
	4406-COL on Fry and W.L-S	494000	494000	Social & Farm Forestry, R.D.F, Forestry etc.
	2406-Fry and W.L-State Plan	11003330	10953350	Elephant management, strengthening of V.S.S, Protection from fire etc.
	2406-Fry and W.L-Central Pl	383330	383330	Water body, compassionate grant, W.L preservation etc.
	2406-Fry and W.L-C.S.P	503500	503500	Contgency, Forestry & W.L, Revolver, mobile phone etc.
	MGNREGS		1236710	
	CAMPA	14797000	13683920	Construction of building, tube well etc.

2011-12	2059-Public work-Non-Plan			
	2406-Forestry & Wildlife-No	2849580	2849580	Maintenance of Builing (Office & Res.)
	4406-COL on Fry and W.L-S	883000	883000	Repair of Road& Building, Regeneration cleaning etc.
	2406-Fry and W.L-State Plan	2088300	2088300	Farm Forestry, R.D.F, OBDP,13th F.C, S.S.O timber etc.
	2406-Fry and W.L-Central Pl	40000	40000	Tribal area sub plan, elephant management etc.
	2406-Fry and W.L-C.S.P	1426500	1426500	Forest fire control, 01 forestry, construction of barrack etc.
	MGNREGS		2006146	
	CAMPA	16087000	15492583	Construction of building & tube well
2012-13	2059-Public work-Non-Plan	930000	930000	Maintenance of Builing (Office & Res.)
	2406-Forestry & Wildlife-No	2612225	2612225	Repair of Road & Building, protection from fire, showing & planting etc.
	4406-COL on Fry and W.L-S	1567800	1567800	Avenue Plantation, Farm Forestry, maintenance of permanent nursery
	2406-Fry and W.L-State Plan	19057664	19057664	OBDP, FCDR, T.W.C, S.S.O timber & Bamboo etc.
	2406-Fry and W.L-Central Pl	275000	275000	Elephant management, anti poaching squad etc.
	2406-Fry and W.L-C.S.P	270625	270625	Camp equipment, forest protection squad etc.
	MGNREGS		3391290	
	CAMPA			

2013-14	2059-Public work-Non-Plan	600000	600000	Maintenance of Builing (Office & Res.)
	2406-Forestry & Wildlife-No	2061000	2061000	Repair of Road & Building, showing & planting, regeneration department working of timber & bamboo etc.
	4406-COL on Fry and W.L-S	-	-	
	2406-Fry and W.L-State Plan	8825362	8825362	Solar fencing, sign board, tube well, compassionate grant etc.
	2406-Fry and W.L-Central Pl	283000	283000	Elephant management project
	2406-Fry and W.L-C.S.P	218950	218950	Fire line maintenance, V.S.S other charges etc.
	MGNREGS		31575153	
	CAMPA			

2014-15	2059-Public work-Non-Plan	500000	500000	Maintenance of Builing (Office & Res.)
	070-Communication & Building-Non-Plan	7280	7280	Conduct of Examination of Forester & FGs etc.
	0851-Maintenance & Repair Work	2,30,000.00	2,30,000.00	Construction of Building & repair work
	1904-Verious Developmental Work	10,00,000.00	10,00,000.00	Repair of Building & Roads
	onservation Devt. & Regeneration-1012-C	3,41,000.00	3,41,000.00	Construction of Boundary pillar,purchase of GPS,Fire equipments etc.
	13th F.C. grant-78378	22,45,000.00	22,45,000.00	Fire protection squad, stall feeding to graziers, Building a cadre of community youth.
	13th F.C. grant-78379	40,47,080.00	40,47,080.00	Maintenance of 1st year,2nd year and 3rd year Block plantations
	13th F.C. grant-78124	31,45,000.00	31,45,000.00	Distribution of seedlings7,40,000 nos under Increasing tree cover out side Forest.
	105-Forest Produce	2,00,000.00	2,00,000.00	Transportation of seized timbers
	111/922-Deptl. Working of timber coupes & depots	2,92,000.00	2,92,000.00	Survey & Demarcation of Timber and Bamboo coupes
	22-2406-02-110-0484-29016-918-010-Compassionate grant	8,07,330.00	8,07,330.00	Payment of compassionate grant to the victim.
	2726-state plan	10,86,794.00	10,86,794.00	Protection squad,elephant squad, Fire fighting squad,eradication of invasive weeds,creation of water body etc.
	Total-Avenue	22,73,805.00	22,73,805.00	Avenue plantation
	Total-Agro Forestry	35,40,000.00	35,40,000.00	Free distribution of seedlings to the beneficiaries
	Total-Maint. 0f permanent Nursery	25,97,274.00	25,97,274.00	Maint. Of 4.00 lakh seedlings
	Total-O.B.D.P.	4,44,770.00	4,44,770.00	Maintenance of 2012-13,2013-14,2014-15 & planting of 20 Ha in Jhurikata K.F.

	2399-IFM-Construction & Dev.	6,82,353.00	6,82,353.00	Fire line- 50 Km.,Incentive to local VSS,pillar posting in Northern R.F, Purchase of Camp equipmentsetc.
	2829-Rehabilitation of degraded Forests, Increasing Green Cover in the State.	5,00,000.00	5,00,000.00	Regeneration cleaning in Dantarikhol R.F. comp No. 5 over an area of 100 Ha.
	Popularisation of Fuel efficient Chullas	8000	8000	Supply of 20 Nos of chullas in Dhandatopa Range.
	Central plan: 22-2406-02-110-0361-20002-central plan.	2,83,000.00	2,83,000.00	Engagement of 5 watchers & purchase of cracker
	Central plan: 22-2406-02-789-0361-20002-central plan	81000	81000	Engaged 1 squad in Bamur Range & 1 squad in Madhapur Range.
	National Bamboo Mission.	11,70,000.00	11,23,465.00	Planting,soil workimg & manuring.
	CAMPA APO-2014-15	5,55,81,000.00	4,75,53,279.00	Wages of protection Squad, Wages of Data entry operator, Wages of Driver, Maintenance of Fireline, Creation of Water body, Plantation work etc
	CAMPA APO-2014-15(WL)	75,81,100.00	72,61,100.00	Creation of water body, Old tank renovation, Payment of Compassionate grant, immunaization of cattle, invasion of weeds etc.
	MGNREGS	2,18,63,924.00	1,93,42,934.00	Plantation work.
	FDA	15,74,957.00	14,00,700.00	Plantation work.
TOTAL		**11,49,09,832.00**	**10,38,20,329.00**	

2015-16	2059-Public work-Non-Plan	800000	800000	Repair of FRH at Korab,Takoba,Division Office, Range Office ,Section/Beat office.
	78124-Working Plan.	1,50,000.00	1,50,000.00	Purchase of 2 Nos of GPF & implementation of Working Plan.
	21064-Repair of Building	3,00,000.00	3,00,000.00	Repair of ACF Qr,Division Office & clerk Qr
	21094-Repair of Road	8,67,000.00	8,67,000.00	Forest Road repair at Dhandatopa-Bipradihi Forest Road 15.5 KM in Hatidhara R.F.
	21019-Maintenance of Boundary,	1,50,000.00	1,50,000.00	Maintenance of Boundary Pillar in Hatidhara R.F.
	22035-Regeneration.	25,,000.00	25,,000.00	Regeneration cleaning in Handapa R.F Comp No. 43 to 48.
	37109-Other Works.	1,50,000.00	1,50,000.00	Payment of daily wages driver,Division Office sweeper.
	105-0334-Drift & Waif wood.	50,000.00	50,000.00	Transportation of seized timbers
	105-0513-H.Forest Produce.	1,12,000.00	1,12,000.00	Transportation of seized timbers
	111/0922-Deptl. Working of timber coupes & depots	5,10,000.00	5,10,000.00	Marking of Timber coupes 2015-16 and payment of watchers.
	2399-H-Intensification	5,60,000.00	5,60,000.00	Payment of Squad,Purchase of camp equipments,survey & demarcation of Mahindrapur R.F & repair of 70 Nos of Boundary Pillars.
	2118-Critically endangered Squad.	7,50,500.00	7,50,500.00	Protection squad,in Dhandatopa Range,Purchase of POL.
	110-2314-Elephant Management Plan.	3,82,760.00	3,82,760.00	Elephant census,engagement of watchers,Cost of POL.

	789-2314-Equipment to prevent depredation activities.	1,00,000.00	1,00,000.00	Purchase of 1 Nos of Camera,04 Nos of GPS.
	796-2314-Publication of IEC material on wildlife depredation	10,000.00	10,000.00	Awerness on Forest Fire under Madhapur Range.
	110-2726-Management & Development of Elephant corridor-20002-other charges	8,51,750.00	8,51,750.00	Engagement of elephant squad, Fire Fighting Squad,iradication of invasive weeds,watch & ward of plantation etc.
	789-2726- Management & Development of Elephant corridor-20002-other charges	42,00,000.00	42,00,000.00	Digging of 10 Kms trench in Khajhurijharan-Bhojpur under Madhapur Range,purchase of sewing machine and distribution to Bharatpur & Manarbeda VSS,Construction of Hording in Nuagaon-Bareni elephant corridor.
	796-2726- Management & Development of Elephant corridor-20002-other charges	21,50,000.00	21,50,000.00	Construction of watch tower at Nuagaon R.F. Compt. No. 3, Creation and renovation of Water body.
	102-Monitoring & Evalutaion Work.	21,000.00	21,000.00	Monitoring & Evaluation Work.
	Total-Agro Forestry	50,00,000.00	50,00,000.00	Raised 7,40,000 seedlings and distributed during 2015-16 & 500000 seedilings for distribution during 2016-17.
	102-Total-O.B.D.P	6,00,260.00	6,00,260.00	Maintenance of 2013-14 & 2014-15 plantations, plantation of 20 Ha at Nishanipathar K.F and preplanting operation in Kusumkuhuri K.F

	102-Total-Avenue	26,78,800.00	26,78,800.00	Maintenance of 2012-13, 2013-14 & 2014-15 plantations, plantation of 15 RKM in Ambapal-Jharabereni Road and preplanting operation for 2016-17.
	Permanent Nursery-	10,98,000.00	10,98,000.00	Raising 200000 seedlings for 2016-17 plantation.
	789-Fuel efficient Chullas	10,000.00	10,000.00	Supply of 20 Nos of Smokeless Chullas in Puleswar village of Athmallik Range.
	789-Sacred Groves	3,50,000.00	3,50,000.00	Protection of deities from desecration and vargaries of nature
	3024-21168-Farm Forestry Nursery	27,75,000.00	27,75,000.00	Raising of 7,40,000seedlings for distribution.
22-2406-02-110-1571-20002-Compassionate g		18,25,870.00	18,25,870.00	Compassionate payment to the victims
	Central plan:			
	2-2406-02-110-0361-20002-Other Charge	4,49,630.00	4,49,630.00	POL,purchase of 2 Nos of F
	National Bamboo Mission.	6.79,200.00	1,88,880.00	Plantation work.
	CAMPA APO-2015-16	4,21,73,000.00	1,39,99,371.00	Wages of protection Squad, Wages of Data entry operator, Wages of Driver, Maintenance of Fireline, Creation of Water body, Plantation work etc
	CAMPA APO-2015-16 (WL)	49,00,000.00	5,40,000.00	Creation of water body, Old tank renovation, Payment of Compassionate grant, immunaization of cattle, invasion of weeds etc.
	MGNREGS	2,94,31,172.00	82,62,110.00	Plantation work.
	FDA	21,85,820.00	21,85,820.00	Plantation work.
	JVP	3,06,000.00	3,06,000.00	Plantation work.
TOTAL		**10,66,02,762.00**	**5,24,09,751.00**	

10.15.2 The total expenditure in the entire **6th plan** period is only **Rs.17.14 lakhs**, of which the major amount is spent on Economic Plantation, road repair, NREP works, RDF and trench work etc. The expenditure incurred in the **7th plan** period is **Rs. 32.21 lakhs** of which the major share of expenditure is towards NREP and RLEGP works. In the **8th plan** the total expenditure incurred is **Rs. 24.54 lakhs**, in this the major expenditure is on Economic Plantation and Jawahar Rojgar Yojana. The expenditure incurred in the **9th plan** period was again very low, it is only **Rs.16.89 lakhs** and this amount was spent on Economic Plantation, RDF works and the elephant management etc. In the **10th plan** period, the major expenditure has gone for implementation of SGRY (Sampoorna Gram Rojgar Yojana), Food for Work Programme (FFW) and Jagannath Van Prakalpa (JVP) plantations etc. The investment position is slightly improved in the 10th plan period, in 6th Plan and 9th Plan the total expenditure in the entire five years has not crossed even Rs.20 lakhs. It means that on an average less than Rs. 4 lakhs are spent in the entire forest area of the Division. The many important stated objectives of the different plans are also not percolated down to the division level. The expenditure on fire protection is very meager, on the other hand it should have been a major activity of the Division. The amount spent on road repairs is also very low except in the 6th plan period. There are no investments on soil and moisture conservation measures, Bamboo working, silvilcultural working of the forests of the Division till 10th plan period. There is slight investment in these sectors during 11th and 12th plan period which need to be enhanced. Most of the time the stated objectives of the different Plans have not percolated down to the Division. Works like Forest Development Agencies (FDAs), JVP etc have been started. This is a good sign for the improvement of people living in the forest fringe villages which helps in better management of the forests.

10.16 Intersectoral Programmes :

Resource allocation under major sector for the year 2012-13 of Athmallik Civil Sub-Division is furnished in **Table. No. 10.5** as follows.

Table. No. 10.5 Resource allocation under major sector for the year 2012-13. (In Lakhs)				
Sl. No	Sector of development	Athmallik Block	Kishorenagar Block	Athmallik NAC
1	Agriculture & allied services.	309.6	270.9	
2	Rural Development.	738.72	646.38	
3	Special areas programmes.	203.52	178.08	
4	Irrigation.	210	183.75	
5	Energy.	104.88	91.77	
6	Industry & minerals.	20.4	17.85	
7	Transport.	1494.24	1307.46	
8	Science & Technology.	78.96	69.09	
9	General economic service.	99,60	87.15	
10	Social services	3364.32	2943.78	
	TOTAL:	**6624.24**	**5796.21**	**637.28**

CHAPTER-11

PAST STSTEM OF MANAGEMENT

11.1 General history of the forests :

11.1.1 There is no much information available on the forest management and conservancy in Athamallik Division prior to 1919. The capital of the Athamallik State was situated at Handapa. The demarcation of forests commenced in 1919. There was extensive shifting cultivation in the Northern block. The Panchdhar hills have good forest growth on the northern aspect. The timber used to be extracted from these forests and transported to Cuttack by river.

11..1.2 The western end of Northern block was worked out by the subcontractors of Bengal Timber Trading Company in 1902. J.C. Mukherji of Sambalpur was one of the subcontractors. They worked in compartment No. 4, 5, and 6 of Northern block. There were also some business transactions of Sal longs in the south east of the State, near Taranda and Bipradihi and the produce used to be transported to Cuttack by few contractors like Chintamani Satpathy.

11.1.3 The state was visited by Agency Forest Officer, Mr. G. M. Cooper in 1919. He selected the areas suitable for reservation and gave instructions for survey and demarcation. This survey took long time of nearly 6 years due to shortage of staff and funds and it was completed in 1926. Since low paid and incompetent surveyors had conducted the survey, it became necessary to resurvey the entire area in 1940-41. The forests used to be managed with the inspection note of Mr. Cooper till the preparation of first Working Plan in 1929.

11.1.4 Rough enumeration was initiated in 1919 in Hatidhara, Talaipathar, Northern and Dantarikhol blocks and the results were used to fix the yield at 2400 Sal over 5' girth in Hatidhara, Northern, 2000 Sal of 4.5' girth in Talaipathar in a scheme prepared in 1924 -1925. In this scheme the felling was prescribed for Asan and Kurum in Hatidhara. In 1928 –29, special emergency felling were made to meet the local unforeseen financial difficulties of the State. The yield of Hatidhara is increased to 3000 trees. The financial returns were not very encouraging due to unsoundness of the trees.

11.2 Past system of management and their results :

The first Working Plan for the Reserved Forests of Athamallik Division was prepared by Dr. H.F. Mooney in 1928 for 20 years i.e. from April 1929 to March 1949.There were 3 Working Circles prescribed in this plan. After the preparation of the first Plan, it was realized that earlier revision of the said plan was desirable. As a result, the second Working Plan prepared by the same author which became operational form 1st October 1946.There were five Working Circles prescribed in this plan. Teak Plantation Working Circle and Protection Working Circle were added apart from Selection, Coppice and Bamboo Working Circles of the previous plan. This plan was written for the period 1946-61 and extended up to June. 1965. The third Working Plan was written by Sri S. B. Das for the period of 1965-85.In this plan there were 7 Working Circles. The Khair Working Circle and the MFP Working Circle were added new. This Plan was revised by Sri Dinesh Singh in 1985 and his plan was in vogue from 1985-2005. He proposed 6 Working Circles. The details of the different Working Plan prescriptions and their implementation are discussed in detail below.

11.2.1 FIRST WORKING PLAN OF DR. H.F.MOONEY (April 1929-March-1949)

In this Plan there were 3 Working Circles.

1. High Forest Working Circle
2. Coppice with Standard working Circle
3. Bamboo Working Circle

11.2.1.1 High Forest Working Circle:

Northern, Talaipathar, Hatidhara Blocks were allotted to this Working Circle, each of them forming a felling series. Felling cycle of 30 years was fixed. Exploitable girth was fixed 5 ½' in Hatidhara block and 4 ½' in Talaipathar, Northern blocks. The yield prescribed was 3000 Sal in Hatidhara, 3500 Sal in Northern, 2000 Sal in Talaipathar. Subsequently the yield was modified in Hatidhara and Northern in 1937 to 3500. In Hatidhara the yield for Asan and Kurum were also fixed at 3000 and 80 respectively at 6 ft. girth. In the war (1940-45) an additional marking of 10,000 Sal was made in Northern block. Besides main fellings, improvement felling, thinning and climber cuttings were also prescribed.

The total outturn of timber was 226,369 cft. in Hatidhara, 85,639 cft. in Talaipathar, 128,462 cft in Northern block. The sawn timber outturn per tree was 3.8 cft. in Hatidhara, 2.2 cft. in Talaipathar, 1.7 cft. in Northern block. The outturn per tree was low due to unsoundness of the timber and the wastage involved in exploiting a forest for sleepers alone.

The prescriptions for thinning and climber cutting were entirely neglected. The silvicultural operations like improvement fellings and cleanings etc were not carried out. This has affected the equilibrium of the forest composition of Hatidhara block, in which the matured Sal trees were removed and the regrowth was affected by mixed forest and bamboo resulting in change of Sal forest to mixed.

11.2.1.2 Coppice with Standard Working Circle.

There were two felling series, Baruni and Guja. The rotation period was initially fixed at 60 years, subsequently reduced to 40 years due to demand from artisans from the west of the State and Boudh. The thinnings were prescribed in the eleventh year. The coppice coupes were to remain closed for grazing for six years after felling.

Guja felling series has never been worked out due to lack of demand, but 860 acres of Baruni had been worked out due to demand from Boudh. After coupe working, cleaning and thinnings were not done.

11.2.1.3 The Bamboo Working Circle :

When the first Working Plan was being written, use of bamboo was not completely known to people. The Bamboo in Athamallik remained mostly unexploited. 4 felling series were constituted covering the whole of Dantarikhol, Bankimundi, greater part of Hatidhara, and some portions of Talaipathar block. A cutting cycle of 4 years was prescribed and simple cutting rules were framed. Though the prescriptions were made, no real work on Bamboo coupes was done until 1941, when a lease was granted to Messer Heilgers & Co. in the north of Hatidhara block. As a result, 2 new felling series (Northern & Southern) were laid down in Kutulsingha and Dantarikhol blocks. In Hatidhara, bamboo continued to be sold to local contractors for supply to Cuttack and to the villagers of the riparian tract on permit. This system had caused a considerable damage to bamboo forest especially the southern aspect towards the river. All most all the clumps in the accessible areas got damaged due to inadequate supervision and control of cutting.

11.2.1.4 Roads

No road construction was provided for in this plan due to shortage of funds and staff. In 1944-45, a beginning was made with the construction of Dhandatopa-Korab, and Jamdoli road based on the note of Forest Adviser, Eastern States. An amount of Rs.8,195/ was spent on Dhandatopa - Kurab section of 8 miles and Rs.92 on Kurab - Jamdoli section. Some improvement works were taken up in Handapa- Gundri -Jharan road in Northern Range by spending Rs.993.

11.2.1.5 Buildings

After 1940, few buildings had been constructed i.e. Forest Rest House at Kurab (1940-41), Range quarters at Handapa (1946-47), Range quarters at Kurab, Madhapur. Till 1940 there was no reasonable accommodations and the staff lived in miserable conditions. So some efforts were made after 1940.

11.2.1.6 Fire Protection

It couldn't be done successfully mainly due to apathy on the part of the forest staff and lack of co-operation from the local people. Lot of damage has occurred annually due to fire.

11.2.1.7 Improvement felling

The improvement felling had not been carried out as per the prescriptions of the Plan. Fellings were done in accessible areas of Northern R.F, leaving inaccessible areas of Hatidhara, Talaipathar where the improvement fellings were mostly required.

11.2.1.8 Plantations

No plantations work was prescribed because there was no staff to carryout plantations. Some experiments have been carried out since 1937-38 with teak and Sissoo in Hatidhara and Talaipathar blocks. Teak was found to be promising wherever plantation was done carefully.

11.2.1.9 There were no stock maps and compartment histories in the 1929 Plan. Subsequently these works were completed in Hatidhara and Talaipathar. The description of compartments was not done properly as it was done by Range officers. The stock maps were prepared on the 2 inch photographically enlarged Survey of India topographical sheets.

11.2.1.10 B- Class Reserved Forests

In order to meet the requirement of villagers, 10 forest blocks were reserved and designated as class B for the exclusive area of the villages. These blocks were demarcated and surveyed in 1947 and were brought within the purview of the second Working Plan

11.2.1.11 *Bambusa arundinacea*

Kanta bans flowered gregariously throughout the state in 1944, and presumably flowered in 1918-19. There was heavy sporadic flowering of *Dendrocalamus strictus* in 1939-40 following which many clumps died in the south-east of the State.

11.2.2 SECOND WORKING PLAN OF DR.H.F.MOONEY (1946-47 to 1960-61)

The second Plan was improvised over the first Plan. Larger forest areas were covered in the plan, including A class and B class reserved forests. First attempt was made to divide large blocks like Northern, Talaipathar and Hatidhara into compartments. Compartment histories, stock maps were prepared. The basis for proposals and prescription were laid down in detail. A reference was made to standard yield tables. Enumeration of growing stock in respect of exploitable species of three feet and above in girth was undertaken in the selection forests for which a shorter felling cycle was adopted for quicker improvement of the crop. A more intensive working was prescribed in the High forest, Coppice and Bamboo forests excluding unsuitable areas, which were kept under protections. A programme for constructions of roads, buildings, wells and repair of boundary pillars was prescribed. Five Working Circles were prescribed in the Plan:

1. The selection working circle (92,494 Ac)
2. The Coppice working Circle (23,432 Ac)
3. The Bamboo working Circle (58, 744 Ac)
4. The Teak plantations working Circle (1500 Ac)
5. The protection working Circle (2, 979Ac)

11.2.2.1 The Selection Working Circle

It covered Northern, Talaipathar and Hatidhara blocks over an area of 92494 acres, each block constituting one felling series with a felling cycle of 15 years. The exploitable diameter for Sal was fixed at 20 inches in Talaipathar, Hatidhara and 18 inches in Northern felling series. The yield was by number of trees, the increment was not taken into account as a possible safeguard. The yield was fixed at 1500 trees in Talaipathar and Hatidhara felling series, and 6000 in Northern R.F. Apart from Sal, felling was prescribed for Asan (200 trees), Kurum & Bija (150), Sissoo (20), Bandhan (50) in Talaipathar felling series. In Hatidhara felling series 500 trees of Asan, 2255 trees of Kurum and Bija, 50 trees of Sissoo, 200 trees of Bandhan were prescribed for removal.

The improvement fellings were prescribed in the year following the main felling. There felling were prescribed mainly with an object of favouring Sal, Bija, Kurum, Mundi and the other more readily saleable species. The climber cutting for every 5th year was prescribed in badly infested areas, especially along some ravines in Hatidhara block. No Goat, Sheep were allowed for grazing, No grazing is permitted in coupes less than 5 year old or in the coupes two years before felling. The number of animal that can graze were limited to one Cow or Bullock per 4 acres and one buffalo per 6 acres.

The Northern & Hatidhara felling series were extensive, large area had to be covered for marking, selection and improvement fellings, thinnings and climber cutting. Hence these operations could not be carried out economically and according to the scheduled time. The compartments were not laid down in the forest though these were marked on the topo map. Their location while carrying out the stock mapping and enumeration must have been only approximate. No management map was prepared. No allotment of areas to coupes was made and their sequence was not prescribed. The layout of coupes was left to the division staff. It leads to irregular size of the coupes, and haphazardness in sequencing. Even the areas worked out during the Plan period were not shown properly on the map.

The 3 felling series were worked under long tern lease with D. N. Datta for the sleeper supply up till 1950. From1950-51 the trees were marked and sold in annual auctions. The Northern felling series has yielded 2 additional coupes besides leaving a worked area equivalent to 3-4 coupes. Similarly in Talaipathar, nearly 2000 acres of area has been left unworked being inaccessible due to lack of road. In prescribing the yield no consideration was made to ensure the future yield and to provide any safeguard, due to which there was deficiency of exploitable sound trees in most of the areas of Hatidhara and Talaipathar blocks.

11.2.2.2 Coppice Working Circle

This included all 'B' class Reserved Forests, whole of Handapa, Guja blocks and the lower slopes of Baruni block. The object of management in this Working Circle was to provide local people with house building and agricultural timber, brush wood, and fuel wood and to improve the quality and stocking of the forest. 13 felling series were formed, one each block, Baruni, Guja, Handapa Ghosar, Kishoreban, Dandarugudi, Kholdangiani, Bindhyabasini, Kadalimunda, Kusumkuhuri, Mahendrapur, Nuagan, and Bijamalhia. The rotation period was fixed at 60 years for Baruni and Handapa, 40 years for the rest of the blocks. The coupes would be felled leaving the standards. The coupes except the standards were to be clear felled as the sequence prescribed in felling table. Thinning and climber cuttings were to be done at an interval of 10 years. The grazing was prohibited in young coupes and restricted in the remaining areas.

The blocks were not divided into compartments in the field. The village enclosures and encroachments in Handapa, Ghosar, Baruni, Bijamalhia and Kusumkuhuri blocks were not shown on the map 'B' class RF blocks, Handapa, West Baruni, "A" class RF blocks were not shown on the maps. There was no management map. The actual selection of coupe areas and their sequence was left to division staff. The coupes were made in haphazard manner without any sequence. In some blocks the coupes were laid on the lower slopes without reaching the ridge. The portions of the coupes were not correctly shown on the map as a result there were mistakes in the demarcation on the ground.

"B" class RFs were mainly intended to cater to the needs of the tenants. Nevertheless, in practice only small quantities of timber, firewood were taken from coupes for the usage of public as their immediate requirement were mostly met through the neighbouring Khesra forests. The remaining produce from the coupes were sold to the contractors in the following year.

Some of coupes like coupes in Guja felling series did not have any demand. In other coupes like in Baruni felling series there was lot of demand and in these coupes rotation period of 60 years was insufficient to meet the increasing demand. The selection of standards was not good except in Handapa felling series. The number of standards retained was less than the prescriptions. In some of the coupes, fruit bearing trees and soft wood species were retained as standards. Cultural and thinning operations were neglected due to want of funds. Fire protection measures were not effective, as a result the growth of the crop was retarded. No plantation work was prescribed, but since 1962-63 suitable worked out coupe areas have been planted on an experimental basis with valuable species like Teak, Gambhar, Semul in Bindhyabasini, Kishoreban, Dandarugudi, Kholdangiani, Kadalimunda, Mahendrapur, Nuagan, East Baruni, West Baruni and Ghosar. In Dantarikhol block, only 8 coppice coupes were worked out, leaving the area for future working.

11.2.2.3 The Teak Plantation Working Circle

The main objective of this working circle was to replace mixed and bamboo forests with teak. The plantation areas were not specified but on an average 100 acres per year were prescribed. It was expected to do 1500 acres of plantation over the entire Plan period. In the planting technique, it had specified 3 weedings in the year of plantation and one weeding in the second year, thinnings in the 9th and 15th year. The plantation areas were to be protected from fire and closed to grazing.

The target of 1500 acre could not be reached, only 86 .9 acres of area could be planted. Very small areas of 1-10 acres could be planted annually and no plantation activity in some years in between. Earlier plantations were not reflected in the maps and compartment history. Hence it was difficult for field identification of plantation sites. Thinnings were neglected and were inadequate in most of the plantation areas. The plantation journals were not maintained properly. No record on growth rate was found, though the growth was good on the whole.

11.2.2.4 The Bamboo Working Circle

It covered an area of 50,424 acres of Hatidhara, Kutulsingha, Dantarikhol, Bankimundi, Kadalimunda and part of Talaipathar blocks. 6 felling series as enumerated below were formed. Felling cycle of 4 years was prescribed. Equiproductive coupes were made as far as possible. Protection against fire and grazing was prescribed.

1. Hatidhara Sapaghari 7128 acres.
2. Hatidhara Kurab 12.431 acres.
3. Hatidhara Southern 18528 acres.
4. Talaipathar 5416 acres.
5. Kutulsingha 1380 acres of Hatidhara, whole of Kutulsingha Bankimundi blocks and village forest.
6. Dantarikhol- whole of Dantarikhol, Kadalimunda blocks and village forest.

Kutulsingha, Dantarikhol, Hatidhara-Kurab felling series had been leased out to Titagarh Paper Mills on long-term basis. The minimum royalty fixed was Rs. 30,000 to 32,500 and the royalty rate was Rs.3/- to Rs. 3.25/- per hundred bamboos. The working by the paper mills was better than that of contractors, though it was much below the expectation. The coupes were not worked out on the higher slopes of the hills, there was over felling in accessible areas and little working in difficult areas.

Coupes in Talaipathar, Sapaghar and Hatidhara were sold to contractors by auction. The working of the contactors was not systematic. Cutting rules were not followed and difficult areas were not worked out. The bamboo extraction by the tenants for local consumption was irregular and considerable damage was done to the clumps. Fire protection measures were not effective.

11.2.2.5 The Protection Working Circle

2779 acres of upper slopes of Baruni block which were considered not suitable for exploitation was allotted to this Working Circle. This area was poorly stocked and denuded. Fellings were prohibited.

Climber cutting was never done. There was no protection from fire and the area used to be burnt almost every year. The area of Protection Working Circle was not marked on the field. Fellings also could not be controlled completely.

11.2.2.6 The Khair Working Scheme

This scheme was made to exploit Khair trees in khesra forests. The exploitable diameter was 18 inches at ground level. 15 equiproductive coupes were made. Out of 15 coupes 9 coupes were worked out. Out of these 9 worked out coupes, 3 were worked departmentally 5 were sold to contractors and one coupe was given to cooperative society. The quality of Katha produced in the coupes widely varied from 100 to 1200 mounds. Large area with scattered trees made the working uneconomical. Sufficient numbers of trees were also not available in some of the coupes. Reserved forest areas containing Khair tees were not included in this working circle.

11.2.2.7 Roads & Buildings

In the Plan period total length of 53 miles 43 chains over 8 forest roads were constructed. Nearly 35 residential buildings, 5 checknaka sheds and 2 other buildings had been constructed in the plan period. Nevertheless, much more needed to be done for reasonable accommodation to forest Guards. Rest Houses at Pathargarh, Gundurijharan and Kutulsingha were planned, but could not be constructed.

11.2.3 1961 OCT TO 1965 JUNE

Dr. H. F. Mooney's plan was to expire on 30th Sep. 1961. The next plan could not be prepared immediately due to heavy pressure of work in Working Plans Divisions, so 1946-61 Working Plan continued till 30th June 1965.

11.2.4 SRI S. B. DAS'S WORKING PLAN.

This Plan was prepared for a period of twenty years (1965-85). This plan had an edge over the previous plan. For the first time the management maps were prepared. So there was no scope for haphazardness in laying out the coupes. In previous Plan, compartments had been constituted only in 4 blocks i.e. Hatidhara, Talaipathar, Northern and Dantarikhol. In this Plan compartments were constituted in 9 more blocks i.e. Handapa, Kutulsingha, East Baruni, west Baruni, Bankimundi, Nuagan Ghosar, Kusumkuhuri and Mahendrapur. Many of the existing compartments in Hatidhara, Talaipathar, Northern and Dantarikhol were reorganized in to smaller compartments. Detailed compartment histories and stock maps were prepared for all the 20 forest blocks. In this plan, there were 7 working circles. 2 new working circles were introduced in this plan i.e. Minor Forest Produce Working Circle and Khair Working Circle.

1. Selection Working Circle (95, 643 acres)
2. Coppice Working Circle (22,248 acres)
3. Plantation Working Circle (8,383.6 acres)
4. Protection Working Circle (5,320 acres)
5. Bamboo Working Circle (55,273 acres)
6. Khair Working Circle (9,256 acres)

11.2.4.1 Selection Working Circle

The 3 larger blocks, Northern, Hatidhara, and Talaipathar with the exception of some areas in the first two blocks, which were placed in the Plantation and Protection Working Circles, were kept in this Working Circle over an area of 95, 643 acres. There were 5 felling series; 2 in Northern, 2 in Hatidhara, and one in Talaipathar. Felling cycle of 20 years was adopted in all the felling series coinciding with the Plan period. The yield was prescribed by area. The exploitable girth class for Sal was fixed at 5 feet g.bh in Hatidhara, Talaipathar and 4 feet in Northern. 25% exploitable sound Sal trees were to be retained in all felling series as a safeguard measure. Marking rules were laid down in detail. There was also provision for thinning at the time of marking. The felling schedule showing annual coupes, their area and compartments were laid down and coupes were shown on the management maps.

Subsidiary silvicultural operations were to be carried out in the first year after the completion of the main felling. These operations were aimed at favouring principal species against secondary species. Climber cutting, and thinning were also prescribed. The worked out coupes were to be protected from fire. The area was to be closed for grazing for 5 years after main felling. In the rest of Working Circle area, grazing was allowed with some restrictions like no Sheep or Goat was to be admitted.

Some of the coupes were very large making supervision difficult. The prescription of 25% retention of exploitable trees could not be followed. Subsidiary silvicultural operations were also not carried out fully. The fires were rampant, and as a result lower girth class trees got damaged and crop pattern was changed in number of places. It was unfortunate that most of the fires were not brought to the record. The compartment histories and control forms were not at all maintained. Nothing was entered in compartment histories except in one or two cases, that to in one or two years.

11.2.4.2 Coppice Working Circle

This Working Circle (22,248 acres) covers one sixth of the area of Reserved Forest. 15 blocks were allotted to this working circle, out of this 10 blocks were in B class and 5 were in A class. Each of these blocks constitutes one felling series except part of East Baruni and west Baruni that constitute one felling series. The rotation period was 60 years in Handapa felling series where good Sal crop was there and local demand for poles and firewood was limited. For the remaining blocks the rotation period was 40 years. The number of standards for retention was fixed at 10-15 per acre, in addition all Bija, Sisoo up to 3 feet girth and all Khair, Semul trees were to be retained. Subsidiary silvicultural operations like planting of suitable species in blank and eroded, areas thinning etc. were also prescribed. The coupes were to be protected from fire. The area should be closed for grazing for five years.

Majority of the area allotted to this Working Circle was hilly and poorly stocked. There were also frequent fires and hence the regeneration was poor. Severe degradation has occurred in Dandarugudi, Kholdangiani, larger parts of Bankimundi, Kadalimunda and Dantarikhol. The soil had become shallow, making regeneration difficult. The subsidiary silvicultural operations like plantations in blank and eroded patches could not be taken up in majority of areas. Other operations also were not done.

11.2.4.3 Plantation Working Circle

The main aim of this working circle was to tend and protect the existing teak plantations and to raise large scale plantations of valuable species like Teak, Bija, Sissoo, Semul and Gambhar etc. The plantable area assigned to this working circle consisted 5,111.6 acres of Hatidhara, 3,065 acres of Kutulsingha, 207 acres of Northern blocks. Four planting series were formed, 2 in Hatidhara, one each in Kutulsingha and Northern each. The extent of area to be planted annually was prescribed, but the identification of area was left to the Divisional Forest Officer. The details of the planting techniques also were to be decided by the DFO. Thinning of teak plantations was prescribed. The first thinning would be in the 7th year and subsequent thinning would be in 12th, 20th, 30th and 45th years. The plantations of other species were to be thinned in 10th and 20th years.

Most of the prescriptions were not implemented. In Hatidhara, only one fifth of the prescribed area was planted. In Northern RF and Kutulsingha RF no plantations were raised. 1000 acres of plantations were raised in Mahendrapur, Dantarikhol, Nuagan, Baruni, Talaipathar, Bijamalhia, Bindhyabasini, Kishoreban, Dandarugudi, Kholdangiani and Ghosar blocks.

11.2.4.4 Bamboo Working Circle

It covered an area of 55,273 acres overlapping with Selection, Coppice, Plantation and Protection Working Circles. It included Hatidhara, Kutulsingha, Dantarikhol, Bankimundi, Kadalimunda completely and Talaipathar partly. This circle comprises 6 felling series, in each felling series four coupes were formed. The cutting rules were elaborated in this circle.

In Bankimundi, Kadalimunda and Dantarikhol blocks bamboo was degraded and there was hardly anything to cut. In Hatidhara, Talaipathar blocks quality is better, but cutting rules were not implemented strictly. The tenants while removing bamboo for their own requirement were hardly following cutting rules and they used to cut from easily accessible areas. Some of the artisans engaged in basket making tend to remove young culms of less than 2 years old.

11.2.4.5 Protection Working Circle

This working circle comprised an area of 5230 acres of poor and open forests. It included entire Guja block, upper slopes of East Baruni, West Baruni, Dantarikhol, Kutulsingha and Northern RF. Some areas of these blocks were having exposed, and shallow soil or rocky or barren patches. The open patches were to be planted with suitable species like Eucalyptus, Asan, Kurum in plain areas and *sterculia urens* in the rocky areas. Prescriptions were outlined to prohibit the area from grazing and to protect from fire. Bamboo felling in Dantarikhol and Kutulsingha blocks was permitted.

No plantation or soil conservation works were taken up. Protection against fire, grazing also could not be done. However, Bamboo exploitation was going on in Kutulsingha and Dantarikhol.

11.2.4.6 Khair Working Circle

It comprised parts of East Baruni, West Baruni, Nuagan, Mahendrapur and Kusumkuhuri and also included adjoining Khesra forests. The total RF area in this Working Circle was 9256 acres. Only one felling series was formed. The trees attaining at least 18" girth class were prescribed for cutting and felling cycle was fixed at 20 years.

The number of exploitable trees was less, hence the working could not be taken up for many years. In January 1983, the areas were leased out to M/s Kamal Wood Products, Deogarh for five years with effect from 1st October 1982 to 30th September 1987.

11.2.4.7 Minor Forest Produce Working Circle

It was an Overlapping Working Circle extending over all the Reserved Forests. The most important MFP items available in the division were Kendu leaf, Genduli gum, Sabaigrass, Siali leaves, fibres, Mahula flowers and fruits, Lac, Tussar, Cocoons, Honey, wave, Myrobolans, Brooms, Chara seeds, etc. Kendu leaf trade was regulated as per the Kendu leaves (Control and trade) Act, 1961. Rules were prescribed for tapping of Genduli gum. For promoting Lac cultivation, it was proposed to open more Lac firms in Hatidhara range. It had been prescribed that the host plants like Kusum and Khair trees present in the Reserved Forests and wastelands would be leased out to intending cultivations and they would be supplied with brood Lac on payment. For encouraging Tussar cultivation, it was prescribed to supply seed cocoons to intending cultivators at nominal price and Asan trees would be leased out for nominal considerations. It was prescribed to reduce the illegal transit of Sabai grass. It was also prescribed to organize Forest Labourers Co-operative Societies to under take Lac cultivation, Tussar reusing and for collections of other MFP items. But these prescriptions could not be implemented.

11.2.4.8 Wild life

In this plan there were proposals for creating 3 shooting blocks, one comprising Northern and Handapa blocks, second Talaipathar block, third Dantarikhol and Kutulsingha blocks. Shooting permits would be issued in small numbers. There was also prescription to form game sanctuary comprising Hatidhara block adjoining to Tikarapada game sanctuary of Angul Division. There was also prescription to erect 7 anti poaching gates at different places.

Shooting blocks were not formed. No game sanctuary was constituted in Hatidhara block and some anti poaching gates were installed.

11.2.4.9 Special Works of Improvement

11.2.4.9.1 Reservation of Forests

There are many forest blocks with very good growth that are fit for reservations like Purnapani, Phuljhari, Digi, Susab in Handapa Range, Mangalpur and Bajipur in Madhapur Range, Solanda and Rampur in Athamallik Range etc. But none of these blocks could be reserved in the entire plan period**.**

11.2.4.9.2 Buildings & Compartment Histories

It had been prescribed to construct many buildings like one rest house at Pathargarh, 47 Forest Guard sheds. It had also been prescribed to shift the head quarters of Forester Dhandatopa to Kurab to have more control over the jurisdiction. Out of this, some of prescriptions were implemented, but the rest house could not be constructed at pathargarh. The Compartment Histories were handed over to DFO, Rairakhol, but they are not at all maintained. Similarly control forms were also not maintained.

11.2.5 SRI DINESH SIGH'S WORKING PLAN

The revised working plan prepared by Sri Dinesh Singh came into force from 1985-86. Originally the plan was prepared for 10 years and subsequently extended in August 1984 for further 10 years up to 2004-05. All the RF blocks were included in the purview of this Plan. There were no changes in number of compartments, but changes were made in sub compartments and some new compartments were formed. 6 working circles were constituted in the Plan. They are

1. The Selection Working Circle (45,193.33 ha)
2. The Coppice Working Circle (2,360.63 ha)
3. The Rehabilitation Working Circle (3,154.88 ha)
4. The Teak Plantation Working Circle (4,075.11 ha)
5. The Bamboo (Ove lapping) Working Circle (17,970.78 ha)
6. The Khair (Overlapping) Working Circle (4,112.30 ha)

11.2.5.1 The Selection Working Circle

This circle included major portions of Northern, Talaipathar, Hatidhara and entire area of East Baruni, West Baruni, Guja, & Handapa. The last four blocks (East Baruni, West Baruni, Guja, & Handapa) were included for the first time in this working circle. Earlier East Baruni, West Baruni, Handapa were in Coppice Working Circle and Guja in Protection Working Circle in S. B. Das's Working Plan. The total area under this working circle was 45,193.33 ha. The main objectives of this working circle were to improve the forest cover on the hilly areas and to get maximum sustained yield. There were 7 felling series in this Circle, namely Pathargarh, Udol, Handapa, Hatidhara North, Hatidhara South, Talaipathar and Baruni. Felling cycle has been fixed at 10 years. Each felling series had been divided into 10 annual coupes. The coupes were shown in the management maps. The coupe working was entrusted to OFDC Ltd.

In the first year after completion of main felling subsidiary silvicultural operations like felling of left over marked trees, damaged, dead and diseased trees, cutting of all climber, twinners and sowing and planting in the blank patches of the coupes were prescribed to be taken up. The coupes would be closed for grazing for 5 years after completion of main felling and they would be rigidly protected from fire for at least a period of 5 years after completion of main felling.

The annual coupe working was carried out on regular basis from 1985-86 to 1991-92. Coupe working could not be taken up due to imposition of moratorium on green felling in the Division with effect from 1-10-1992. Only dead, dry and wind fallen trees were salvaged departmentally. Silvicultural operations like thinning, climber cutting, cutting back of damaged trees, etc were executed in the worked out coupes only in 1987-88 and to some extent in 1988-89. In the subsequent years these operations were not carried out. The sowing and planting in the gap areas of worked out coupes had also not been carried out properly. In the absence of working of coupes, the crop had become congested and the matured tees tend to become over matured. The Reserved Forests close to habitations were subjected to severe biotic interference like grazing illicit felling, encroachments etc.

There was no justification in support of allotting the blocks, allotted to Coppice Working Circle in S. B. Das's Plan, to the Selection Working Circle in Sri Dinesh Singh's Plan.

11.2.5.2 Coppice Working Circle

The total area covered in this working circle was 2360.63 ha extended over 5 blocks i.e. Kishoreban, Bindhyabasini, Mahendrapur, Nuagan and Bijamalhia. These blocks were close to human habitations where local demand for medium sized timber, poles and firewood was considerably high. The objective of management of this Working Circle was to harvest the crop regularly to meet the local demand. Five felling series were constituted, namely Kishoreban, Bindhyabasini, Nuagan, Mahendrapur & Bijamalhia. The silvicultural system adopted was "Coppice with Reserve" and the rotation period was fixed at 40 years. Each felling series was divided into 40 annual coupes and these coupes were shown on the management maps. The coupes have been divided based on stock quality, terrain, extent of eroded areas etc. The subsidiary silvicultural operations like, thinnings were prescribed. It had been prescribed for the closure of the coupes for grazing for 10 years after the main felling. All worked out coupes were prescribed for protection from fire for at least 10 years after main felling.

The annual coupe working was carried out up to 1987-88 in Kishoreban, Bindhyabasini and Nuagan felling series, while in Mahendrapur and Bijamalhia coupes could not be worked out due to poor vegetation. In 1988-89 and 89-90 annual coupe working was done only in Kishoreban and Bindhyabasini felling series, in other coupes the working could not be done due to poor vegetation.

The prescribed subsidiary silvicultural operations like cleaning, supplementary felling, high stump cutting, climber cutting, improvement thinning, etc. were not executed Block plantations were taken up in Reserved Forest blocks like Mahendrapur, Bijamalhia and Nuagan though the same were not prescribed in the plan. At the same time the supplementary plantations in the blank and eroded areas though prescribed in the plan, were not implemented. Little attention was given for protection of coupes against fire and grazing. As a result, the coppice has not come up well and eventfully most of the area became degraded.

11.2.5.3 Teak Plantation Working Circle

This working circle comprised all the areas of existing teak plantations of 1 ha and above and the degraded mixed forest of low economic consideration fit for teak plantation. The total area of this working circle was 4075.11 ha of which 1110.08 ha comprised old teak plantation and the balance 2965.03 ha was prescribed for new plantation. It was prescribed to take up 627.77 ha of plantation in Hatidhara, 1035.87 ha in Dantarikhol and 1301.39 ha in Kutulsingha RF. In toto, portions of 13 Reserved Forest blocks namely Hatidhara, Dantarikhol, Mahendrapur, Talaipathar, Nuagan, Bijamalhia, Kholdangiani, Kishoreban, Bindhyabasini, Dandarugudi, Kadalimunda, Bankimundi and Kutulsingha were allotted to this Working Circle.

Six planting series were formed namely Dhandatopa, Kamalpur, Sisukati, Pedipathar, Kutulsingha and Pokanda. Silvicultural system adopted was clear felling with artificial regeneration. In most of the plantation areas, site quality was III. Rotation period was fixed at 80 years, which would produce trees of about 115 cm g. b. h on site quality III. Mechanical thinning at 6th year and silvicultural thinning at 10th, 20th, 30 and 44th, year of plantation were prescribed. All the plantation areas were prescribed for closure against grazing for seven years. Fire protection would be provided to the plantation. The details of the implementation of these prescriptions are discussed below in the Para 7.7.4.

The thinning operations were done only in few plantations, while in majority no thinning was done. The details of thinning operation done during the plan period are given in **Table No: 11.1.** Since

Table: 11.1 DETAILS OF THINNING OPERATIONS DONE BETWEEN 1985-86 TO 2000-01

Name of RF Block	Year of plantation	Area (ha)	Year of thinning	Thinning sequence.
	1946	3.64	1989-90	5th Silvicultrual
	1947	1.65	1991-92	5th Silvicultrual
	1959	4.04	1988-89	4th Silvicultrual
	1965	10.92	1987-88	3rd Silvicultrual
	1967	24.28	1987-88	2nd Silvicultrual
	1968	24.28	1987-88	3rd Silvicultrual
	1969	28.32	1988-89	3rd Silvicultrual
	1970	24.28	1989-90	3rd Silvicultrual
	1971	35.2	1991-92	3rd Silvicultrual
	1978	10.11	1987-88	2nd Silvicultrual
	1979	20.23	1988-89	2nd Silvicultrual
	1980	20.23	1989-90	2nd Silvicultrual
	1981	20.23	1987-88	1st Mechanical
			1991-92	2nd Silvicultural
	1982	20	1987-88	1st Mechanical
			1992-93	2nd Silvicultural
Hatidhara R.F	1983	40	1988-89	1st Mechanical
	1984	60	1989-90	1st Mechanical
	1985	40	1991-92	1st Mechanical
	1977	10.11	1987-88	2nd Silvicultural
	1979	70.82	1988-89	2nd Silvicultural
Dantarikhol	1981	10	1991-92	2nd Silvicultural
R.F	1982	10	1992-93	2nd Silvicultural

	1964	3.2	1991-92	4th Silvicultural
	1974	8.89	1987-88	2nd Silvicultural
	1981	20.23	1987-88	1st Mechanical
			1991-92	2nd Silvicultural
	1982	20.23	1987-88	1st Mechanical
			1992-93	2nd Silvicultural
	1983	16.18	1988-89	1st Mechanical
Dandarugudi	1984	20.22	1989-90	1st Mechanical
Kishoreban				
R.F	1968	4.04	1987-88	3rd Silvicultural
	1962	7.28	1991-92	4th Silvicultrual
	1966	3.23	1987-88	3rd Silvicultrual
Kadalimunda	1967	3.23	1987-88	3rd Silvicultrual
Source: DFO, Athamallik				

11.2.5.4 Rehabilitation Working Circle

This working circle was introduced for the first time in the Working Plan of the Division. It included all degraded forests partly or wholly, areas of Coppice Working Circle of the previous plan. The total area under this circle was 3154.88 ha. Kusumkuhuri, Ghosar, blocks as a whole, Dantarikhol, Kutulsingha, Bankimundi, Dandarugudi, Kholdangiani and Kadalimunda in part were included in this Working Circle.

The objective of management was to restock the depleted forest, arrest soil erosion and to augment soil moisture regime. There would be no exploitation except for the removal of dead and uprooted trees. 8 rehabilitation series had been formed. Each rehabilitation series had been divided into annual coupes. The coupe areas would be protected from fire, grazing.

The prescribed soil and moisture conservation measures like gully plugging, check dams, contour trenching, grass planting and subsidiary silvicultural operations like thinning and tending were not carried out due to lack of funds. Little attention was given for protection of forest area from fire, grazing, etc. However in few RF blocks like Dantarikhol, Kusumkuhuri, Bankimundi and Ghosar gap plantation had been done. The details of gap plantation done in the Plan period are furnished in **Table No:11.2**.

Table:11.2 DETAILS OF GAP PLANTING BETWEEN 1985-86 TO 2000-01				
Sl. No.	Name of RF Block	Year of Work	Area in Ha	Total
1	Ghosar RF	1986-87	50	175
		1992-93	25	
		1996-97	100	
2	Kusumkuhuri R.F	1986-87	80	125
		1989-90	45	
3	Dantarikhol R.F	1986-87	50	100
		1996-97	50	
4	Bankimundi R.F	1991-92	25	25
5	Bijamalhia R.F	1986-87	60	93
		1987-88	33	
6	Nuagan R.F	1986-87	125	401
		1987-88	56	
		1988-89	50	
		1989-90	25	
		1992-93	25	
		1996-97	100	
7	Mahendrapur R.F	1989-90	50	125
		1992-93	25	
		1996-97	50	
8	Handapa R.F	1986-87	100	130
		1995-96	30	
9	Hatidhara R.F	1991-92	25	25
10	West Baruni R.F	1991-92	25	25
11	East Baruni R.F	1996-97	30	30
Source: DFO, Athamallik				

Plantations

The plantations were prescribed in Teak Plantation Working Circle and Rehabilitation Working Circle. The details of the prescriptions given in the Working Plan are given in **Table No: 11.3.** The implementation of the prescriptions is provided in **Table No: 11.4 and 11.5.** It is observed from the tables that plantations were done in RF and beyond RF areas. Nearly 44.2% of plantations were done in RF area and 55.8% outside the RF area and the total plantations done are 7156.5 ha. Thus if the total area to be planted is taken into account it has surpassed the prescribed area of the Working Plan. The Social Forestry Division had taken up plantations in a large scale in the waste lands of the villages and the revenue lands. This has helped in one way to meet the local demand and reduce the pressure on the forest areas. Within a period of 20 years, many deviations were caused mainly due to changed conditions like implementation of Forest Conservation Act, 1980 and the degradation of forest due to biotic interference, resulting in the restocking of the areas with plantations.

Table: 11.3 DETAILS OF PROPOSED PLANTATIONS		
S.No.	Block	Area Proposed
Teak Plantation Working Circle		
1	Hatidhara	627.77
2	Dantarikhol	1035.87
3	Kutulsingha	1301.39
	Total	2965.03
Rehabilitation Working Circle		
4	Kusumkuhuri	612.04
5	Dantarikhol	435.7
6	Kutulsingha	345.25
7	Bankimundi	372.84
8	Ghosar	878.05
9	Dandarugudi	34.09
10	Kholdangiani	208.18
11	Kadalimunda	268.73
	Total	3154.88
	G.Total	6119.91
Source: Revised Working Plan of Sri Dinesh Singh, IFS.		

Table : 11.4 DETAILS OF PLANTATIONS DONE IN THE PLAN PERIOD						
		Implementation				
Block	Prescription	Block	FDA	RDF	Compensatory	Total
Hatidhara	T.P.W.C. - 627.77	287				287
Kusumkuhuri	R.W.C. - 612.04	20	30	125		175
Mahendrapur		60	80	112		252
Kutulsingha	T.P.W.C-1301.39 R.W.C-345.25	130	30			160
Dantarikhol	T.P.W.C-1035.87 R.W.C-435.70	285		120		405
Talaipathar		25			67	92
East Baruni		40		10		50
West Baruni		7				7
Nuagan		95		376	103	574
Kadalimunda		30	30			60
Kholdangiani		20		36		56
Northern		10	20		85	115
Source: DFO, Athamallik						

Table: 11.5 RANGEWISE DETAILS OF PLANTATIONS DONE DURING THE PLAN PERIOD			
Name of the Range	Area of Plantation	R.F.	Beyond R.F.
Athamallik	1493.5	482.5	1011
Bamur	1354	583	771
Dhandatopa	482	367	115
Handapa	2383	1023	1360
Madhapur	1444	708	736
Total	7156.5	3163.5	3993
Source: DFO, Athamallik & DD, SFP, Dhenkanal			

11.2.5.5 Bamboo (Over Lapping) Working Circle

This circle comprised an area of 17, 970.78 ha. It overlapped Selection Working Circle in Hatidhara entirely and in Talaipathar partly. Salia Bamboo is the main species occurring extensively in the area. Daba or Kanta Bamboo occurs along big nallahs and most valleys of Hatidhara RF. The main objective of management was to obtain maximum possible sustained yield and to improve the growing stock. The silvicultural system followed was Culm selection cum Clump improvement, cutting cycle of 4 years was prescribed. 4 felling series had been constituted, namely Hatidhara Sapaghari, Hatidhara, Kurab, Hatidhara South and Talaipathar. Each felling series was divided into 4 annual coupes namely A, B, C, D. Detailed cutting rules were also prescribed. Subsidiary silvicultural operations like cutting dead and dry clumps, girdling of inferior heavy crowned miscellaneous species, suppressing good and productive clumps, climber cutting etc were also prescribed. Bamboo plantation was prescribed in areas where bamboo was found to be depleted.

The coupe working had been carried out on regular basis. Up to 1987-88 coupe working was carried out by M/s T. P. Mills Ltd. on long term lease basis and afterwards annual coupes were worked out by OFDC Ltd. There was no working from 2000-2002. The working was more in valleys, down hill portions, quite low in uphill portions, leading to over exploitation in down hills and congestion in up hill portions.

In general, bamboo cutting rules had not been followed. Hardly there was any protection from fire and grazing. In the first 7 years of Plan period, no silvicultural operation was carried out. In the next three years i.e. from 1992-93 to 1994-95, these operations were done marginally. From 1994-95 to 1999-2000, silvicultural operations were carried out, but the extent of work done in different years was depending on availability of funds. The details of silvicultural operations done during the Plan period are furnished in **Table No: 11.6**. From 2000 onwards, no silvicultural operations were being carried out. This created an adverse impact on the forest. The Bamboo crop was tended to be degraded over a period of time due to non working or less working of forest. The presence of dry bamboos increased the risk of forest fires.

Table:11.6 DETAILS OF SILVICULTURAL OPERATIONS

Year	Name of the coupe	No. of clumps Treated
1985-86 to 1991-92	Nil	
1992-93	Hatidhara-Kurab B.C. 'C'	216 clumps
1993-94	Hatidhara-south B.C. 'C'	2122 clumps
	Hatidhara-Sapaghari B.C. 'C'	120 clumps
	Hatidhara-Kurab B.C. 'C'	1105 clumps
	Talaipathar B.C. 'C'	1900 clumps
1994-95	Hatidhara-Kurab B.C. 'A'	3209 clumps
1995-96	Hatidhara -Kurab B.C. 'A'	46,818 clumps
	Hatidhara- Sapaghari B.C. 'A'	54,420 clumps
	Hatidhara-South B.C. 'A'	59,315 clumps
	Hatidhara-South B.C. 'C'	1,974 clumps
	Kadalimunda R.F	7,000 clumps
	Bankimundi R.F	21,470 clumps
	Talaipathar B.C. 'A'	33,482 clumps
	Talaipathar B.C. 'D'	31,630 clumps
1996-97	Hatidhara-Sapaghari B.C. 'C'	10,050 clumps

	Hatidhara-South B.C.'C'	23,408 clumps
	Talaipathar B.C 'C'	16,670 clumps
1997-98	Hatidhara-Kurab B.C.'C'	2,210 clumps
	Hatidhara-Sapaghari B.C, 'C'	4,038 clumps
	Hatidhara-South B.C.'C'	5,953 clumps
	Hatidhara- South B.C. 'C'	3,315 clumps
1998-99	Talaipathar B.C, 'D'	10,487 clumps
	Hatidhara- Sapaghari B.C, 'C'	8,977 clumps
	Hatidhara-South B.C, 'D'	8,287 clumps
	Bankimundi R.F	8,125 clumps
	Kadalimunda R.F	2,520 clumps
	Hatidhara- Sapaghari B.C, 'C'	4,062 clumps
1999-2000	Hatidhara-Sapaghari B.C, 'A'	2,480 clumps
	Hatidhara-Sapaghari B.C, 'B'	3,710 clumps
	Hatidhara-South B.C, 'A'	1,885 clumps
	Hatidhara- South B.C, 'D'	1,875 clumps
	Talaipathar B.C 'A'	7,102 clumps
Source: DFO, Athamallik		

11.2.5.6 Khair (Over Lapping) Working Circle

This circle overlapped with Selection Working Circle in East Baruni and West Baruni, Coppice Working Circle in Nuagan, Mahendrapur and Rehabilitation Working Circle in Kusumkuhuri. The total area allotted to this working circle was 4112.30 ha Khair trees generally occur in open and eroded patches. The Silvicultural Division had kept 5 ha of Khair plantation in compartment No. 16 of West Baruni block as Seed Production Area (SPA). In rest of the areas, the number of exploitable Khair trees was small. Hence only one felling series was constituted. The exploitable girth class was fixed at 45 cm measured at a height of 15cm from ground level. The entire working area was divided into 10 annual copes. The subsidiary silvicultural operations like gap planting with Khair, coppice shoot reduction in five to seven years after felling depending on the coppice growth were prescribed. There was Khair plantation of 383 acres, which had been raised in West Baruni from 1956-57 to 1960-61. It had been prescribed to harvest the Khair Plantation and to replant the said area with Khair even by removing inferior forest growth.

Form 1983-84 to 86-87 Khair working in Reserved Forests and Khesra forests had been carried out by M/s Kamala Wood Products Ltd., Deogarh on long term lease basis. Afterwards, Khair coupes could not be worked out due to poor growth and poor availability of Khair trees. No working could be taken up in Nuagan RF, Mahendrapur RF, and Kusumkuhuri RF due to poor crop growth. Right now there is rapid degradation of Khair and only stunted and sparse growth is available. The details of Khair working are furnished in **Table No: 11.7**.When the Working Plan period was extended in 1994, the Government of India categorically denied the continuation of working of Khair Working Circle in the Working Plan of Athamallik Division.

Table: 11.7 DETAILS OF KHAIR WORKING

Year	R.F/K.F	Outturn in cft.
1983-84	West Baruni	11526.5
	Bharatapur KF	
	Raniakata KF	
	Ghorakhol KF	
	Adeswar KF	
1984-85	Bhuasuninali KF	17562.9
	WestBaruni	
	East Baruni	
	Ghodagadi KF	
	Naikpada KF	
	Tentalapani KF	
1985-86	Bajipur KF	6355.5
	Thakurgarh KF	
	Kurab KF	
	Kantapad KF	
1986-87	Kutulsingha KF	10355.5

Source: DFO, Athamallik

11.2,5.7 Exploitation Of Minor Forest Produce

The important MFP items available in the division are Kendu Leaves, Sal Seed, Genduli and other gums, Lac and Tussar etc. The prescriptions were given in the Plan for the extraction of gums, growth of Lac and Tussar. But none of these prescriptions could be implemented and right now there is no cultivation of Lac and Tussar in the division in a major scale.

11.2.5.8 Fire & Grazing

The prescriptions were given for the protection of forest from fire and grazing in each Working Circle. The grazing has come down officially, as evident from the grazing fees realized in the division. Fire is a major problem, but the investment for fire protection are also meager. Hence it is not possible to mitigate the fire hazard with the low investment in the forest.

11.2.5.9 Reservation of Forest Blocks

It was prescribed in the Working Plan to take steps for the reservation of 16 forest blocks like Phuljhari, Puranapani, Digi, Bhagamunda, Gundrijharan etc. Not much head way could be made in this direction. However, recently the DFO is taking some steps to get few blocks like Puranapani, Mucchapur A & B notified under Section 4 (i) of Orissa Forest Act, 1972

11.2.5.10 Roads and Buildings

t was prescribed in the plan to improve the conditions of forest roads and construct new buildings for the Forest Guards and Foresters. Some of prescriptions could be implemented. Some amount could be spent on the repair of the forest roads. Some new buildings were constructed during the Plan period.

11.2.6 : The working Plan of Uma Nanduri (2006-2007 to 2015-2016) – current plan

a. The Selection-cum-Improvement Working Circle (42001.50 ha.)
b. The Rehabilitation Working Circle (9149.26 ha.)
c. The Plantation Working Circle (2297.21 ha.)
d. The Protection Working Circle (6370.03 ha.)
e. The Bamboo (Over Lapping) Working Circle (21936.32 ha.)
f. The NTFP (Over Lapping) Working Circle (entire working plan area of the division)
g. The Wildlife(Over Lapping) Working Circle (entire working plan area of the division)
h. The Joint Forest Management Working Circle (2154.81 ha.)

The working plan of Athmallik Division prepared by Mrs. Uma Naduri for the period from 2006-07 to 2015-16 is operational at present. The results of the past management do not indicate considerable increase in density of forest and increase in area of forest cover. Emphasis was given on conservation of flora, fauna and soil but it has been found to be inadequate. Silvicultural operations essential for the subsidiary operations were inadequate.

The management of NTFP working circle and plantation of indigenous NTFP species were neglected. For the first time one NTFP Survey was conducted in this Division during 2012-13. The prescriptions on wild life management were found to be inadequate. Man-elephant conflict has increased tremendously. Though massive plantations were raised during the last 30-40 years, no plantation was harvested till date. The analysis of the outgoing plan prepared by Smt. Uma Nanduri, IFS for the plan period 2006-07 to 2015-16 is furnished herewith.

11.2.6.1 The Selection cum Improvement Working Circle

In the current working plan following Forest Blocks have been included under this working circle. There are 1. Talaipathar R.F 2. Hatidhara R.F 3. Handapa R.F & 4. Northern RF. The selection-cum improvement working circle has devided in to six felling series.

Block	Area in Ha	Sel/Imp W.C
Hatidhara	5938.81	5903.81
Kusum kuhuri	612.04	0
Talaipathar	1806.04	1761.04
Mahendrapur	434.07	0
Total	8790.96	7664.85
Hatidhara	8984.97	8202.16
Talaipathar	2054.99	2014.76
Kutulsingha	1646.64	0
Dantarikhol	527.32	0
Total	13213.92	10216.92
Talaipathar	3151.51	3151.51
East Baruni	1606.54	0
West Baruni	400.21	0
Nuagan	1258.93	0
Total	6417.19	3151.51
Northern	12336.29	12330.63
Handapa	1799.21	1799.21
Dandarugudi	162.31	0
Kholdangiani	221.11	0
Kadalim unda	298.23	0
Dantarikhol	1097.32	0
Bankim undi	393.07	0
Total	16307.54	14129.84
Northern	6838.38	6838.38
Bindhyabasini	275.84	0
Kishoreban	344.56	0
Ghosar	1140.53	0
Bijam alhia	216.95	0
Guja	346.18	0
Total	9162.44	6838.38
G.Total	53892.05	42001.50

11.2.6.1.1 Special objectives

The special objectives of the management of the Selection Working Circle are within the scope of general objectives of the management of the entire division. These are as follows: -

i To conserve and improve the forest cover by soil and water conservation method following the principles of watershed development.

ii To maintain and improve the biodiversity of the forest blocks.

iii To build up the growing stock and improve stand structure by silvicultural operation.

iv To establish natural regeneration of indigenous species.

v To obtain the yield on sustainable basis to cater the need of the people subject to environmental and silvicultral availability and lifting the ban on green tree felling imposed by the State Government.

11.2.6.1.2 Implementation/ Achievements

1. The tree felling was not done from 1995-96 to 2006-07 due to ban on felling by Government of Odisha. This resulted in non working of the coupe.

2. The coupe working started from 2006-07. The subsidiary silvicutural operation (SSO) was not taken up during ban period i.e. up to 2005-06.

3. The area of Talaipathar felling series is 6927.31 ha. as per working plan prescription. But it is observed from the marking list and field verification that very less number of trees were marked and felled due to non-availability of trees having exploitable girth. During 2010-11 Taleipahtar SWC-V was not taken delivery due to uneconomical to OFDC, Ltd. From this felling series 2569 trees were marked and felled from 2006-07 to 2014-15 where 57098 has been prescribed in the working plan for the period. Which is very less.

4. The area of Pathargarh felling series is 7206.77 ha. as per working plan prescription. But it is observed that 4273 nos. of trees were marked and felled from 2006-07 to 2014-15 where 56436 has been prescribed in the working plan for the period,which is very less.

5. The area of Udal felling series is 7393.79 ha. as per working plan prescription. But it is observed that 4287 nos. of trees were marked and felled from 2006-07 to 2014-15 where 62522 has been prescribed in the working plan for the period, which is very less.

6. The area of Handapa felling series is 6367.66 ha. as per working plan prescription. But it is observed that 4261 nos. of trees were marked and felled from 2006-07 to 2014-15 where 46879 has been prescribed in the working plan for the period,which is very less.

7. The area of Hatidhara South felling series is 7422.34 ha. as per working plan prescription. But it is observed that 1694 nos. of trees were marked and felled from 2006-07 to 2014-15 where 59542 has been prescribed in the working plan for the period,which is very less.

8. The area of Hatidhara North felling series is 6683.63 ha. as per working plan prescription. But it is observed that 5758 nos. of trees were marked and felled from 2006-07 to 2014-15 where 52762 has been prescribed in the working plan for the period,which is very less..

10. The total area of selection-cum implement working circle was 42001.50 Ha. as per working plan prescription. But no. of trees to be felled 335239 No. against which no. of trees marked is 22842 no. and total no. of trees felled is 22759 no. The production of timber is 10955.0174 Cum. and production of firewood is 5587.5 Stacks.

The reason for less no. of trees felled is due to non-availability of exploitable girth class tree.

After expiry of approved Plan (2006-07 to 2015-16) & one year extension of working plan for the period 2016 -17and annual working scheme from 2017- 18 to 2020-21 has been approved by MoEF & CC (As enclosed in Annexure XXI) to undertake various activities in the forest. The year wise target and achievement in the said period is furnished below

Target & Achievement under approved Annual Working scheme (Area In Ha.)								
Working Circle	Year-2017-18		Year-2018-19		Year-2019-20		Year-2020-21	
	Target	Achievement	Target	Achievement	Target	Achievement	Target	Achievement
SWC	2171.03	2171.03	5531.18	5531.18	2825.34	0	2825.58	
RWC	3764.11	300	1978.47	500	1648.03	50	1432.75	
PWC	0	10	0	0	0	0	0	
B(O)	4156.09	0	4035.9	0	3522.36	0	3209.43	

Timber and firewood Harvested from Different coupes in SWC Talaipathar, Pathargarh, Udal, Handapa, Hatidhara (S) & Hatidhara (N) SWC-I felling series

Table

Talaipathar Felling Series

Year	Coupe No.	No of trees as per Working Plan -2006-07 to 2015-16 & ext.2017-17 & WS 2017-18 to 2020-21	No of trees marked	No. of trees felled /delivered	Timber Production (In cum)	Firewood (In stack)	Remarks
1	2	3	4	5	6	7	8
2006-07	Taleipathar SWC-I	7223	612	612	162.6704	136.5	
2007-08	Taleipathar SWC-II	7014	715	715	201.192	32	
2008-09	Taleipathar SWC-III	5497	215	215	10.45	0	
2009-10	Taleipathar SWC-IV	5877	224	224	171.95	0	
2010-11	Taleipathar SWC- V	6897	83	0	0	0	Not taken delivery due to being un-economical to OFDC, Ltd.
2011-12	Taleipathar SWC-VI	6904	101	101	34.149	10	
2012-13	Taleipathar SWC-VII	6733	307	307	160	60	
2013-14	Taleipathar SWC-VIII	6106	107	107	40.017	0	
2014-15	Taleipathar SWC-IX	4847	205	205	89.483	35	
2015-16	Taleipathar SWC-X	5247	153	0	0	0	
2016-17		0	0	0	0	0	
2017-18	Taleipathar SWC-I	3210	298	298	47.3793	88	-
2018-19	Taleipathar SWC-II	6235	127	127	64.016	0	-
-do-	Taleipathar SWC-III	3664	265	265	280.8797	0	-
2019-20	Taleipathar SWC-IV	3265	343	343	413.9757	0	-
2020-21	Taleipathar SWC- V	25289	59	59	44.5278	0	-
	G.Total	**135817**	**6324**	**6005**	**2546.07**	**635**	

Udal felling series – Northern R.F							
Year	**Coupe No.**	**No of trees as per Working Plan -2006-07 to 2015-16 & ext.2017-17 & WS 2017-18 to 2020-21**	**No of trees marked**	**No. of trees felled /delivered**	**Timber Production (in cum)**	**Firewood (In stack)**	**Remarks**
1	2	3	4	5	6	7	8
2006-07	Udal SWC-I	6764	873	873	159.6632	110	
2007-08	Udal SWC-II	5805	560	560	216.337	258.5	
2008-09	Udal SWC-III	7632	354	354	148.044	72	
2009-10	Udal SWC-IV	10189	451	451	312.421	185	
2010-11	Udal SWC-V	5891	353	353	288.888	95	
2011-12	Udal SWC- VI	7275	421	421	377.243	127	
2012-13	Udal SWC-VII	7164	718	718	518.04	311.75	
2013-14	Udal SWC-VIII	5599	348	348	150.539	196	
2014-15	Udal SWC-IX	6203	209	209	116.288	83	
2015-16	Udal SWC-X	4022	191	0	0	0	
2016-17	0	0	0	0	0	0	
2017-18	Udal, SWC-I	9018	465	465	420.8754	314	-
2018-19	Udal, SWC-II	8384	341	341	331.2474	126	-
-do-	Udal, SWC-III	22898	211	211	148.5141	80	-
2019-20	Udal, SWC-IV	15848	265	265	242.5511	115	-
2020-21	Udal, SWC- V	13091	91	91	84.0566	52	-
	G Total	**135783**	**5851**	**5660**	**3514.71**	**2125.25**	

Handapa felling series.							
Year	Coupe No.	No of trees as per Working Plan -2006-07 to 2015-16 & ext. 2017-17 & WS 2017-18 to 2020-21	No of trees marked	No. of trees felled /delivered	Timber Production (In cum)	Firewood (in stack)	Remarks
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
2006-07	Handapa SWC-I	7515	1431	1431	588.742	390.75	
2007-08	Handapa SWC-II	8289	651	651	117.038	256	
2008-09	Handapa SWC-III	4073	410	410	100.602	46	
2009-10	Handapa SWC-IV	3678	230	230	119.589	91	
2010-11	Handapa SWC-V	6424	434	434	316.699	180	
2011-12	Handapa SWC-VI	3757	307	307	122.6	95	
2012-13	Handapa SWC-VII	3757	253	253	140.408	36	
2013-14	Handapa SWC-VIII	3622	315	315	100.343	80	
2014-15	Handapa SWC-IX	5764	230	230	133.95	70	
2015-16	Handapa SWC-X	10428	203	0	0	0	
2016-17	**0**	**0**	**0**	**0**	**0**	**0**	**-**
2017-18	**0**	**0**	**0**	**0**	**0**	**0**	**-**
2018-19	II	5525	255	255	72.4352	56	-
-do-	III	10862	336	336	136.5648	84	-
2019-20	IV	6538	153	153	95.4162	42	-
2020-21	V	7137	311	311	246.2362	120	-
	G.Total	**87369**	**5519**	**5316**	**2290.623**	**1546.75**	

Hatidhara South felling series.							
Year	Coupe No.	No of trees as per Working Plan -2006-07 to 2015-16 & ext.2017-17 & WS 2017-18 to 2020-21	No of trees marked	No. of trees felled / delivered	Timber Production (In cum)	Firewood (in stack)	Remarks
1	2	3	4	5	6	7	8
2006-07	Hatidhara South SWC-I	6625	258	258	26.075	0	0
2007-08	Hatidhara South SWC-II	7184	215	215	6.662	0	0
2008-09	Hatidhara South SWC-III	7044	171	171	12.43	0	0
2009-10	Hatidhara South SWC-IV	6153	129	129	76.385	0	0
2010-11	Hatidhara South SWC-V	7080	151	151	79.839	5	0
2011-12	Hatidhara South SWC-VI	6940	102	102	69.716	0	0
2012-13	Hatidhara South SWC-VII	6380	282	282	221.097	10	0
2013-14	Hatidhara South SWC-VIII	6006	183	183	100.023	150	0
2014-15	Hatidhara South SWC-IX	6130	203	203	191.542	36	0
2015-16	Hatidhara South SWC-X	7257	165	0	0	0	0
2016-17	Hatidhara (S),SWC-I	0	0	0	0	0	0
2017-18	Hatidhara (S),SWC-II	0	0	0	0	0	0
2018-19	Hatidhara (S),SWC-III	0	0	0	0	0	0
2019-20	Hatidhara (S) SWC-IV	0	0	0	0	0	0
2020-21	Hatidhara,SWC- V	0	0	0	0	0	0
	G.Total	**66799**	**1859**	**1694**	**783.769**	**201**	**0**

Hatidhara North felling series							
Year	Coupe No.	No of trees as per Working Plan -2006-07 to 2015-16 & ext.2017-17 & WS 2017-18 to 2020-21	No of trees marked	No. of trees felled / delivered	Timber Production (In cum)	Firewood (in stack)	Remarks
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
2006-07	Hatidhara North SWC-I	5175	1902	1902	1015.365	527	
2007-08	Hatidhara North SWC-II	5616	1750	1750	850.769	309	
2008-09	Hatidhara North SWC-III	4947	306	306	83.623	12	
2009-10	Hatidhara North SWC-IV	5937	282	282	187.585	31	
2010-11	Hatidhara North SWC-V	6089	288	288	151.661	20	
2011-12	Hatidhara North SWC-VI	6357	320	320	257.04	60	
2012-13	Hatidhara North SWC-VII	4638	301	301	259.41	102	
2013-14	Hatidhara North SWC-VIII	7001	292	292	250.225	80	
2014-15	Hatidhara North SWC-IX	7002	317	317	225.495	182	
2015-16	Hatidhara North SWC-X	7390	221	0	0	0	
2016-17	Hatidhara (N),SWC-I	0	0	0	0	0	0
2017-18	Hatidhara (N),SWC-II	0	0	0	0	0	0
2018-19	Hatidhara (N),SWC-III	0	0	0	0	0	0
2019-20	Hatidhara (N) SWC-IV	0	0	0	0	0	0
2020-21	Hatidhara (N),SWC- V	0	0	0	0	0	0
	G Total	**60152**	**5979**	**5758**	**3281.173**	**1323**	**60152**

ABSTARCT OF TREE MARKED AND FELLED						
Sl No.	Name of felling series	No of trees as per Working Plan -2006-07 to 2015-16 & ext. 2017-17 & WS 2017-18 to 2020-21	No of trees marked/ felled	Timber Production (In cum)	Firewood (in stack)	Remarks
1	2	3	4	5	6	7
1	Talaipathar F.S	6324	6005	2546.07	635	During 2010-11 Compt. No. V not taken delivery due to being un-economical to OFDC, Ltd.
2	Pathargarh F.S	96389	5937	5686	3101.31	
3	Udal F.S	**5851**	**5660**	**3514.71**	**2125.25**	
4	Handapa F.S	**5519**	**5316**	**2290.623**	**1546.75**	
5	Hatidhara-South F.S	**1859**	**1694**	**783.769**	**201**	
6	Hatidhara-North F.S	**5979**	**5758**	**3281.173**	**1323**	
	Total	**115597**	**24365**	**15556.28**	**8297.31**	

The details of SSO work like Silvicultural Cleaning, Soil and Moisture Conservation Work and Fire line Creation carried out in different years as per prescription of Working Plan the physical target and financial target achieved is provided in the Table.

Expenditure on SSO Timber				
Year	Physical	Financial	Expenditure	Remarks
1	2	3	4	5
2006-07	967	8,70,000	8,70,000	967
2007-08	1677.65	15,09,890	15,09,890	1677.65
2008-09	2411.11	21,70,000	21,70,000	2411.11
2009-10	1359.67	12,23,7000	12,23,7000	1359.67
2010-11	6138.89	55,52,000	55,52,000	6138.89
2011-12	4287.78	38,59,000	38,59,000	4287.78
2012-13	4534.52	40,81,074	40,81,074	4534.52
2013-14	2779.9	25,01,913	25,01,913	2779.9
2014-15		Nil	Nil	
2015-16		Nil	Nil	
2016-17	4752 Ha	95,04,000/-	95,04,000/-	State Plan
2017-18	4260.93 Ha	90,95,100/-	90,95,100/-	State Plan
2018-19	2173.03 Ha	60,89,132/-	60,89,132/-	CAMPA APO 2017-18
2019-20	-	-	-	-
2020-21	-	-	-	-
G.Total	**35342.48**	**57469109**	**57469109**	**24156.52**

11.2.6.1.3 Observation/ Analysis of past management

1. As per field verification and inspection of coupes during coupe working in various years of plan, it was found that crop for selective felling exists over extensive areas of hilly portion. Regeneration of Sal is adequate in Sal bearing areas and advance growth is available.

2. The total area of the working circle was 42001.50 ha. Sal is the most common species and regeneration of different species is very good. The hillocks and plateau have a mixed crop predominated by Sal and its associate species such as Dhaura, Asan and Kendu etc. The Selection-Cum-Improvement working circle has 6 felling series with 10 nos. of annual coupes and the felling cycle was fixed for 10 years. The regeneration of Sal and other species is adequate, subsidiary Silvicutural operations have been taken up in many areas during the plan period.

3. From the data of Timber harvested from different coupes in SWC it is found that less no. of trees were felled. The reason for less no. of tree felled is due to non availability of exploitable girth class tree in that area. The area covered upto 2014-15 is 36846.69 Ha. Out of the 42001.50 Ha. The less area covered is due to non working of Talaipathar coupe no.V in the year 2010-11 and non working of coupe during 2015-16.

11.2.6.1.4 Suggestion for Future Plan

1. Since the entire area of Hatidhara R.F i.e. 14923.78 Ha. have been merged with Satkosia gorge Wild Life Sanutuary, the entire area is deducted from the Working Plan prescription.

2. The net area of the Selection Working Circle will be reduced due to inclusion of the area of Dantarikhol R.F, Handapa R.F, Kadalimunda R.F and Northern R.F in the proposed Satkosia Tiger Landscape/ Satkosia Tiger Reserve Corridor.

3. Due to paucity of funds S.S.O work could not be done regularly in all the coupes. It is requested to prescribe for the allotment of adequate fund for the entire plan period.

11.2.6.2 The Rehabilitation Working Circle

11.2.6.2.1 General constitution:

The forest blocks that are in various stages of degradation are allotted to this working circle. Degradation of these forests is due to unrelenting biotic interference such as illicit felling, repeated fire, grazing, encroachment and inadequacy of coppice regeneration. The top soil is washed away in some of the places resulting in the exposure of the rocks. On the other hand, these forests contain sufficient rootstock, which if tended and protected has the potentiality to convert to high forests. These blocks need immediate attention to arrest the process of degradation. The area allotted to this Working Circle is 9149.26 ha. in 16 forest blocks.

11.2.6.2.2 Area Allocation

The area allotted to this Working Circle is 9149.26 ha in 16 forest blocks.

BLOCK WISE AREA OF REHABILITATION WORKING CIRCLE				
S.No.	**Range**	**Treatment Series (T.S.)**	**Block**	**Area Of Treatment (Ha.)**
1	Athamallik	Kusumkuhuri T.S	Kusumkuhuri	609.04
2			Mahendrapur	383.96
			Total	**993**
3	Dhandatopa	Kutulsingha T.S.	Kutulsingha	1490.14
4			Dantarikhol	267.32
			Total	**1757.46**
5	Madhapur	Nuagan T.S.	East Baruni	1452.16
6			West Baruni	380.21
7			Nuagan	1148.93
			Total	**2981.3**
8	Handapa	Dantarikhol T.S.	Kholdangiani	167.18
9			Kadalimunda	228.73
10			Dantarikhol	924.25
11			Bankimundi	259.84
			Total	**1580**
12	Bamur	Ghosar T.S.	Bindhyabasini	263.35
13			Kishoreban	310.03
14			Ghosar	782.53
15			Bijamalhia	135.41
16			Guja	346.18
			Total	**1837.5**
			G.Total	**9149.26**

11.2.6.2.3 Special Objectives of the management:

The following special objectives of management are set for the Working Circle which is within the ambit of the general objectives of management.

i To improve the condition of existing forests through protection against grazing, fires and illicit felling.

ii To enhance soil productivity through soil and moisture conservation measure.

iii To stabilize the ratio between water runoff during rainy season and that of during dry season.

iv To restock barren areas through artificial regeneration with most desirable indigenous species.

v To involve the local community in protection and management of the forest.

vi To restock and improve the microclimate and micro edaphic condition.

vii To increase the biodiversity and heterogeneity in the forest crop by encouraging natural regeneration.

viii. To increase the water retaining capacity of the soil.

11.2.6.2.4 Implementation/Achievement

The area allotted to this working circle was 9149.26 ha. As per the prescription ANR (Gap Plantation) over an area 1413 Ha. has been taken up during the out going plan period as furnished below.

LIST OF ANR PLANTATIONS TAKEN UP IN THE DIVISION DURING THE YEAR 2006-07 TO 2020-21				
Sl No.	Year	Name of the Range	Name of the scheme	Area covered R.F
1	2	3	4	7
1	2006-07	Madhapur	CATP RDF	Nuagaon C.No.4 -63 Ha.
2		Bamur	-do-	Northern C. No.12 -57 Ha.
3		Handapa	-do-	Northern C. No.23 -80 Ha.
4	2007-08	Athmallik	Economic RDF	Hatidhara C. No.32 -50 Ha.
5		Dhandatopa	-do-	Hatidhara-100 Ha.
6		Athmallik	12th F.C	Hatidhara-120 Ha.
7		Dhandatopa	-do-	Hatidhara-80 Ha.
8		Dhandatopa Madhapur Handapa	FDA-2nd phase	Hatidhara-40 Ha.
		Bamur		Nuagaon-40 Ha.
		Bamur		Handapa-30 Ha.
				Northern-10 Ha.
				Ghosar-30 Ha.
10	2009-10	Handapa	CATP RDF	Northern R.F C. No.26 & 27-250 Ha.
11		Madhapur	-do-	Taleipathar C. No.7 & 8 - 150 Ha.
12	2012-13	Madhapur	-do-	West Baruni-133 Ha.
				Nuagaon R.F-100 Ha.
13	2013-14	Madhapur	-do-	West Bareni-20 Ha.
				Nuagaon-20 Ha.

14		Bamur	-do-	Bindhyabasini-20 Ha. Ghosar-20 Ha.
	2014-15			
	2015-16	-	-	-
	2016-17	Dhandatopa	CAMPA	Kutulisinga RF Compt. No. 1&2-160 ha.
		Handapa		Dantarikhol RF Compt. No. 4- 90 Ha.
		Bamur		Ghosar RF Compt. No. 5- 50 Ha.
		Athmallik	Comp. Affn. (Safety Zone)	Mahendrapur RF Compt. N
		Dhandatopa		Kutulisinga RF Compt. No. 6- 44.66 Ha.
		Madhapur	Comp. Affn.- ANR @200	East Baruni RF Compt. No. 2- 150 Ha.
		Madhapur	Comp. Affn.- ANR @400	West Baruni Compt. No. 2- 75 Ha.
				West Baruni Compt. No. 3- 33.75 Ha.
				East Baruni Compt. No. 7- 41.25 Ha.
				East Baruni Compt. No. 3&4- 67.5 Ha.
		Dhandatopa		Kutulisinga RF Compt. No.6- 22.5 ha.
		Handapa		Dantarikhol RF Compt. No. 5-22.5 ha.
		Bamur		East Baruni RF Compt. No. 1-121.9725 ha.
		Madhapur	Comp. Affn.- ANR @800	West Baruni RF Compt. No. 2- 10 ha.
				East Baruni RF Compt. No. 2- 20 ha.
				East Baruni RF Compt. No. 7- 8 ha.
				East Baruni RF Compt. No. 5- 20 ha.

	2017-18	-	-	-
	2018-19	Athmallik	CAMPA (WP)	Kusumkuhuri RF Compt. No. 2&3- 150 Ha.
		Handapa		Dantarikhol RF Compt. No. 5- 100 ha.
		Madhapur		Nuagaon RF Compt. No. 4&5- 150 ha.
				Nuagaon RF Compt. No. 3- 100 ha
		Athmallik	MGNREGS	Hatidhara RF Compt. No. 28- 60 ha.
	2019-20	Bamur	CAMPA (WL)	Northern RF Compt. No. 1&2- 20 ha.
	2020-21	Dhandatopa	CAMPA	Hatidhara RF Compt. No. 1
			(Bamboo plantation)	
			CAMPA (WP)	Kutulisinga RF Compt. No.- 5- 50 ha.
		Madhapur		Nuagaon RF- 100 ha.

Besides ANR without gap plantation, silvicultural cleaning like climber cutting, singling out of shoot, high stump cutting, soil and moisture conservation and fire line creation have been taken up in outgoing plan as furnished below over an area of 2994.92 Ha.

EXPENDITURES UNDER REHABILITATION WORKING CIRCLE FOR THE PERIOD FROM 2006-07 TO 2009-10						
Sl No.	Name of the Range	Name of the R.F	Area covered in Ha.	Amount spent (In Rs.)	Work done	Remarks
1	2	3	4	5	6	7
1	Athmallik	Kusumkuhuri	400	87,36,557.00	ANR without gap planting	ANR without gap planting work like silvicultural cleaning, soil and moisture conservation and fire line creation has been carried out
	-do-	Mahendrapur	144		-do-	
	-do-	Hatidhara	25		-do-	
	-do-	Taleipathar	45		-do-	
2	Dhandatopa	Kutulisinga (1,2)	204		-do-	
	-do-	Kutulisinga (2,3)	250		-do-	
	-do-	Dantarikhol (3)	50		-do-	
	-do-	Dantarikhol (4)	95.92		-do-	
	-do-	Dantarikhol (4, 5 & 6)	375		-do-	
3	Handapa	Kadalimunda	110		-do-	
	-do-	Bankimundi	60		-do-	
	-do-	Khaladangani	100		-do-	
4	Madhapur	Nuagaon (1,2 &3)	346		-do-	
	-do-	East Bareni (1,6)	180		-do-	
	-do-	West Bareni (2,3)	210		-do-	
	-do-	East Bareni (7)	100		-do-	
5	Bamur	Bijamulia (1)	100		-do-	
	-do-	Bindyabasini	100		-do-	
	-do-	Kishorebani	100		-do-	
		Total	**2994.92**	**87,36,557.00**		

Thus the area treated within this Rehabilitation Working Circle (1413 Ha. + 2994.92 Ha.=4407.92 Ha.). Since the fund allotted was not adequate, further Rehabilitation of degraded forest could not be taken up. However during implementation of the prescription it was observed that good number of vacant spaces suitable for AR/Block Plantation within the working circle was available. Since there was no availability of space for plantation in the plantation working circle (Target=190 Ha.), to achieve the same AR plantation was taken up in this working circle over an area of 100 Ha. deviating the prescription as it was felt necessary.

LIST OF AR PLANTATIONS TAKEN UP IN THE DIVISION DURING THE OUTGOING PLAN PERIOD				
Sl No.	Year	Name of the Range	Name of the scheme	R.F
1	2	3	4	5
1	2010-11	Madhapur	State CAMPA	East Baruni-10 Ha.
2	2011-12	Handapa	13th F.C	Dantarikhol-20 Ha.
3	2012-13	Athmallik	13th F.C	Mahendrapur-50 Ha.
4	2013-14	Bamur	MGNREGS	Ghosar R.F-20 Ha.
5	2014-15	-	-	-
6	2015-16	Bamur	MGNREGS	Ghosar RF- 10 ha
7	2016-17	Athmallik	Comp. Affn. (Safety	Mahendrapur RF- 12.18 Ha.
8		Madhapur	Comp. Affn.	East Baruni RF Compt. No.3- 35 Ha.
9		Bamur		East Baruni RF Compt. No.1- 15 Ha.
10		Madhapur		West Baruni RF Compt. No. 3- 2 Ha.
11		Athmallik	MGNREGS	Kusumkuhuri RF- 20 ha.
12	2017-18	-	-	-
13	2018-19	-	-	-
14	2019-20	Bamur	MGNREGS OBDP plantation	Bhangamunda DPF- 40 ha.
15	2020-21	Dhandatopa		Pitabalibahal DPF- 20 ha.
16		Handapa	MGNREGS Bamboo plantation	Handapa RF Compt. No.5- 20 ha.
17				Gundurijharan DPF- 20 ha.
18		Bamur		Bindhyabasini RF- 25 ha.

11.2.6.2.5 Observations/ Analysis

1. Efforts have been given to restore the degraded forest area by above silvicultural operations and protection measures over 2994.92 Ha. The balance area having 100 Ha. AR and 1413 Ha. ANR Plantation has been raised during the plan period 2006-07 to 2013-14.

1. Now illicit felling has been reduced considerably, but further protection measures are required to be taken for fire protection, control grazing etc..

2. Due to silvicultural cleaning work and other allied plantation work, the density of the forest has increased. Since the degraded areas are assigned to VSS, the illicit felling, grazing and fire damage have been controlled. The degraded forest has regained its greenery to some extent.

3. During the plan period efforts have been given for protection, Rehabilitation, Reforestation, Afforestation and people participation to check further degradation of the forest blocks of this Division.

5. During the plan period maintenance and posting of boundary pillars along R.F and DPF have been carried out in different forest blocks which has been given in Annexure-

The details of numbers and area affected by fire during the last plan period has been furnished below

Year / Session	Number of beat / compartment affected	Frequency of fires (no. of fire incidences in a season / year)	Total Forest area affected (Ha.)	Fire sensitive blocks	Trend to the last assessment year / season
1	2	3	4	5	6
2006	2 nos Beat / 4 Compt.	4	2.5	Handapa Northern RF Kishorbana	Moderate
2007	3 nos Beat / 3 Compt.	3	2	Handapa Northern RF Taleipathra Kishorbana	Moderate
2008	1 no Beat / 2 Compt.	2	1.5	Taleipathar Northern RF Handapa	Moderate
2009	1 no Beat / 2 Compt.	2	1	Handapa Northern RF Kishorbana	Moderate
2010	Nil	0	0	Nil	Nil
2011	1 no Beat / 1 Compt.	1	0.5	Hatidhara RF Taleipathra	Moderate
2012	10 nos Beat / 12 Compt.	12	3.5	Hatidhara RF Taleipathra Northern RF Bankimundi	Moderate
2013	8 nos Beat / 11 Compt.	11	8.5	Northern RF East Bareni	Moderate
2014	18 nos Beat / 30 Compt.	30	15.8	Hatidhra Taleipathara Nuagoan Northern RF	Moderate
2015	2 nos beat / 4 Compt.	4	3.25	Handapa Northern RF Kishorebane	Moderate
2016	30nos beat / 35 Compt.	32	185.4	Hatidhara RF Kumumkuhuri RF Datarikhol RF Kutulisinga RF Taleipathar RF West Baruni RF Northern RF	Moderate

2017	41 nos beat /	461	82.38	Hatidhara RF	Moderate
	45 Compt.			Kumumkuhuri RF	
				Kutulisinga RF	
				Taleipathar RF	
				East Baruni RF	
				West Baruni RF	
				Northern RF	
2018	45 nos beat /	652	160.11	Hatidhara RF	Moderate
	88 Compt.			Kumumkuhuri RF	
				Mahendrapur RF	
				Datarikhol RF	
				Kutulisinga RF	
				Taleipathar RF	
				East Baruni RF	
				West Baruni RF	
				Northern RF	
2019	45 nos beat /	170	26	Hatidhara RF	Moderate
	94 Compt.			Kumumkuhuri RF	
				Mahendrapur RF	
				Datarikhol RF	
				Kutulisinga RF	
				Taleipathar RF	
				East Baruni RF	
				West Baruni RF	
				Northern RF	
2020	50nos beat /	775	115.07	Hatidhara RF	Moderate
	527 Compt.			Kumumkuhuri RF	
				Mahendrapur RF	
				Datarikhol RF	
				Kutulisinga RF	
				Taleipathar RF	
				East Baruni RF	
				West Baruni RF	
				Northern RF	
2021					
Total		2162	611.51		

11.2.6.2.6 Suggestions for future plan

Under this working circle emphasis will be given on rehabilitation of degraded forest blocks with suitable measures such as extensive SMC works, preservation of rare and endangered species of plants, cleaning, singling out of the coppice crops and gap plantation with indigenous species which are suitable for the locality.

1. Based on the field inspection and observation of the forest blocks, flora, fauna and biodiversity, it is proposed to include more areas in this working circle. The total DPF area may be included in the circle.
2. The rehabilitation working circle will be continued for rehabilitation of degraded forests.
3. Attempt will be taken to form more VSS for protection of forests.

11.2.6.3 Plantation Working Circle

11.2.6.3.1 General Constitution

This working circle includes the areas where the blank patches exist and those areas where the plantations were raised earlier. In Athmallik Division, the forests generally have a dense growth and there are limited blank areas which are suitable for plantation. Earlier the forests used to be cleared in certain patches, and teak plantations were raised. Wherever such plantations are raised, separate compartment numbers like 1b, 2b, 3b, etc were given. In these compartments along with teak, other species like Sal, Bandhan, Kendu, Kasi, Mahula, Amla, Chara, Dhaura, etc. also have good growth. This Working Circle comprises total area of 2297.21 ha, of which the existing plantation area is 2107.21 ha. and the area prescribed for raising new plantation is 190 ha.

11.2.6.3.2Area allotment

Block	Plantation W .C	
	Existing	Proposed
Hatidhara	10	25
Kusumkuhuri	0	0
Talaipathar	0	45
Mahendrapur	50.11	0
Total	**60.11**	**70**
Hatidhara	782.81	0
Talaipathar	40.23	0
Kutulsingha	120	20
Dantarikhol	260	0
Total	**1203.04**	**20**
Talaipathar	0	0
East Baruni	20	30
West Baruni	0	20
Nuagan	110	0
Total	**130**	**50**
Northern	0	0
Handapa	0	0
Dandarugudi	162.31	0
Kholdangiani	53.93	0
Kadalim unda	59.5	10
Dantarikhol	153.07	20
Bankimundi	123.23	10
Total	**552.04**	**40**
Northern	0	0
Bindhyabasini	12.49	0
Kishoreban	34.53	0
Ghosar	60	10
Bijam alhia	55	0
Guja	0	0
Total	**162.02**	**10**
G.Total	**2107.21**	**190**

11.2.6.3.3 Special objective of Management

The special objective of the management of this Working Circle is within the scope of general objective of the management for the entire division. These are as follow:

a. To restock the blank areas through artificial regeneration.
b. To enhance the land productivity through soil and moisture conservation.
c. To increase the biodiversity for improvement of local ecology.
d. To carry out suitable tending operations in the existing old plantation.
e. To carry out the gap plantations in the old plantation areas, wherever it is necessary.
f. To cut the matured teak trees having more than 150 cm girth in the plantation areas and replace those areas with new plantation.

11.2.6.3.4 Implementation and Achievement

In this working circle 2297.21 Ha. area which includes existing plantation area of 2107.21 ha. with good condition and area prescribed for raising of new plantation is proposed only in 190 ha. Plantation done in the past in Hatidhara R.F has reached harvesting stage in this Division. Scheme was submitted for harvesting of old plantations and thinning of old plantation raised in the past but could not be worked due to want of necessary approval from proper quarter. Hence it is decided to submit necessary proposal in the revised plan for its harvesting.

During the current plan 190 Ha. area was allotted for taking up new plantations. 165 Ha of AR/Block Plantation has been taken up during the plan period with deviations as there was no site available for block plantation. However 180 Ha. Block Plantation has been taken outside plantation working circle (Selection and Rehabilitation Working Circle) as furnished in the Table below. Besides a number of plantation (AR-1102 Ha. and ANR-2207 Ha.) has been raised outside working plan area i.e. in Khesra Forest which is furnished in the **Table No 6.-** . The

EXPENDITURES UNDER PLANTATIONS WORKING CIRCLE							
Sl No.	Year	Name of the Range	Name of the R.F	Area covered in ha.	Amount spent (in Rs.)	Work done	Remarks
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1	2010-11	Madhapur	East Baruni R.F	10 Ha.	98800	-	-
2	2011-12	Handapa	Dantarikhol R.F	20 Ha.	197600		
		Bamur	Northern R.F	30 Ha.	296400		
3	2012-13	Athmallik	Mahendrapur R.F	50 Ha.	866375		
		Bamur	Northern R.F	50 Ha.	866375		
4	2013-14	Bamur	Ghosar R.F	20 Ha.	346550	-	-
	2014-15	-	-	-	0	-	-
	2015-16	Bamur	Ghosar RF	10	237760	Completed	
	2016-17	Dhandatopa	Kutulisinga RF Compt. No. 1&2	160	1424957	-do-	
		Handapa	Dantarikhol RF Compt. No. 4.	90	0	-do-	
		Bamur	Ghosar RF Compt. No. 5	50	0	-do-	
		Athmallik	Mahendrapur RF Compt. No.1	70	497400	-do-	
		Dhandatopa	Kutulisinga RF Compt. No. 6	44.66	0	-do-	
		Madhapur	East Baruni RF Compt. No. 2	150	3940696	-do-	
		Madhapur	West Baruni Compt. No. 2	75	0	-do-	
			West Baruni Compt. No. 3	33.75	0	-do-	
			East Baruni Compt. No. 7	41.25	0	-do-	
			East Baruni Compt. No. 3&4	67.5	0	-do-	
		Dhandatopa	Kutulisinga RF Compt. No.6	22.5	0	-do-	
		Handapa	Dantarikhol RF Compt. No. 5	22.5	0	-do-	
		Bamur	East Baruni RF Compt. No. 1	121.9725	0	-do-	
		Madhapur	West Baruni RF Compt. No. 2	10	0	-do-	
			East Baruni RF Compt. No. 2	20	0	-do-	
			East Baruni RF Compt. No. 7	8	0	-do-	
			East Baruni RF Compt. No. 5	20	0	-do-	
		Athmallik	Mahendrapur RF	12.18	130066	-do-	
		Madhapur	East Baruni RF Compt. No.3	35	389230	-do-	
		Bamur	East Baruni RF Compt. No.1	15	0	-do-	
		Madhapur	West Baruni RF Compt. No. 3	2	0	-do-	
		Athmallik	Kusumkuhuri RF	20	33280	-do-	
	2017-18	-	-	-	0	-	-
	2018-19	Athmallik	Kusumkuhuri RF Compt. No. 2&3	150	8138888	-do-	
		Handapa	Dantarikhol RF Compt. No. 5	100	0	-do-	
		Madhapur	Nuagaon RF Compt. No. 4&5	150	0	-do-	
			Nuagaon RF Compt. No. 3	100	0	-do-	
		Athmallik	Hatichara RF Compt. No. 28	60	1111040	-do-	
	2019-20	Bamur	Northern RF Compt. No. 1&2	20	26394	-do-	
			Bhangamunda DPF	40	1798500	-do-	
	2020-21	Bamur	Pitabalibahal DPF	20	467640	-do-	
		Handapa	Handapa RF Compt. No.5	20	639151	-do-	
		Bamur	Gundurijharan DPF	20	495710	-do-	
			Bindhyabasini RF	25	691960	-do-	
		Dhandatopa	Hatichara RF Compt. No. 10	30	981240	-do-	
			Kutulisinga RF Compt. No.- 5	50	2370951	-do-	
		Madhapur	Nuagaon RF	100	0	-do-	
	G.Total			**2166.3125**	**26046963**		

The plantations taken up in different forest blocks are successful at many places and 180 Ha. area has been planted during plan period and Rs.26,72,100/- has been spent. At many places browsing has taken place and growth is less. In the new plan plantations can be taken up with suitable species in 9 forest blocks. These areas need rigorous protection which will boost the coppice growth within next 10-15 years and good growth will come up because many of these blocks contain good soil.

11.2.6.3.5 Observation/ Analysis of past management

No new plantation was taken up in the prescribed area of plantation working circle, but 180 Ha. of Plantation taken in other areas of this Division. However silvicultural operation of the existing plantation has been taken up as per prescription of working plan. The existing old plantation has a good growth and will be verified at the time of field exercises.

11.2.6.3.6 Suggestion for Future Plan

1. The exact area for further plantation and gap plantation under this working circle may be fixed after identification of suitable area during field exercise.

2. The present status and survival percentage in the area under plantation should be surveyed for taking further course of action. Barren hills expect the RF blocks should be given proper and adequate attention for restoration of greenery through artificial regeneration.

3. It is also proposed to provide suitable prescription for management of old plantation. Management may include tending, thinning, climber cutting and annual scheduled of harvesting followed by replanting of the area for sustainable yield to meet the demand of the local people.

4. No plantation has been harvested during the current plan period. Site specific prescription should be given for harvesting of old plantation.

5. The area under PF and VF may be included under plantation working circle subject to proper identification.

6. The 180 Ha. taken in Rehabilitation, Selection Cum-Improvement Working Circle will be included in plantation working circle.

11.2.6.4. PROTECTION WORKING CIRCLE

11.2.6.4.1. General Constitution

This protection working circle includes 6 Nos. of Reserved Forests and 19 Nos. of D.P.F over an area of 6370.03 Ha. Which is furnished in the table. The areas selected are mostly eco fragile sloppy area, Smuggling/Encroachment/Grazing Prone area and catchment area of reservoir.

11.2.6.4.2. Area Allotment:

AREA ALLOTTED TO PROTECTION WORKING CIRCLE				
Sl.No.	**Range**	**RF/ PF**	**Total Area in Ha**	**Area Allotted in Ha**
1	Athamallik Range	Kuber Hill	60	60
2	Dhandatopa Range	Thakurgarh	139.62	139.62
3		Pitabalibahal	160	160
4		Rampur	114.33	114.33
5		Kutulsingha	20	16.5
6		Kusumkuhuri	3	3
7	Madhapur Range	Purunapani	133.55	133.55
8		Muchhapur 'A'	54.58	54.58
9		Muchhapur 'B'	28.77	28.77
10		Mangalpur	87.79	87.79
11		East Baruni	1606.54	104.38
12	Handapa Range	Northern	12336.29	5.66
13		Gundurijharan	802.91	802.91
14		Kuturukani	1226.13	1226.13
15		Solanda	189.8	189.8
16		Berham	185.35	185.35
17	Bamur Range	Susab	141.64	141.64
18		Bhangamunda	111.22	111.22
19		Digi	141	141
20		Batipurunapani	1214.08	1214.08
21		Tileswar	1022.07	1022.07
22		Tulusipur	43.99	43.99
23		Bijamalhia	216.95	26.54
24		Bajpur	69.12	69.12
25		Ghosar	1140.53	288
		G. Total	**21249.26**	**6370.03**

11.2.6.4.3 Special Objectives of Management

1. To evict the encroachments in few blocks like Ghosar, Kusumkuhuri, Kutulsingha, East Baruni etc.
2. To restock the barren and the encroached areas.
3. To enhance soil productivity through soil and moisture conservation measures.
4. To demarcate the boundaries of all the DPFs and resubmit the proposals for notification Under Sec 4(1) of Odisha Forest Act.
5. To enhance the communication and protection network.
6. To protect smuggling and grazing prone area.

11.2.6.4..4 Implementation and Achievements

1. During the present plan period the special protection measures have been carried out under various budget provision of Building a Cadre community, establishment of Control room at Division Office, Engagement of VHF Operator, Special Budget under 101-Protection Working Circle, Education and Training and engagement of Para Forest staff and Protection squad in vulnerable sites.

2. Effective steps have been taken to reduce the illegal smuggling of timber through intensive patrolling by field staffs and engaging Forest Protection Squads, Para forest staff, Anti-smuggling squad, Critically Endangered Area Squad, Squads under Building 'A' Cadre Scheme and Elephant squad in vulnerable area of this Division given in **Annexure- XVII**

3. Critically endangered area squad has been deployed in special area of Dhandatopa Range to protect flora, fauna and the Para Forest Staffs are engaged to support the staffs in protection activities.

4. Protection activities done effectively and successfully in this Division with help of Regular Forest Staffs, Para Forest Staffs, Protection Squad and VSS members. There are 11107 no. of offence cases detected against which 353 numbers of offenders arrested.

Forest Offences Cases booked during 2006-07 to 2020-21					
Year	OR cases	UD cases	Timber seized	Persons arrested	Total
1	2	3	4	5	6
2006-07	1182	399	75.2741 Cum	47	1628
2007-08	1384	242	141.0039 Cum	33	1659
2008-09	1487	330	195.2198 Cum	100	1917
2009-10	1270	109	255.0445 Cum	47	1426
2010-11	1672	258	354.8243 Cum	40	1970
2011-12	1432	260	395.538 Cum	51	1712
2012-13	1308	220	440.332 Cum	20	1548
2013-14	1372	142	448.457 Cum	15	1529
2014-15	1501	113	89.906Cum	28	
2015-16	1590	190	99.4715Cum	71	1766
2016-17	1170	160	71.7999 Cum	75	1405
2017-18	1090	111	38.5103Cum	76	1277
2018-19	774	116	76.6569 Cum	79	969
2019-20	806	75	35.6692 Cum	40	921
2020-21	777	93	60.74627 Cum	104	974
Total-	**18817**	**2821**	**16461 Cum**	**831**	**7312**

Cases booked & Disposed off U/S 56 OF O.F. ACT 1972			
Year	No. of cases booked	No. of cases disposed off	Balance for disposal
1	**2**	**3**	**4**
2006-07	16	14	2
2007-08	12	7	5
2008-09	16	5	11
2009-10	15	2	13
2010-11	16	4	12
2011-12	4	1	3
2012-13	14	3	11
2013-14	13	3	10
2014-15	17	1	16
2015-16	11	0	11
2016-17	13	7	6
2017-18	20	9	11
2018-19	10	2	8
2019-20	11	-	11
2020-21	9	-	9
G.Total	**199**	**61**	**143**

11.2.6.4.5. Awards:-

As per Govt. provision to encourage the VSS members for protection of forests some awards have been recommended at sub division level. Basing on the activities of 170 VSSs of this division in forest protection and co-operation with the staffs for protection. Two nos. of VSS have been awarded with Biju Pattnaik Award for Forest Protection and Conservation at the Sub Divisional Level of Angul District**.**

11.2.6.4.6 Disposal of forest produce: -All the fire wood & timber seized by the department are regularly handed over to the M/s OFDC Ltd. and royalty realized in shape of irregular lot. The year wise forest produce handed over and price realized is given in **Table. No. 11.8** as follows**.** The timber salvaged due to cyclone, the drift and waif woods are also disposed off to OFDC Ltd. immediately to prevent depreciation of the value of the seized produces.

Table. No. 11.8 Timber and firewood delivered to OFDC Ltd.			
Year	**Total Round Timber in cum**	**Fire Wood in qtl.**	**Royalty received in Rs.**
2006-07	2106.85	1436.25	Rs.8220038/-
2007-08	1731.91	1057.5	Rs.7098489/-
2008-09	513.9675	208,00	Rs.3232154/-
2009-10	1171.9218	406	Rs.4001497/-
2010-11	1009.5762	388	Rs.3401879/-
2011-12	1198.994	418	Rs.4635120/-
2012-13	1604.008	567.75	Rs.5847060/-
2013-14	791.764	461.5	Rs.39,09,606
2014-15	956.758	541	Rs.42,11,334
2015-16			
2016-17	85,711	182	769836
2017-18	653.485	7787	4596433
2018-19	1503.358	8424	100052507
2019-20	1340.5775	5967	7712386
2020-21	134.7057	260	-
Total:	**89,343.13**	**22620**	**Rs.111,963.1262**

11.2.6.4.7 Infrastructure Development: -During Plan Period beat house, special protection barrack, Range office, Section office, malkhana, seizure yards, staff quarters have been constructed. Four wheeler Vehicles are provided to Handapa, Madhapur and Bamur Range specially to facilitate the staffs for instant action to the challenging problem of forest protection. The Camp equipments, Fire arms, Fibre boats have been purchased under different schemes during plan period. Arms and ammunition strength are also provided to all Range Officer and field staffs to face all eventualities and also arms trainings are imparted for the maintenance of the weapons, A Divisional Control room is functioning 24 hour to monitor the problem in the field and the redressal activities are given immediate attention.

11.2.6.4.8 Forest Fire: -In this Division, forest fire incidence are very less during the plan period. The fire incidence was attended promptly by the staffs to control the fire. Further to prevent and control fire, special activities are undertaken like engagement of fire watchers, supply of firefighting equipments, training to staffs and VSS members by specialized persons and maintenance of fire lines in the forest blocks. Special awareness campaign organized through banners and posters on fire and to educate people for controlled burning during the time of NTFP collection.

Occurance of Fire in Athmallik Division			
Year	Occurance of fir	Area in Ha.	Remarks
2006-07	4 Nos.	2.5	Ground fire
2007-08	3 Nos.	2	Ground fire
2008-09	2 Nos.	15	Ground fire
2009-10	2 Nos.	1	Ground fire
2010-11	-Nil-	0	Ground fire
2011-12	1 No.	5	Ground fire
2012-13	12 Nos.	10.5	Ground fire
2013-14	11 Nos.	8.5	Ground fire
2014-15	30 Nos.	20.5	Ground fire
2015-16	4	3.5	-
2016-17	32	185.4	-
2017-18	461	82.38	-
2018-19	652	160.11	-
2019-20	170	26	-
2020-21	775	155.07	-
Total	**2118**	**677.46**	

11.2.6.4.9 Observations/ Analysis of past management

1. None of the 19 DPF blocks is under the legal control of the Forest Department. Recently several steps have been taken by the DFO to get some of the blocks notified under Sec 4 (1) of Orissa Forest Act, 1972. Two blocks namely Muchhapur A & B have been resubmitted after complying with the objection of the Forest Settlement Officer. Another three blocks Purunapani, Rampur and Thakurgarh are under the process. These are good steps in right direction.

2. There are encroachments in 9 RF blocks, these encroachments needs to be evicted. Encroachers should be persuaded to vacate the areas and if these efforts fail, they should be evicted with the help of district administration. In these areas trench should be dug out to prevent further encroachments. Once the encroachment is evicted, these areas need to be restocked.

The DPF blocks have been brought under the management fold for the first time in Rehabilitation Working Circle. There are open and eroded areas in these blocks, hence suitable soil moisture conservation works need to be taken up. The structures should be decided basing on the terrain, slope and extent of degradation.

1. The areas should be strictly protected from fire, grazing, poaching and illicit felling.

2. With the available funds 8 Nos. of protection squad and 5 Nos. of fire protection squad have been deployed for which smuggling and fire hazard come under control. Poaching of wild animal has been reduced due to prompt action of the front line staff and wildlife squad.

11.2.6.4.10 Suggestions for Future Plan

1. The boundary lines of the forest blocks need to be verified and DGPS survey has to be carried out.

2. Every month boundary maintenance certificate, pillar position of the forest block in the beat should be given by the beat Forest Guard to know the status of encroachment. To deal with encroachment strong action should be taken by the field functionaries' alongwith joint effort of police, revenue officials to prevent new encroachments.

3. Special teams should be formed at Division and Range level and always be in state of readiness to move within a short notice to the spot of forest offence. Field staffs should create strong information system at their locality to detect the cases.

4. For better effectiveness of detection of forest cases co-ordination among the field staffs of Forest Department, Police Department and Revenue Department is highly essential. DFO is requested to monitor this co-ordination activity.

5. Forest Officers at each level should furnish the case record of the offence cases in time and should track the progress of the case and its quick disposal.

6. The forest roads should be improved for transportation of forest produce, for supervision of forestry operation and to check smuggling, illicit felling and poaching.

7. The Tiger land scape area and Tiger Corridor area included in different working circle of the outgoing plan over an area of 7992.41 Ha. will be included in Protection working circle in the revised working plan excluding the area of Hatidhara RF as the entire area have been mereged in Satkosia WL Gorge Sanctuary. Hence special protection measures will be taken up for Tiger Landscape and Tiger Corridor.

11.2.6.5 BAMBOO (OVERLAPPING) WORKING CIRCLE

11.2.6.5.1 General Constitution

The total area included in this working circle is 21936.32 i.e. whole of Talaipathar and Hatidhara blocks.

11.2.6.5.2 Special Objective of Management.

The special objectives of the management of the Bamboo (Overlapping) Working Circle are within the scope of general objectives of management of the entire division. These are as follows: -

(i) Systematic management of the bamboo forests to obtain sustained yield.

(ii) Improving the condition of the Bamboo crop

(iii) Meeting the demand of the local people and artisans from the depots of the Orissa Forest Development Corporation.

(iv) Employment to forest dwellers and local people.

11.2.6.5.3 Area Allotment.

The entire Talaipathar and Hatidhara blocks have been included in the Bamboo (Overlapping) Working Circle. Hatidhara block is categories under Treatment type "A" and Talaipathar block under Treatment type "B". These two blocks spread over three ranges. The area wise details along with number of compartments in each range are given in **Table.11.9.**

Table.11.9.Area allotted to Bamboo overlapping working circle

Range	Forest Block	No. of Comptt	Area
Athamallik	Hatidhara (Part)	18	5938.81
Athamallik	Talaipathar (Part	6	1806.04
Madhapur	Talaipathar (Bal)	10	3151.51
Dhandatopa	Hatidhara (Bal)	27	8984.97
Dhandatopa	Talaipathar (part)	8	2054.99
		Total	**21936.32**

11.2.6.5.4 Observation / Analysis of the Past Management.

This Working Circle covers potentially rich bamboo areas. Bamboo survey had been carried out in Talaipathar and Hatidhara blocks. As per the provisions of the Bamboo Cutting Rules, Bamboo cutting was feasible in Hatidhara block only.

The Taleipathar R.F included in Bamboo working circle where no improvement work has been taken up due to want of fund. Hence the purpose of involving in this working circle is not fulfilled.

The total area allotted to this working circle is 21936.32 Ha. and 2 cutting series namely Talaipathar and Hatidhara have been constituted. Salia and Daba bamboo were worked only in 2007-08 & production of commercial bamboo has been obtained during 2007-08, 2008-09, 2010-11 and 2011-12. In the outgoing plan only ones i.e. in 2007-08 710.120 MT of Salia Bamboos was obtained throughout the plan period. The data on the production of industrial bamboo and commercial bamboo is given below in the table. The coupe has not been worked out during the plan period due to non-availability of sufficient bamboo clumps which are commercially viable. Silvicultural operation has been taken up in all the areas of coupe. The details of bamboo coupe worked in different forest areas are given in the following **Table No. 11.10** as follows.

Table No. 11.10 Details of bamboo coupe worked

Year of working	Name of the coupe	Production (industrial Bamboo) (in MT)			Production (Commercial Bamboo) (in No.)	Royalty paid by OFDC, Ltd.	Reason for No working
		Salia	Daba	Total			
1	2	3	4	5	6	7	8
2006-07	Hatidhara (S & N) BCB	No. Working	-	-	-	-	During 2006-07 offered to OFDC, Ltd but surrender due to un-productive and un-economical.
2007-08	Hatidhara (S & N) BCC	710.120 MT	-	710.120 MT	1961 nos	-	
2008-09	Hatidhara (S & N) BCD	-	-	-	10933 nos	-	
2009-10	Hatidhara (S & N) BCA	No Working				-	During 2009-10 offered to OFDC, Ltd, Anugl for taking delivery but the OFDC, Ltd have not taken delivery of the coupes.
2010-11	Hatidhara (S & N) BCB	-	-	-	3862 nos	-	
2011-12	Hatidhara (S & N) BCC	-	-	-	8473 nos	-	
2012-13	Hatidhara (S & N) BCD	No working	-	-	-	-	During 2012-13 offered to OFDC, Ltd, Anugl to work out but the OFDC, Ltd have not taken delivery of the coupes.

2013-14	Hatidhara (S & N) BCA	No working	-	-	-	-	Delivered during 2013-14 but surrendered due to non-economic vide his Memo No. 835 dt. 20.12.2013
2014-15	Hatidhara (S & N) BCB	No Working	-	-	-	-	Delivered during 2014-15 but the OFDC, Ltd surrender due to there is no potentiality for commercial exploitation of Bamboo from these coupes.
2015-16							The Bamboo coupe has been included under Satkosia Groge Wildlife Sanctuary So the coupe operation cannot be dawn within the Sanctuary area
2016-17	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	
2017-18	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	
2018-19	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	
2019-20	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	
	Total			**710.120 MT**	**25229 Nos.**		

The detail of Bamboo Silviculture work taken up during the plan period is furnished in table below.

S.S.O operation taken up in Bamboo Coupes					
Year of working	Name of the coupe	Forest block & Compt. No.	Area worked (In Ha.)	Clumps worked (No.)	Scheme
1	2	3	4	5	6
2006-07	B.C (B)	Hatidhara (S) Compt. No.40,41,42,43 & 44	1660.45 Ha.	No work taken u	-
		Hatidhara (N) Compt. No.8,9,10,11,12,13 & 14	2375.45 Ha.	No work taken u	-
2007-08	B.C (C)	Hatidhara (S) Compt. No.34,35,36,37,38 & 39	1822.51 Ha.	No work taken u	-
		Hatidhara (N) Compt. No.15,16,17,18 & 19	1699.85 Ha.	No work taken u	-
2008-09	B.C (D)	Hatidhara (S) Compt. No.28,29,30,31,32 & 33	1540 Ha.	38500	S.S.O Bamboo General
		Hatidhara (N) Compt. No.20,21 & 22	1209.37 Ha.	No work taken u	-
2009-10	B.C (A)	Hatidhara (S) Compt. No.45,46,47,48,49 & 50	828 Ha.	20700	S.S.O Bamboo Gen
		Hatidhara (N) Compt. No.1,2,3,4,5,6 & 7	212.5 Ha.	5990	S.S.O Bamboo CAMPA A.P.O

		Hatidhara (S) Compt.No. 40,41, 42,43 & 44	480 Ha.	12000	S.S.O Bamboo General
2010-11	B.C (B)	Hatidhara (N) Compt. No.8,9,10,11,12,13 & 14	950.1 Ha.	23752	S.S.O Bamboo CAMPA A.P.O
		Hatidhara (S) Compt. No.34,35,36,37,38 & 39	800 Ha.	20000	S.S.O Bamboo General
2011-12	B.C (C)	Hatidhara (N) Compt. No.15,16,17,18 & 19	1039 Ha.	25975	S.S.O Bamboo CAMPA A.P.O
		Hatidhara (S) Compt. No. 28,29, 30, 31,32 & 33	1350 Ha.	33750	S.S.O Bamboo General
2012-13	B.C (D)	Hatidhara (N) Compt. No.20,21 & 22	2500 Ha.	62500	S.S.O Bamboo CAMPA A.P.O
		Hatidhara (S) Compt. No.45,46,47,48,49 & 50	150 Ha.	3750	S.S.O Bamboo General
2013-14	B.C (A)	Hatidhara (N) Compt. No.1,2,3,4,5,6 & 7	1500 Ha.	37500	S.S.O Bamboo CAMPA A.P.O

2014-15	Hatidhara South B	Hatidhara & Compt. No. 43,43 &44, 44	700.1	24602	CAMPA
-do-	Hatidhara North A &B	Hatidhara & Compt. No. 1,2,3,4,5,6,7,8,9 &14	2464.4	68476	CAMPA
2015-16	Hatidhara South C	Hatidhara & Compt. No. 45, 45 &48, 49,50,46	907.7	22600	CAMPA
-do-	Hatidhara North B	Hatidhara & Compt. No. 11	200	5000	CAMPA
2016-17	-	-	-	-	-
2017-18	Hatidhara South A	Hatidhara & Compt. No. 50,48 &49,49 &50	605.22	15300	CAMPA
-do-	Hatidhara North A	Hatidhara & Compt. No. 1,3,4,5	1401	35125	CAMPA
2018-19	Hatidhara South E	Hatidhara & Compt. No. 40,40 &41,41 &42,42 &43	649	16270	CAMPA
-do-	Hatidhara North B	Hatidhara & Compt. No. 8,9,10,11,13,14	1320.1	31016	CAMPA
2019-20	-	-	-	-	-
2020-21	Hatidhara South C	Hatidhara & Compt. No. 28,32,28&29,29,31	300	6935	CAMPA
-do-	Hatidhara North C & D	Hatidhara & Compt. No. 16,20,21 & 22	503	13050	CAMPA
G.Total			**29167.75**	**510791**	

The area under bamboo coupes will be enumerated again to find out high production area and less production area. There is degradation with regards to quality and density of the bamboo. Natural regeneration of bamboo is observed in some forest blocks. The impact of grazing, fire and illicit felling should be stopped completely. The O.F.D.C. Ltd. is not taking up bamboo work because it is not commercially viable. In total 710.120 MT of Saila bamboo has been harvested.

Year of working	Name of the coupe	Production (industrial Bamboo) (in MT)			Production (Commercial Bamboo) (in No.)	Royalty paid by OFDC, Ltd.	Reason for No working
		Salia	Daba	Total			
1	2	3	4	5	6	7	8
2006-07	Hatidhara (S & N) BCB	No. Working	-	-	-	-	During 2006-07 offered to OFDC, Ltd but surrender due to un-productive and un-economical.
2007-08	Hatidhara (S & N) BCC	710.120 MT	-	710.120 MT	1961 nos	-	
2008-09	Hatidhara (S & N) BCD	-	-	-	10933 nos	-	
2009-10	Hatidhara (S & N) BCA	No Working				-	During 2009-10 offered to OFDC, Ltd, Angul for taking delivery but the OFDC, Ltd have not taken delivery of the coupes.
2010-11	Hatidhara (S & N) BCB	-	-	-	3862 nos	-	
2011-12	Hatidhara (S & N) BCC	-	-	-	8473 nos	-	
2012-13	Hatidhara (S & N) BCD	No working	-	-	-	-	During 2012-13 offered to OFDC, Ltd, Angul to work out but the OFDC, Ltd have not taken delivery of the coupes.
2013-14	Hatidhara (S & N) BCA	No working	-	-	-	-	Delivered during 2013-14 but surrendered due to noneconomic vide his Memo No. 835 dt. 20.12.2013
2014-15	Hatidhara (S & N) BCB	No Working	-	-	-	-	Delivered during 2014-15 but the OFDC, Ltd surrender due to there is no potentiality for commercial exploitation of Bamboo from these coupes.

11.2.6.5.5 Suggestion for future Management:

1. Area covered under last working plan has reduced due to non-availability of commercially viable bamboos in coupe areas.

2. The Bamboo clumps in interior areas may be harvested by forest staff & sold to local people at the rate fixed by OFDC which will solve the problem of illicit felling and fulfill the demand of the local people.

3. In all coupes detailed enumerations are needed to assess the availability of commercially viable clumps and feasible out turn for working. The commercially non-viable coupes need to be stopped from working for few years.

4. Extensive SSO works are to be taken up to enrich the stock by improving the clumps for future sustained yield.

5. Adequate fire protection and improvement in cutting process need to be ensured by additional prescription in working plan.

6. The Bamboo over lapping working circle will be continued in Talipathar block only as the entire Hatidhar RF have been merged into Satkosia WL Sanctuary.

7. The guidelines issued by RCCF, Angul for management practices for working of Bamboo coupes within Tiger landscape and Tiger corridor vide Memo No.1681 Dt.27.04.2015 will be followed.

(a) Bamboo working not to be taken up in the areas of tiger landscape, frequently visited by tigers/leopards.

(b) New Bamboo culms attract wild herbivores as food. Hence, patches of un-worked culms should be staggered with worked areas to avoid gregarious use of wildlife.

(c) Gregariously flowered bamboo clumps will be harvested in scattered blocks to avoid creation of large opening.

11.2.6.6 NTFP (OVERLAPPING) WORKING CIRCLE

11.2.6.6.1 General Constitution

The forests of Athamallik Division are rich in biodiversity. Species yielding non-timber forest produce (NTFP) like fruits, seeds, flowers, tubers, barks, leaves, roots and gums are abundant. The livelihood security of the people in and around the forests largely depends on these products. NTFP collection has been largely unorganized in this division. The present practice of collection of various NTFP items is not scientific and it is not sustainable. Though NTFPs are within the broad spectrum of forestry development and tribal welfare, the investment in NTFP sector is not a priority. This Working Circle is constituted with an aim to address the problems with regard to scientific management of NTFPs and the problems involving means of livelihood of the rural poor and tribals of the locality and increasing the investments. This Working Circle overlaps the entire Working Plan area of the Division.

11.2.6.6.2 Area allotted

This Working Circle overlaps the entire Working Plan area of the division (59818.00 Ha.).

11.2.6.6.3 Objectives Management

The special objectives of management are as follows:

a) To regulate the collection and extraction of various NTFPs with a view
- (i) To sustain desired species composition,
- (ii) To encourage regeneration of the forests,
- (iii) To promote sustainable management of forests
- (iv) To protect the interests of the primary gatherers.
- (v) To promote the scientific extraction of the various NTFP items.

b) To optimize collection and extraction of various NTFPs consistent with the first objective.

c) To enhance the value of forests by way of
- (i) Developing new NTFPs,
- (ii) Creating opportunities for value-addition in existing NTFPs,
- (iii) Strengthening marketing and other local institutions.

d) To enhance the stakes of local people in NTFPs and to extend skills to local people for sustainable collection, extraction and utilization of various NTFPs.

e) To encourage greater financial and managerial inputs in forests to promote regeneration of most valuable and desirable NTFPs and to enhance productivity of forests.

f) Organization of Primary Collectors through village level institutions like VSS, Self Help Groups, Cooperative societies etc. to protect the interests of the people from exploitation of the middlemen.

11.2.6.6.4 Observation

The NTFP items are regulated by Grampanchayat and forest department is not aware about procurement, quantity collected, marketing and utilization pattern of NTFP. The Grampanchayat are not registering transportation and collection of NTFP items and they are not maintaining information about the quantity of NTFP procured, transported and sold.

Inventorization of NTFP items has been taken up in all ranges. The scientific management of NTFP items and marketing linkage has not been practiced as a result the local villagers are not getting adequate return from NTFP items. The Forest and Environment Department and Panchayat Raj Department officials will organise coordination meeting among them to boost the growth and marketing of NTFP items. To know the potentiality of the NTFP in the Division, Inventorization of NTFP has been done in the outgoing plan period..

11.2.6.6.5 Suggestion for Future Management

1. Collection of fixed NTFP item are going on in this division on a substantial scale for Mahua, flower and Kusum seeds since 69 NTFP items are dealt with Panchayat in Odisha, no collection figure are available with the forest department. There is a view that the villagers have not been benefited to the desired extent due to transfer of above NTFP to the Panchayat. For sustainable harvest of NTFP's, prescription for closure areas for collection/extraction of particular forest produce for a specific period (closed area), banning collection for a certain period (close season) and limits on quantity to ensure sustainable harvests for future.

1. Training to primary collectors for sustainable collection and value addition.
2. Capacity building for VSS members.
3. Adequate funding for processing.
4. Creation of market at village, block and district level and their linkage with buyers.
5. Formation of S.H.G.
6. To protect NTFP trees and promote their regeneration.

11.2.6.7 WILDLIFE (OVERLAPPING) WORKING CIRCLE

11.2.6.7.1 General Constitution

The forests of Athamallik Division have got rich heritage of wild life. Being on two sides of a coin, forest and wild life management go hand in hand. At the time of Athamallik Raja administration, wild life was found in abundance all over the division due to rigid preservation/protection policy adopted by the then rulers. At that time Hatidhara was reserved for Elephants and the shooting of animals in the reserved forests was prohibited except with the prior permission of the ruler. With the merger of state and opening up of roads to forests the wild life population of the Division has started diminishing. Wild life Management has got the attention of the planners only in the last two decades, but still then the financial allocation for the wild life management are very much limited. The National Forest Policy 1988 has emphasized the need to conserve wildlife and their habitat. Therefore, to provide protection to existing wildlife, to improve their habitat and to conserve bio-diversity, the Wildlife (Overlapping) Working Circle that extends to entire Working Plan area of the Division has been constituted, with optimistic idea that limitations encountered during the last plan period will not prevail during this plan period.

11.2.6.7.2 Area Allotment:

The area of wildlife over lapping working circle extend to entire Division i.e. 59818.00 Ha.

11.2.6.7.3 Special Objectives of Management

The special objectives of the management of the Wildlife Working Circle are within the scope of general objectives of the management of the entire division. These are as follows:

(i) Conservation, protection and improvement of existing wildlife habitat.
(ii) Protection of wildlife in general and endangered species in particular.
(iii) Eco tourism and People's participation to create awareness.
(iv) Increase in biodiversity and wildlife population.
(v) Prevention of wildlife related crimes.

11.2.6.7.4 DISTRIBUTION OF WILDLIFE IN RELATION TO VEGETATIVE COVER

This Division forms an important area of the Elephant corridor namely (Nuagaon-Baruni) and the proposals are given to declare the area as Mahanadi Elephant Reserve.

11.2.6.7.5 Implementation and Achievements

The number of elephants in the Division has increased. Some cases of elephant death due to disease, poaching and electrocution have been noticed. To prevent destruction of elephant habitat one permanent elephant corridor namely (Nuagaon-Baruni) has been notified and 60 Nos. of water bodies have been created, construction of elephant proof trench (6 Km.) and solar fencing over (2 Km.) have been done from 2005-06 to 2013-14. Improvement of elephant corridor taken up through plantation to provide food and shelter and awareness has been created among the people to reduce man animal conflict. Regular monitoring and coordination meeting with energy department and railway department has been conducted frequently in Divisional Level and Range Level to avoid the accident of elephant.

Abstract of wildlife Census report of Athmallik Forest Division.

Sl.No.	Species	2010	2011	2012	2013	2014	2015
1	2	3	4	5	6	7	8
1	Elephant	15	-	28	-	-	56
2	Crocodile	2	4	4	3	3	5
3	Tiger	-	-	-	-	-	-

Abstract of bird Census report of Athmallik Forest Division.

Sl.No	Species	2010	2011	2012	2013	2014	2015
1	2	3	4	5	6	7	8
1	Indian Shag	72	82	70	69	134	90
2	Little Cormorant	40	44	36	38	92	75
3	Indian Pond Heron	48	55	29	66	138	68
4	Cattle Egret	36	43	10	63	88	36
5	Little Egret						6
6	Asian Openbill	29	26	30	28	28	46
7	Lesser Whistling Duck	576	580	568	595	1000	1299
8	Brahminy Ruddy Shelduck	39	36	44	37	2	113
9	Red-crested Pochard						16
10	White-breasted Water hen						23
11	Painted Snipe	168	194	160	156		53

12	Yellow-wattled Lapwing	11	12		8	29	18
13	Grey-headed Lapwing	42	38	65	44		18
14	Common Sandpiper						83
15	White breasted kingfisher	68	77	72	87	35	66
16	Indian Pied kingfisher						7
17	Brahmani kites	1	1		1		1
18	Parniah Kite	1	1		2		3
19	Ruddy Shelduck						8
Total		**1131**	**1189**	**1084**	**1194**	**1546**	**2029**

The carnivores have reduced in number and their sighting is very less. The man-elephant conflict is increasing day by day because elephants are coming out to open village areas due to non-availability of food, water and cover inside forest. Elephants are frequently entering into the peripheral area of paddy fields, human habitation and damaging the paddy crops and houses etc. During the plan period total area of 692.4205 Ac. was damaged by the elephants for which an amount of Rs.35,11,975/- was paid towards crop damages and an amount of Rs.51,000/- was paid towards house damages (19) Nos. during the plan period 2006-07 to 2013-14.

11.2.6.7.6 Man animal conflict

In this Division the animal attack on human being are mainly caused by the elephant and wild bore. Though sufficient measures are taken for wildlife depredation by engaging elephant squads and elephant trackers in the elephant movement areas still the man animal conflict exist and casuality of both human being and wild animals are happening. The elephant population is on the increasing trend as a result lot of crop damage is caused due to elephant depredation.

11.2.6.7.7 Suggestions for Future Plan.

1.Due to biotic interference in the natural forest area man-animal conflict has increased. The number of elephants has increased according to census data. The death of elephants due to electrocution, poaching and disease is reported. The electric pole inside forest area should be covered with scoping to check the electrocution of elephants.

2.The water harvesting structures are contaminated and muddy due to interference of local cattle. Sufficient number of WHS having three meter depth and clean water should be created. Salt licks may be created inside dense forest areas. Adequate steps should be taken to check the elephant depredation. The elephant are coming out to village in search of food, grass and water.

3.The plantation of fruit bearing trees and bamboo inside forest area will stop elephants from coming out to villages.

4.The development of corridor is essentially required. The improvement of habitat will help in checking elephant menace.

5. Awareness meeting to be conducted in forest fringe villages to know the behavior and attitude of animals.

6. Rescue equipments like cage, nets, tranquilization gun etc. to be purchased to deal the situation instantly.

7. Protection activities will be strengthened in Tiger landscape and Tiger Corridor areas with setting up of new anti-poaching camps.

8. Half yearly sign survey for both ungulates and carnivores will be taken up in areas coming under Satkosia Tiger landscape and Tiger corridor following NTCA Guidelines.

11.2.6.8 JOINT FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE

11.2.6.8.1 General Constitution

This Working Circle includes Working Plan areas that are under the protection of Van Samrakshana Samities. The total area allotted to this Working Circle is 2154.81 ha. This is an Overlapping Working Circle, overlapping with Selection, Rehabilitation and Plantation Working Circles. The important forest blocks included in this Working Circle are Hatidhara, Kusumkuhuri, Nuagan, Bankimundi, Dandarugudi, Handapa, Kadalimunda, Kholdangiani and Dantarikhol. In Athamallik Division, the VSS are mainly protecting the Khesra forests; more than 6000 ha of Khesra forests are under the protection of VSS and the RF area under the VSS protection is 2154.81 ha. Since the Working Plan is written for Reserved Forests and PFs, the JFM area under these forests is taken under the preview of this Working Circle. However, the prescriptions given can also be extended to the VSS areas in the Khesra forests. The prescriptions can also be extended to the other VSS areas formed in the course of the Working Plan period.

11.2.6.8.2 Special Objective of Management.

· To involve communities in forest and natural resource management.
· To make the people and Forest Department equal partners in management.
· To restock the barren and blank areas through artificial regeneration.
· To increase the productivity of soil through suitable soil and moisture conservation activities.
· To encourage people to rationally utilize the community resources
· To involve people in NTFP collection and trade.
· To create income generating activities in the villages protecting the forests.
· To study the scope of enhancing the network of VSS protection areas.
. To restore and improve the microclimate and micro-edaphic conditions.

11.2.6.8.3 Area Allotment.

There are 54 VSS, protecting forests in RF area. These areas are distributed over five ranges. Maximum VSS are present in Handapa and Bamur ranges. The State Government has formulated the first JFM resolution in 1988, subsequently modified in 1990, 1998, 2004, 2010, 2012 and 2015.

11.2.6.8.4 Method of execution of Operation:

The implementation of this working circle has been done through the VSS which are regulated vide Resolution No. **16524-IF-Affn.17/2011/F&E** of Forest and Environment Dept. of Odisha. The technical guidance and monitoring is done by the officials of the Forest Department. A micro plan for each VSS has been prepared with technical support from the Forest Department. Though the micro plan is locally focused but it is in consonance with the broad objective of the working plan of the Division approved by Govt. of India. Monitoring through maintenance of record and submission of reports with periodical meeting of both general body and executive body as prescribed in aforesaid guideline has also been carried out. An amount of 27lakh have been provided for strengthening of the VSS to improve their capability and technical skill for shouldering the entire responsibility of management in the long run.. Forest Development Agency is functioning to provide financial assistants to the VSS for implementation of Micro plan. An amount of Rs.27,41,774/- has been provided to the VSS through FDA.**Forest Development Agency of Athmallik Division.**

Sl. No.	Year	Name of F.D.A	Area in Ha.	Name of the work	Name of the Range
1	**2**	**3**	**4**	**5**	**6**
1	2013-14	Khajurijharan, VSS	25 Ha.	ANR	Madhapur
2		Dhuliapada, VSS	20 Ha.	ANR	Madhapur
3		Kenchuanali, VSS	25 Ha.	ANR	Dhandatopa
4		Naktinali, VSS	25 Ha.	ANR	Bamur
5		Dalimura, VSS	25 Ha.	ANR	Bamur
TOTAL			**120 Ha.**		

Sl. No.	Year	Name of F.D.A	Area in Ha.	Name of the work	Name of the Range
1	**2**	**3**	**4**	**5**	**6**
1	2015-16	Kadapada-Mangalpur	30 Ha.	ANR	Madhapur
2		Dalapaka	20 Ha.	ANR	Bamur
TOTAL			**50 Ha.**		

Expenditure.

Year	Total amount received from SFDA	Utilisation of funds		Balance
		Name of the work	Expenditure incurred	
1	**2**	**3**	**4**	**5**
2013-14	4,37,346/-	ANR	4,37,346/-	Nil
2014-15	19,19,295/-	ANR	19,19,295/-	Nil
2015-16	3,85,133/-	ANR	3,85,133/-	Nil
Total	**27,41,774/-**		**27,41,774/-**	

11.2.6.8.5 Observation / Analysis of the Past Management.

During the plan period more 132 VSS has been formed and total VSS comes to 170 Nos. and area covered is 13,121.19 Ha. and VSS formed inside R.F in 54 Nos. over an area of 3358.68 Ha.

1. By forming more VSS the degraded forest have been rehabilitated.
2. The sense of responsibilities of the forest fringe villagers have come up in natural forest adjoining to plantation area.
3. By introduction of FDA 7 Nos. VSS in this Division have included and villagers were given financial assistance for the development of their livelihood through entry point activities. As a result the involvement in protection, conservation and management of forest among the villagers have been created in this Division.
4. The NTFP, interim harvest, those are collected are not properly recorded.

11.2.6.8.6 Result of Consultation with the VSS/FDA

1. Consultation with VSS members were held on various occasion during field visit and governing body meeting for FDA.
2. The expectation of VSS was to re-designate the Foresters/Forest Guards as the member Secretary of their VSS, which has already been taken care of vide memorandum made in government resolution in 2015.
3. The members were happy with the usufructory benefits accruing to them as per the VSS guidelines i.e. 100% intermediate harvest and 50% for final harvest. But in certain villages conflicts are arising in distribution of usufructory benefits as the demand exceeds supply. Therefore there is a need to supply alternative sources of firewood and timber in such villages to reduce dependence on forest areas. The villagers also expected more entry point activities in their villages.
4. Since many villages are affected due to elephant depredation during September to December their demand for erection of either elephant proof trench or solar fencing around their villages can be accommodated to some extent.
5. VSS members expected to visit some of the successful areas outside the Division/State for better appreciation.

11.2.6.8.7 Suggestion for future Management:

Present scenario of dwindling of forest wealth coupled with galloping rise in demand of forest produce, poses a great challenge for management of forest by forest officials alone. The role of local inhabitants specifically the forest fringe villagers in the field of protection, production, management of forest wealth was not significant thereby leaving a greater responsibility on the officials of Forest Department. In order to overcome such a problematic situation, the joint forest management was conceived during early 70s to make the local people both producer and consumer of forest produce through VSS.

The dependence of the local people particularly rural populace on forest to meet their bonafide needs will continue for some more years. In such circumstance, the joint forest management is a panacea to all such problems. In this division having high density population and scanty forest area, there is no alternative except resorting to joint forest management. Moreover, the result of this working circle during the current plan period is very much effective in protection and management of forest. So it is suggested to continue this working circle in the future plan with greater emphasis on the following points.

- More VSSs are to be formed to ensure participatory management.
- The plantations raised during the plan period under different schemes need to be managed under JFM by VSS members.
- Micro plan is to be prepared in each VSS and various site specific activities are to be taken up.
- Motivation training and exposure field visit should be carried out periodically to ensure continuous participation.
- Incentives are to be given to VSSs
- The SHGs and NGOs in the villages having VSSs are to be involved in Management of Forest
- Effort should be made to create sustainable income generating activities through Entry Point Activities.
- Capacity building of VSS will be taken up to reduce man animal conflict.

11.2. 7 Assessment of invasive weed eradication :

Steps taken towards invasive weed eradication is furnished in **Table No. 11. 11** as follows.

TABLE NO.11. 11 Invasive weed eradication					
Name of the Range.	Year of activity.	Forest Block.	Compartment No.	Area treated (Ha)	Expenditure incurred (Rs)
Madhapur	2010-11	Ketkijharan KF	-----	73Ha	45,900.00
		Nuagaon RF	Comp No. 1	47 Ha	29,160.00
		East Baruni RF	Comp No. 7	20 Ha	9,000.00
		Kadapada Mangalpur KF	------	60 Ha	27,000.00
		Baruni RF & Subarnapur KF		60 Ha	24,570.00
Dhandatopa	2015-16	Hatidhara RF	Comp No. 22	20 Ha	40,000.00
Handapa	2016-17	Dantarikhol RF	Comp No.3	20 Ha	40,000.00
		Handapa RF	Comp No.5	20 Ha	40,000.00
Bamur	2016-17	Northern RF	Comp No 1,2 & 3.	65Ha	40,000.00
Athmallik	2017-18	Hatidhara RF	39	10	20000
Dhandatopa		Northern RF	9	10	20000
Madhapur		Taleipathar RF	7&8	10	20000
Bamur		Northern RF	5	10	20000
Handapa		Handapa RF	5	10	20000
Bamur	2018-19	East Baruni RF	1	10	24000
Handapa	2019-20	-	-	0	0
	Total			**770**	**19823630**

11.2.7 Reduction in Grazing:

Grazing continues to be unregulated and going on within the Forest. No effective alternative has been taken up during the past working plan inspite of proposal. It is felt to take sound measures to reduce grazing in forests in the current plan.

11.2.8 Reduction in fuelwood & fodder collection:

Collection of firewood continues from the Forest area. No effective alternative has been taken up during the past working plan inspite of proposal. It is felt to take sound measures to reduce collection of firewood and fodder species from forests in the current plan.

11.2.9 Insect Pest Management:

This part is totally untouched. Effective step need to be taken in this respect.

11.2.10 Protection of catchment:

Catchment treatment has been done for protection of Manjore reservoir. However this need to be strengthened.

11.3 Special works of improvement undertaken :

11.3.1 Fire protection:

11.3.1.1 Creation of firelines:

During the period from 2005-06 to 2015-16, firelines created in various Forest Blocks are furnished in **Table No. 11.12** as follows.

TABLE NO. 11.12 Creation/ Maintenance of Firelines					
Sl No.	Year	Location of fire line	Length covered in Km./Ha.	Expenditure in Rs.	Remarks
1	**2**	**3**	**4**	**5**	**6**
1	**2005-06**	West Baruni R.F	2	1365	
2		Handapa R.F Compt. No.5	3	2730	
3		Kishoreban R.F	2	1365	
4		Northern R.F	2	1365	
5		Northern R.F Compt. No.12	2	4935	
6		Hatidhara R.F	2	1312.5	
7		Hatidhara R.F	2	1417.5	
8		Hatidhara R.F Compt. No.8	1	1020	
9		-do-	1	1020	
10		-do-	1	1020	
11		-do-	1	1020	
12		West Baruni R.F	2	1365	
13		Hatidhara R.F	2	5000	
14		Taleipathar R.F Compt. No.1	2	5000	
15		Taleipathar R.F Compt. No.8	2	5000	
16		Northern R.F (Udal)	4	5000	
17		Purunapani Teak Plantation	8	1785	
18		Mahendrapur R.F	2.26	1470	
19		Kantapada K.F		3150	
		Total	**41.26**	**46340**	

1	**2006-07**	Hatidhara R.F Compt. No.8	3.6	5905	
2		West Baruni R.F		1100	
3		Taleipathar R.F		1155	
4		Northern R.F Compt. No.12	2.5	5940	
5		Taleipathar R.F		1770	
6		Hatidhara R.F Compt. No.29,30,31	2	1000	
7		Kusumkuhuri R.F	2	1000	
8		Taleipathar R.F Compt. No.18,19	2	1000	
9		Mahendrapur R.F, Taleipathar R.F Compt. No.18		1000	
10		Hatidhara R.F Compt. No.49,50		1000	
11		Hatidhara R.F Compt. No.45,46,48		1000	
12		West Baruni R.F Compt. No.3	1.5	3750	
		Total	**13.6**	**25620**	

1	**2007-08**	Bankimundi R.F	50	3500	
2		Dantarikhol R.F	150	10500	
3		Kadalimunda R.F	100	7000	
4		Dantarikhol R.F	25	3500	
5		Hatidhara R.F	120	8400	
6		Nuagaon R.F Compt. No.5	2.5 Km.	10500	
7		Northern R.F	10 Km.	4900	
8		Nuagaon R.F	1 Km.	4200	
9		Taleipathar R.F Compt. No.7	2.5	2800	
10		Northern R.F Compt. No.12	2.5 Km.	8000	
11		Kusumkuhuri R.F	120	8400	
12		Kusumkuhuri R.F Compt. No.1 & 2	120	8400	
13		Mahendrapur R.F	3 Km.	2700	
14		Dantarikhol R.F Compt. No.3	190	13300	
15		Bindhyabasini R.F	100	7000	
16		East Baruni R.F	100	7000	
17		Bijamaliha R.F	100	7000	
18		Gundurijharan Plantation	0.8 Km.	606	
19		Hatidhara R.F	75	5600	

20		Taleipathar R.F Compt. No.19 & 20	10 Km.	24990	
21		Hatidhara R.F Compt. No.48 & 46	5 Km.	12530	
22		Hatidhara R.F Compt. No.40 & 45	5 Km.	12460	
23		Hatidhara R.F Compt. No.16	6 Km.	14980	
24		Taleipathar R.F Compt. No.3	4 Km.	9800	
25		Hatidhara R.F Compt. No.12,13,14,18 & 19	4 Km.	10010	
26		Taleipathar R.F Compt. No.4	2 Km.	15190	
27		Nuagaon R.F Compt. No.1 & 2	4 Km.	9940	
28		Nuagaon R.F Compt. No.4	2 Km.	4900	
29		Taleipathar R.F Compt. No.4	4 Km.	9940	
30		Taleipathar R.F Compt. No.9,10 & 12	6 Km.	14980	
31		Handapa R.F	8 Km.	500	
32		Northern R.F	6 Km.	14980	
33		-do-	3 Km.	6300	
34		-do-	4.5 Km.	11200	
35		-do-	4 Km.	9940	
36		-do-	3 Km.	14980	
37		Northern R.F Compt. No.1,2 & 3	1.5 Km.	7420	
38		West Baruni R.F Compt. No.2 & 3	5 Km.	7420	
39		East Baruni R.F	20 Km.	29980	
		Total	**1252.5 Ha. 126.8 Km.**	**365746**	

1	**2009-10**	Kutulsinga R.F	250	22500	
2		Nuagaon R.F	85.7	7740	
3		Nuagaon R.F	160.3	14400	
4		Nuagaon R.F	100	9000	
5		East Baruni R.F	150	13590	
6		West Baruni R.F	100	9090	
7		West Baruni R.F	100	9000	
8		West Baruni R.F	10	900	
9		East Baruni R.F	30	2700	
10		Kholadangiani R.F	100	9000	
11		Dantarikhol R.F	150	13500	
12		Dantarikhol R.F	225	20250	
13		Bankimundi R.F	50	4500	
14		Bankimundi R.F	10	900	
15		Kadalimunda R.F	100	9000	
16		Kadalimunda R.F	10	900	
17		Bindhyabasini R.F	100	9000	
18		Bijamaliha R.F	100	9000	
19		East Baruni R.F	100	9000	
20		Kishoreban R.F	100	9000	
21		Singarimunda K.F	20	5400	
22		Taleipathar R.F	150	27000	
23		Northern R.F	100	9000	
24		Northern R.F	150	30060	
25		Northern R.F	242	51750	

26		East Baruni R.F	200	18000	
27		Ghosar R.F	200	18000	
28		Kishoreban R.F	200	18000	
29		Nuagaon R.F	100	9000	
30		Northern R.F	100	9000	
31		Northern R.F	100	9000	
32		Hatidhara R.F	25	2250	
33		Kusumkuhuri R.F	400	36000	
34		Mahendrapur R.F	44	3960	
35		Mahendrapur R.F	100	9180	
36		Taleipathar R.F	45	4050	
37		Dantarikhol R.F	285	25650	
38		Kutulsinga R.F	204	18360	
39		Kutulsinga R.F (Ghonajodi)	10	2700	
40		Dantarikhol R.F	25	6750	
41		Hatidhara R.F	120	27000	
42		Hatidhara R.F	80	7200	
43		Bidising Plantation	14.25	3780	
44		Luhamunda Plantation	12.5	3330	
45		Luhamunda Plantation	24.2	6570	
46		Luhamunda Plantation	22	5940	
47		Krushnapur Plantation	8.49	2250	
48		Chuliapur Plantation	12.16	32.4	
		Total	**5024.6 Ha.**	**552182.4**	

1	**2012-13**	Hatidhara R.F		7000	
2		Hatidhara R.F		7000	
3		Northern R.F		13950	
4		Hatidhara R.F	5 Km.	9000	
5		West Baruni R.F	9 Km.	9000	
6		Northern R.F	9 Km.	9000	
7		Dantarikhol R.F	9 Km.	9000	
8		Northern R.F	5.5 Km.	22500	
9		Gunduridadar Block Plantation	2.5 Km.	13500	
10		Gunduridadar Block Plantation	30	68600	
11		Dalapaka Block Plantation	1 Km.	4500	
12		Dalapaka Block Plantation	10	23000	
13		Raibahal K.F	40	17700	
14		Singarimunda K.F	20	766	
15		Buraghat K.F	20	3000	
16		Ghodagadi K.F	20	9000	
17		Hatidhara R.F	5 Km.	9000	
18		Northern R.F	9 Km.	9000	
19		Northern R.F	10 Km.	19500	
20		Northern R.F	10 Km.	18000	
21		Gunduridadar Outside Block Plantation	30	33600	
22		Dalapaka Outside Block Plantation	10	11100	
		Total	**46 Km. 180 Ha.**	**326716**	

1	**2013-14**	Hatuapada K.F	20	9000	
2		Muchhapur K.F	20	9000	
3		Mahendrapur R.F Block Plantation	50	22500	
4		Northern R.F Block Plantation	50	33450	
5		Dantarikhol R.F Teak Planttaion	50	18300	
6		Gunduridadar K.F outside W.P area	30	13500	
7		Dalapaka Block Plantation outside W.P area	10	1600	
8		Raibahal K.F Block Plantation	40	11550	
9		Hatidhara R.F		6000	
10		Hatidhara R.F		3900	
11		Hatidhara R.F		9900	
12		Hatidhara R.F Compt. No.1 to 7		19950	
13		West Baruni R.F Compt. No.1	5 Km.	9900	
14		West Baruni R.F Compt. No.2 & 3	5 Km.	9900	
15		Northern R.F		19800	
16		East Baruni R.F	2 Km.	4000	
17		Brundabanpur K.F	3 Km.	6000	
18		Bindhyabasini R.F	2 Km.	4000	
19		Kataranga to Bhangamunda	3 Km.	6000	
		Total	**20 Km. 270 Ha.**	**218250**	

1	**2014-15**	Gunduridadar Outside W.P area	30	13500	
2		Dalapaka village area	10	4500	
3		Hatuapada Block Plantation	20	9000	
4		Madhapur Block Plantation	20	9000	
5		Hatidhara R.F		15000	
6		Mahendrapur R.F		4950	
7		Taleipathar R.F	10 Km.	19950	
8		Handapa R.F	5 Km.	4950	
9		Handapa R.F	5 Km.	4950	
10		Handapa R.F	5 Km.	4950	
11		Handapa R.F	5 Km.	4950	
12		East Baruni R.F Compt. No.2 & 3	66	9900	
		West Baruni R.F Compt. No.2 & 3	66	9900	
13		Northern R.F	10 Km.	20000	
14		Mahendrapur R.F Block Plantation	50	22500	
15		Northern R.F Compt. No.5 & 11	50	22500	
16		**Total**	**40 Km. 312 Ha.**	**180500**	

1	**2015-16**	Fire fighting squad patrolling in Madhapur jurisdition, extinguished forest fire where ever necessary and motivated the public regarding forest fire		40500	
2		-do-		40500	
	2015-16	Athmallik Range- 100 km	500 km	1000000	
		Dhandatopa Range- 100 km			
		Madhapur Range- 100 km			
		Handapa Range- 100 km			
		Bamur Range- 100 km			
	2016-17	Athmallik Range- 110 km	550 km	1100000	
		Dhandatopa Range- 110 km			
		Madhapur Range- 110 km			
		Handapa Range- 110 km			
		Bamur Range- 110 km			
	2017-18	Athmallik Range- 100 km	500 km	999577	
		Dhandatopa Range- 100 km			
		Madhapur Range- 100 km			
		Handapa Range- 100 km			
		Bamur Range- 100 km			
	2018-19	Athmallik Range- 26.8 km	136.8	273633	
		Dhandatopa Range- 20 km			
		Madhapur Range- 20 km			

	2019-20	Athmallik Range- 50 km	300 km	840000	
		Dhandatopa Range- 65 km			
		Madhapur Range- 50 km			
		Handapa Range- 70 km			
		Bamur Range- 65 km			
		Total	**673.96**	**7827023.8**	

11.3.1.2 Engagement of firefighting squads & vehicles:

05 units each consisting of 10 local youths and a vehicle are engaged during fire season with 01 unit in each range to combat forest fire.

11.3.1.3 Firefighting equipments(Blower):

The following fire blowers are supplied to the Forest Ranges.

Athmallik: 04 Nos. Dhandatopa: 05 Nos. Handapa:05 Nos. Bamur:04 Nos. Madhapur:02 Nos.Beside that; Pulaski tool, Brass hook,Fire Stacket,Meleod Tool,Fire Racker,Fire Beater,Sttowel,Head light, Fire Dress, Hand Gloves are provided to Ranges to fight against fire.

11.3.1.4 Awareness campaigns:

Just before the fire season starts; awareness campaigns are held in the forest fringe villages.

11.3.1.5 Latest position of allotment available for fire protection:

The position of allotments under various schemes made available for fire protection is furnished in Table as follows.

Allotment available for fire protection under various schemes			
Name of the Scheme	Type of activity	Quantity	Amount(in Rs)
H. Intensification	1)Creation of fireline	50 Rkm	1,00,000.00
	2) Fire protection	10 watchers &	3,64,000.00
		01 vehicle.	
CAMPA APO 2016-17	1) Creation of fireline	500 Rkm	10,00,000.00
	2) Fire fighting squad	50 Nos	15,00,000.00
	3)Firefighting equipment(Blower)	12 Nos.	6,00,000.00
	4) Other expenditure on fire blower		
	5) Training to firefighting squad.	12 Nos.	1,32,000.00
			15,000.00
		Total	1.86.00.00.96

11.3.2 Improvement in communication :

11.3.2.1 Roads :

During the period from 2005-06 to 2015-16, the following Forest Roads are maintained which is furnished in **Table No. 11.13** .

Table No. 11. 13 Maintenance of Forest Roads					
Sl No.	Year	Name of the Forest Road	Length repaired in Kms.	Expenditure in Rs.	Remarks
1	**2**	**3**	**4**	**5**	**6**
1	**2005-06**	Bhangamunda-Pathargarh	5	4935	
2		Kamrei-Udal Wooden bridge repair		265	
3		-do-		420	
4		-do-		6855	
5		-do-		490	
6		-do-	3	8820	
7		-do-		3150	
8		Jadupur-Daruha	0.5	5000	
9		Lenkedachida-Girida	9	9660	
		Total	**17.5**	**39595**	
1	**2006-07**	Dhandatopa-Bipradihi	2	9955	
2		Handapa-Gundurijharan Wooden bridge repair		7800	
3		Dhandatopa-Bipradihi	5	10450	
4		-do-	9	14465	
5		Kamrei-Udal Wooden bridge repair		1200	
6		-do-		1000	
7		Handapa-Gundurijharan Wooden bridge repair		7800	
8		Kamrei-Udal Wooden bridge repair		1000	
9		-do-		1200	
10		Dhandatopa-Bipradihi	9	14465	
11		-do-	5	10450	
12		Dhandatopa-Girida	1.5	12693	
13		-do-	3	17888	
14		Dhandatopa-Bipradihi	1.5	4950	
15		Dhandatopa-Girida	2.5	13760	
16		-do-	1.5	12693	

17		Dhandatopa-Bipradihi	1	5115	
18		Dhandatopa-Bipradihi	2.5	49500	
19		Khadarapada-Ketakijharan	3.5	8100	
20		-do-	4	9900	
21		Lenkedachida-Girida	7	17325	
22		Kamrei-Udal	2	5005	
23		-do-	3	4950	
24		Haripur-Pathargarh	8	22350	
25		-do-	5	12650	
26		Dhandatopa-Girida	2	15789	
27		-do-	2	15465	
28		Handapa-Gundurijharan	1.5	10629	
29		-do-	1.4	9064	
30		-do-	2.1	14757	
31		-do-	1.6	10285	
32		-do-	1.8	9735	
33		-do-	1.6	9683	
34		-do-	1.6	10474	
35		-do-	1.6	9632	
36		-do-	1.8	9528	
37		Korab-Bipradihi	3.5	36575	
38		-do-	9	49885	
39		Dhandatopa-Bipradihi	1	9090	
40		Lenkedachida-Girida	3	12675	
41		Khadarapada-Ketakijharan	2.5	7000	
42		Handapa-Gundurijharan Wooden bridge repair		16295	
43		-do-		13400	
44		-do-		8700	
45		-do-		2700	
46		-do-		1250	
47		-do-		7600	
		Total	**114**	**566875**	

1	**2007-08**	Dhandatopa-Bipradihi cross drain	13.26	4950	
2		-do-	8	5060	
3		-do- drain cutting & cross drain	12	15120	
4		-do-	9	4900	
5		Dhandatopa-Korab cutting of weeds & patch repair	7	7700	
6		-do-	6	7000	
7		Dhandatopa-Bipradihi	3	15750	
8		-do-	3	10500	
9		-do- Cost of material		24450	
10		-do-	3.5	15750	
11		-do-	3.5	17850	
12		Lenkedachida-Girida	5	20020	
13		Ketakijharan-Penderabasa	2	9940	
14		Lenkedachida-Girida	3	14910	
15		-do-	2	5040	
16		Phulamba-Purunapani	4	20000	
17		Dhandatopa-Bipradihi	9	15960	
18		-do- Cost of material		20025	
19		-do-		20025	
20		Udal-Dimiridihi		21000	
21		-do-		17990	
22		-do-		21000	
23		Hingmandal-Penderabasa	2	19950	
24		Dhandatopa-Bipradihi Cost of Material		6809	
25		-do-		20025	

26		-do-		48807	
27		-do-		45189	
28		-do- repair of wooden bridge near Korab FRH		6500	
29		Dhandatopa-Bipradihi Cost of Material		22126	
30		Ketakijharan-Penderabasa	5	9940	
31		Lenkedachida-Girida	1	24990	
32		Udal-Dimiridihi	2.5	16800	
33		-do-	8	18900	
34		-do-	1	24500	
35		-do-	4	20930	
36		-do-	4	18480	
37		Korab-Bipradihi Construction of causeway		23184	
38		-do-		6608	
39		-do-		24510	
40		Jadupur-Daruha	2	19950	
41		Korab-Bipradihi Construction of causeway		476	
42		-do-		28000	
43		-do-		9251	
44		-do-		43215	
45		-do-		1616	
46		-do-		2800	
47		-do-		17416	
48		-do-		19863	
49		-do-		11215	
50		-do-		13581	
51		-do-		425	
52		-do-		23846	
53		Udal-Dimiridihi	2.3	14350	
54		-do-	2.3	21000	
55		Korab-Bipradihi Construction of causeway		462	
56		-do-		1600	
57		-do-		23504	
58		-do-		332	
		Total	**127.36**	**926090**	

1	**2009-10**	Jadupur-Daruha Construction of causeway	1	7748	
2		-do-		32747	
3		Ketakijharan-Penderabasa Construction of causeway	1	6622	
4		-do-		28134	
5		Ketakijharan-Hingmandal Construction of causeway	1	32742	
6		-do-		12502	
7		Jadupur-Daruha Construction of causeway		42864	
8		-do-		16641	
9		Khadarapada-Penderabasa Construction of causeway	1	45540	
10		Khadarapada-Ketakijharan Construction of causeway	1	47188	
11		-do-		49400	
12		Khadarapada-Penderabasa Construction of causeway		11115	
13		-do-		28014	
14		-do-		600	
15		-do-		375	
16		-do-		280	
17		-do-		2487	
18		Haripur-Pathargarh Construction of causeway	1	20000	
19		Dhandatopa-Bipradihi Construction of causeway	1	22680	
20		-do-		194	
21		-do-		7000	
22		-do-		20126	
23		Dhandatopa-Bipradihi Construction of causeway	1	33264	

24		-do-		395	
25		-do-		34341	
26		Dhandatopa-Bipradihi Construction of causeway		12000	
27		Khadarapada-Penderabasa Construction of causeway	1	13004	
28		-do-		6175	
29		-do-		2909	
30		-do-		57462	
31		-do-		7350	
32		-do-		8100	
33		Kamrei-Udal Construction of causeway	1	25200	
34		-do-		3727	
35		-do-		1955	
36		-do-		7875	
37		-do-		11563	
38		-do-		310	
39		-do-		34500	
40		Kamrei-Udal Construction of causeway	1	25200	
41		-do-		3727	
42		-do-		1955	
43		-do-		8775	
44		-do-		11563	
45		-do-		310	
46		-do-		34500	
47		Haripur-Pathargarh	1	74400	
48		-do-		95600	
49		Haripur-Pathargarh Construction of causeway	1	78400	
50		-do-		31600	
51		Kamrei-Dimiridihi Construction of causeway	1	9740	
		Total	**14**	**1070899**	

1	**2010-11**	Lenkedachida-Girida Construction of home pipe culvert	1	25440	
2		-do-		1320	
3		-do-		9540	
4		-do-		27039	
5		-do-		39495	
6		Kamrei-Udal Construction of bridge		13500	
7		-do-		8652	
8		-do-		500	
9		-do-		3250	
10		Khadarapada-Penderabasa Construction of causeway		6408	
11		-do-		14820	
12		-do- Repair of causeway		10003	
13		Takaba-Udal Construction of Bridge		8400	
14		-do-		8400	
15		-do-		21040	
16		-do-		700	
17		Takaba-Udal Construction of Bridge		35000	
18		Jadupur-Daruha Construction of causeway		38440	
19		-do-		47560	
20		-do-		56789	
21		-do-		68211	
22		Khadarapada-Penderabasa Construction of home pipe culvert		18375	
23		-do-		16653	
24		-do-		14336	
25		-do-		13579	
26		-do-		14111	
27		-do-		13197	
28		Takaba-Udal	5.3	23825	
29		Takaba-Udal Construction of causeway		27540	
30		-do-		12266	

31		-do-		15000	
32		Haripur-Pathargarh Construction of causeway		75850	
33		Khadarapada-Penderabasa Construction of guard wall		2400	
34		-do-		2207	
35		-do-		5393	
36		Haripur-Pathargarh Construction of causeway		22000	
37		-do-		29000	
38		-do-		35150	
39		Jadupur-Daruha	1	6660	
		Total	**7.3**	**792049**	
1	**2011-12**	Khadarapada-Penderabasa Construction of guard wall		9880	
2		-do-		8665	
3		-do-		16678	
4		Kamrei-Udal Cost of Material		17698	
5		-do-		28957	
6		-do-		28350	
7		-do-		35010	
8		-do-	3	39960	
9		Dhandatopa-Bipradihi Cost of Material		44000	
10		-do- Patch repair		32400	
11		Dhandatopa-Bipradihi	4	48600	
12		-do-	2.2	37800	
13		-do-	1.1	37170	
14		Khadarapada-Penderabasa Cost of Material		13920	
15		-do-		11295	
16		-do-		19785	
17		Kamrei-Udal-Dimiridihi Cost of Material		8762	
18		-do-		27540	
19		-do-		39042	
20		-do-		26460	

21		Kamrei-Udal	4	48150	
22		Dhandatopa-Bipradihi Cost of Material		8800	
23		-do-	1	16200	
24		Kamrei-Udal-Dimiridihi Cost of Material	3	38658	
25		-do-		36270	
26		Kamrei-Udal Construction of RCC slab culvert		10290	
27		-do-		23470	
28		-do-		59435	
29		-do-		10000	
30		-do-		16658	
		Total	**18.3**	**799903**	
1	**2012-13**	Jadupur-Daruha Cost of material		32000	
2		-do-	4.5	108000	
3		Dhandatopa-Bipradihi	1.5	36000	
4		-do-	1.5	36000	
5		-do-	1	24000	
6		-do-		24000	
7		-do- Cost of material		20000	
8		Lenkedachida-Girida Cost of material		42000	
9		Khadarapada-Penderabasa Cost of material		42000	
10		Khadarapada-Penderabasa	2.6	63000	
11		Lenkedachida-Girida	2.6	63000	
12		Kamrei-Dimiridihi Cost of material		52874	
13		-do-		1326	
14		Kamrei-Udal	4	85800	
15		Haripur-Pathargarh Cost of material		17600	
16		-do-		16000	
17		Haripur-Pathargarh	2.25	60000	
18		-do-	1.75	46200	
19		Lenkedachida-Girida	0.9	9000	
20		Lenkedachida-Girida Cost of material		21000	
		Total	**22.6**	**799800**	

1	**2013-14**	Jadupur-Daruha Construction of causeway		87500	
2		-do-		72500	
3		Dhandatopa-Bipradiha	1	27540	
4		-do-		34037	
5		-do-	1	34037	
6		-do-		27540	
7		-do-		18423	
8		-do-		18423	
9		Dhandatopa-Bipradiha Construction of causeway		27200	
10		Dhandatopa-Girida Construction of causeway		27200	
11		Dhandatopa-Bipradiha Construction of causeway		34377	
12		-do-		18423	
13		Dhandatopa-Girida Construction of causeway		34377	
14		-do-		18423	
15		Dhandatopa-Bipradiha Construction of causeway		20000	
		Total	**2**	**500000**	

1	**2014-15**	Dhandatopa-Korab Cost of material		50000	
2		-do-		81600	
3		Dhandatopa-Korab	5	68400	
4		Handapa-Gundurijharan	2	50400	
5		-do- Cost of material		33600	
6		Kamrei-Udal Cost of material		41488	
7		-do-		42512	
8		Kamrei-Udal	5	126000	
9		Dhandatopa-Bipradiha	0.5	6000	
		Total	**12.5**	**500000**	
1	**2015-16**	Dhandatopa-Bipradiha Cost of material		41400	
2		-do-		40200	
3		Dhandatopa-Bipradiha	6	254400	
4		-do- Cost of material		41400	
5		-do- Cost of material		40200	
6		Dhandatopa-Bipradiha	6	254400	
7		-do- Cost of material		27200	
8		Dhandatopa-Bipradiha	2	84800	
9		-do- Cost of material		30886	
10		Dhandatopa-Bipradiha	1	12000	
11		-do- Cost of material		16363	
12		Dhandatopa-Bipradiha	1.2	50600	
				893849	
		Budget			
	2015-16	Dhandatopa to Bipradiha	18	867000	

			18	867000	
	2016-17	**Budget**	2	800000	
		Dhandatopa to Chhatabar			
		Dhandatopa to Lenkedachhida	2		
		Lenkedachhida to Girida	2		
		Dhandatopa to Korab	10		
		Lenkedachhida to Girida	1.8		
		Kamarei-Udal-Dimiridihi	6		
		Jadupur to Daruha	5		
		CAMPA General	5	1000000	
		Khadapada to Penderabasa			
		Haripur to Pathargarh	5		
			38	**35340000**	
	2017-18	**Budget**	10.5	900000	
		Jadupur to Daruha			
		Dhandatopa to Girida	12		
		Dhandatopa to Korab	8		
		Kamarei-Udal-Dimiridiha	15		
		CAMPA General		2500000	
		Dhandatopa to Bipradiha	5		
		Dhandatopa to Girida	5		
		Lenkedachhida to Girida	12		
		Haripur to Pathargarh	5.8		
		Kamarei-Udal-Dimiridiha	23		
			96.3	**3400000**	
	2018-19	**Budget**		2500000	
		Korab to Bipradiha	13		

		Dhandatopa to Bipradiha	15.5		
		Kamarei-Udal-Dimiridiha	5		
		Jadupur to Daruha	10.5		
		Lenkedachhida to Girida	2		
		Pulamba to Purunapani	4		
			45	**2500000**	
	2019-20	**CAMPA**		2000000	
		Haripur to Pathargarh	24		
		Kamarei-Udal-Dimiridiha	16	1530000	
		Hingmandol to Baradakata	30.6		
		Dhandatopa to Girida			
		Raida to Kenchuanali			
		Dhandatopa to Korab			
		Khadarapada to Ketakijharan			
		Total	**70.6**	**350000**	
			601.46	**48446060**	

11.3.2.2 VHF:

The position of fixed VHF stations & walkitalkies is furnished in **Table No. 11.14** as follows**.**

Table No. 11.14 Position of fixed VHF stations & walkitalkies

Items	Division office	Athmallik Range	Dhandatopa Range	Handapa Range	Bamur Range	Madhapur Range
VHF(Fixed)	Nil	2 (unserviceable)	3 (unserviceable)	Nil	1	3 (unserviceable)
Walkitalkies	Nil	1 (unserviceable)	Nil	Nil	2	Nil

11.3.2.3 Mobile Phones:

The position of Mobile Phones is furnished in **Table No. 11.15** as follows.

Table No. 11.15 Position of Mobile Phones						
Items	Division office	Athmallik Range	Dhandatopa Range	Handapa Range	Bamur Range	Madhapur Range
Mobile	1	11	4	Nil	7	10

11.3.3 Interface activities :

11.3.3.1Position of Computers: The position of Desktop & Laptop is furnished in **Table No. 11.16** as follows.

Table No. 11.16 Position of Desktop & Laptop						
Items	Division office	Athmallik Range	Dhandatopa Range	Handapa Range	Bamur Range	Madhapur Range
Desktop	10	1	1	1	1	1
Laptop	1	Nil	Nil	Nil	Nil	Nil

11.3.3.2 Position of GPS: The position of GPS & GPS PDA is furnished in **Table No. 11.17** as follows.

Table No. 11.17 Position of GPS & GPS PDA						
Items	Division office	Athmallik Range	Dhandatopa Range	Handapa Range	Bamur Range	Madhapur Range
GPS	Nil	13	3	5	6	10
GPS PDA	Nil	2	2	2	2	2

11.3.4 Amenities to staff :

Often,Forest staff is posted in inhospitable areas but rarely the minimum support needed to such postings is planned or available. Staff amenities are important in the planning process. It is essential to consider the basic needs within the departmental framework of regulations. They are described as below.

11.3.4.1 Housing: The priority should be accorded to field staff followed by other categories**.** Consideration should first be shown to locations where little or no housing facilities exist. Before doing this the staff requirement and locations should be thoroughly reviewed. If a village is nearby, the houses for such staff are better located there. Buildings should as far as possible be well communicated. A detail information on various categories of buildings, its GPS locations, No of rooms available, distance from nearby roads & conditions of buildings are furnished in **Annexure No- .** It is observed that most of the old buildings has been replaced by new buildings.

11.3.4.2 Uniforms & Field equipments: Uniforms need to be provided as per the state norms for staff. Though it may be administrative matter, a recommendation within an approved plan makes a difference. The essential field equipments for staff must be well planned and may include several items such as GPS, GPS PDA, Fire blower, Fire fighting equipments, watter bottle, binoculars, tape measurement, compass, field forms, diaries, khukri, or a small axe, tiger tracer, weapons and ammuniations etc. Those working in high altitude areas will need extra warm clothing, insulated field boots etc. There always is a problem with ammunition for firearms. While metal cased bullets for rifles remain functional for relatively longer periods, the shot gun cartridges do not last longer than a year. The staff ends up carrying useless ammuniation for several years which does not serve any purpose. A system of timely replacrment of such unused ammuniation is felt necessary.Legal provisions or cover which would enable the fieldmen to use firearms in a given situation ,when needed require to be sorted out. A list of arms & ammuniations available in the Division is furnished in **Table No. 11.18** as below.

Table No. 11.18 Position of arms & ammunitions and fire blowers						
Items	Division office	Athmallik Range	Dhandatopa Range	Handapa Range	Banur Range	Madhapur Range
Revolver.	Nil	1	2	2	1	2
DBBL Gun	Nil	1	2	2	1	1
Fire blower	Nil	4	5	5	4	2

11.3.4.3 Communication: The efficiency of protection and the smooth operation of management strategies are directly related to staff mobility and this is often inadequate. Foresters need motorcycles for movement. Range officers need four wheelers. A list of vehicles available in the Division is furnished in **Table No.11.19** as below.

Table No. 11.19 Position of four wheeler & two wheeler vehicle						
Items	Division office	Athmallik Range	Dhandatopa Range	Handapa Range	Banur Range	Madhapur Range
Four wheeler	4	1	1	1	1	1
Two wheeler	Nil	1	Nil	1	1	1

11.3.4.4 Incentives & Awards: State Government has a scheme of incentives or awards for meritorious work.On the occasion of world Forestry Day every year; cash award of Rs 5000/ and a citation is awarded to 2 Range officers, 6 Foresters & 12 Forest Guards in the state level. Citations and awards must be used appropriately to motivate staff & officers. They are a token of recognition of good work and have great value. It is felt that such facility should also be made in the Division level every year.

11.4 Past yield, revenue and expenditure :

11.4.1 Past yield :

The yield of timber and firewood obtained during last period of working plan is furnished in **Table No. 11.20** as follows.

Table No. 11.20	ABSTARCT OF TREE MARKED AND FELLED					
Sl No.	Name of felli	No of trees as per Working Pan -2006-07 to 2015-16	No of trees marked/ felled	Timber Production (In cum)	Firewood (in stack)	Remarks
1	2	3	4	5	6	7
1	Talaipathar F.S	62345	2722/ 2639	975.1464	303.5	During 2010-11 Compt. No.V not taken delivery due to being un-economical to OFDC Ltd.
2	Pathargarh F.	64860	4524	2125.987	1210	
3	Udal F.S	66544	4478	2411.827	1504.25	
4	Handapa F.S	57307	4464	1811.596	1344.75	
5	Hatidhara-So	66799	1859	877.777	241	
6	Hatidhara-No	60152	5979	3440.207	1419	
	Total	**336423**	**24026/ 23943**	**11642.5404**	**6022.5**	

11.4.2 Past revenue & expenditure :

The details of past revenue and expenditure in the Athamallik Division are given in **Table No: 11.21.**

Table : 11.21 DETAILS OF REVENUE AND EXPENDITURE			
Year	Revenue (Rs.)	Expenditure (Rs.)	Balance
1918-19	26,038	2,768	(+) 23,270
1919-20	31,286	3,583	(+) 27,703
1920-21	27,648	4,791	(+) 22,857
1921-22	27,943	5,096	(+) 22,847
1922-23	29,310	5,336	(+) 23,974
1923-24	33,379	5,709	(+) 27,670
1924-25	52,685	6,037	(+) 46,648
1925-26	49,366	7,597	(+)41,769
1926-27	54,741	7,142	(+)47,599
1927-28	50,325	7,998	(+)42,327
1928-29	66,926	8,077	(+) 58,849
1929-30	50,640	10,417	(+) 40,223
1930-31	48,330	10,842	(+) 37,488
1931-32	44,066	11,926	(+) 32,140
1932-33	38,372	9,870	(+) 28,502
1933-34	49,288	11,412	(+) 37,876
1934-35	49,157	10,619	(+)38,538
1935-36	52,321	9,139	(+) 43,182
1936-37	59,997	11,465	(+) 48,532
1937-38	60,949	13,024	(+) 47,925
1938-39	88,111	11,184	(+) 76,927
1939-40	57,589	13,684	(+) 43,905
1940-41	72,937	12,387	(+) 60,550
1941-42	71,496	12,969	(+) 58,527
1942-43	1,06,097	14,355	(+) 91,742
1943-44	84,735	22,993	(+) 61,742

1944-45	1,53,426	45,063	(+) 1,08,363
1945-46	1,95,791	53,962	(+) 1,41,829
1946-47	1,98,372	41,242	(+) 1,57,130
1947-48	2,13,467	44,078	(+) 1,69,389
1948-49	2,31,583	47,409	(+) 1,84,174
1949-50	2,08,227	48,128	(+) 1,60,099
1950-51	2,86,135	46,318	(+) 2,39,817
1951-52	3,10,952	53,047	(+) 2,57,905
1952-53	2,40,606	54,907	(+) 1,85,699
1953-54	2,58,587	58,469	(+) 2,00,118
1954-55	2,65,823	63,134	(+) 2,02,689
1955-56	3,77,832	64,945	(+) 3,12,887
1956-57	4,92,118	63,844	(+) 4,28,274
1957-58	5,37,484	73,773	(+) 4,63,711
1958-59	5,90,920	88,687	(+) 5,02,233
1959-60	6,43,984	1,06,684	(+) 5,37,300
1960-61	5,10,685	93,772	(+) 4,16,913
1961-62	4,14,876	1,27,140	(+) 2,87,736
1962-63	4,65,430	1,31,700	(+) 3,33,730
1963-64	4,05,643	1,04,295	(+) 3,01,348
1970-71	6,01,163.67	2,37,918.51	(+) 3,63,245.16
1971-72	9,80,358.01	2,87,843.07	(+) 6,92,514.94
1972-73	6,14,136.81	3,67,162.86	(+) 2,46,973.95
1973-74	8,28,576.38	3,14,797.46	(+) 5,13,778,92
1974-75	15,64,551.14	3,13,122.73	(+) 12,51,428.41
1975-76	14,62,954.03	4,16,149.84	(+) 10,46,804.19
1976-77	16,53,116.55	4,03,496.89	(+) 12,49,619.66
1977-78	21,38,771.86	4,37,395.53	(+) 17,01,376.33
1978-79	18,07,238.00	4,50,470.54	(+) 13,56,767.46
1979-80	15,81,783.74	5,99,357.90	(+) 9,82,425.84
1980-81	73,34,959.99	9,02,474.84	(+) 64,32,485.15
1981-82	89,58,709.85	10,49,440.72	(+) 79,09,269.13
1982-83	78,75,848.55	14,99,706.80	(+) 63,76,141.75
1983-84	72,64,662.68	21,43,236.70	(+) 51,21,425.98
1984-85	74,70,176.53	18,71,190.78	(+) 55,98,985.75
1985-86	85,91,936.00	20,55,750.00	(+) 65,36,186.00
1986-87	77,50,171.00	26,06,059.00	(+) 51,44,112.00
1987-88	81,76,078.00	26,41,915.00	(+) 55,34,163.00
1988-89	75,89,198.00	26,19,651.00	(+) 49,69,547.00
1989-90	62,08,984.00	26,07,048.00	(+) 36,01,936.00

1990-91	75,38,660.00	24,60,749.00	(+) 50,77,911.00
1991-92	53,69,652.00	35,27,595.00	(+)18,42,057.00
1992-93	53,54,074.00	36,24,735.00	(-)17,29,339.00
1993-94	6,30,450.00	39,86,326.00	(-) 33,55,866.00
1994-95	33,06,502.00	45,09,672.00	(-) 12,03,170.00
1995-96	48,81,497.00	77,30,244.00	(-) 28,48,747.00
1996-97	39,84,306.00	67,47,706.00	(-) 27,63,401.00
1997-98	5,21,827.00	61,17,315.00	(-) 55,95,488.00
1998-99	42,62,593.00	61,14,097.00	(-) 18,51,504.00
1999-00	31,79,226.00	1,00,23,515.00	(-) 68,44,289.00
2000-01	80,59,515.00	89,81,317.00	(-) 9,21,802.00
2001-02	66,71,940.00	42,71,347.00	(+) 24,00,593.00
2002-03	15,04,775.00	1,13,19,575.00	(-) 98,14,800.00
2003-04	48,59,341.00	1,18,83,324.00	(-) 70,23,983.00
Source: Previous Working Plans & DFO, Athamallik			

The details of revenue and expenditure during the plan under revision in the Athamallik Division are given in **Table No: 11.22.**

Table : 11.22 DETAILS OF REVENUE AND EXPENDITURE			
Year	Revenue (Rs.)	Expenditure (Rs.)	Balance
2005-06	52,74,032.00	2406-N.P. 7,94,999.70 2406-C.P. 56,700.00 8443-F.D.- 37,747.00 2406-CSP- 9,57,020.00 4406COLNP 14,27,399.50 Total: 32,73,866.20	(+) 20,00,165.80
2006-07	99,52,049.00	2406-N.P. 19,44,999.10 2406-C.P. 50,000.00 2406-S.P: 29,70,900.00 2406-CSP- 1,10,000.00 4406COLNP 38,51,999.50 2059-P.W.N.P 11,60,000.00 Total: 1,00,87,898.60	(-) 1,35,849.60
2007-08	84,34,690.00	2406-N.P. 42,82,660.00 2406-C.P. 3,00,000.00 8443-F.D.- 15,514.30 2406-CSP- 9,02,500.00 2406COLNP 21,08,500.00 2059-P.W,N.P 6,80,000.00 2406-S.P.- 52,74,330.00 4406COLSP 6,77,999.70 Total: 1,42,41,504.00	(--) 58,06,814.00
2008-09	47,49,417.00	2406-N.P. 44,48,460.00 2059-P.W.N.P-4,80,000.00 2406-C.P. 5,10,000.00 2406-CSP- 4,47,000.00 4406COLNP 46,23,380.00 2406-S.P.- 69,79,700.00 4406COLSP 5,00,000.00 Total: 1,79,88,540.00	(--) 1,32,39,123.00
2009-10	1,00,05,581.00	2406-N.P. 38,12,330.00 2406-C.P. 56,700.00 4406COLNP 31,83,880.00 2059-P.W.N.P-11,40,000.00 2406-S.P.- 21,32,520.00 Total: 1,03,68,730.00	(--) 3,63,149.00

		2406-N.P. 1,10,50,330.00	
		2406-C.P. 3,83,330.00	
		2059-P.W.N.P-7,20,000.00	
		2406-CSP- 5,03,500.00	
		4406COLSP 4,94,000.00	
		2406-S.P-1,09,53,330.00	
2010-11	46,45,599.00	Total: 2,41,04,490.00	(--) 1,94,58,891.00
		2406-N.P. 28,30,750.00	
		2406-CSP- 14,26,500.00	
		2406-S.P- 39,39,385.00	
		4406-Col,S,P. 8,43,000.00	
		2059-P.W.N.P-8,60,000.00	
2011-12	27,79,367.00	Total: 98,99,635.00	(--) 71,20,268.00
		2406-N.P. 26,12,225.00	
		2406-S.P.-1,90,57,664.00	
		2406-CSP- 2,70,625..00	
		4406COLSP15,67,800.00	
		2059-P.W.N.P-9,30,000.00	
		1659-Deposit-5,18,000.00	
2012-13	1,00,45,025.00	Total: 2,49,56,314.00	(--)1,49,11,289.00
		2406-N.P. 20,61,000.00	
		2406-S.P. 88,25,362.00	
		2406-CSP- 2,18,950.00	
		2406-C.P- 2,83,000.00	
		2059-P.W.N.P-6,00,000.00	
2013-14	55,53,805.00	Total: 1,19,88,312.00	(--)64,34,507.00
		2406-N.P. 1,23,14,690.00	
		2406-C.P. 3,64,000.00	
		2406-CSP- 1,70,558.00	
		2406-S,P.-1,40,06,696.00	
		2059-P.W.N.P-5,00,000.00	
2014-15	76,04,694.00	Total: 2,73,55,944.00	(---)1,97,51,250.00
		2406-N.P. 23,14,000.00	
		2406-C.P. 4,49,630.00	
		2406-S.P- 2,33,63,940.00	
		2059-P.W.N.P-8,00,000.00	
2015-16	1,83,42,949.00	Total: 2,69,27,570.00	(--) 85,84,621.00
2016-17	1699644	Budge 26929270	607429
		CAMPA 30775571	160949
		CAMPA (WL) 18732771	-
2017-18	6137233	Budget 26756798	1779082
		CAMPA 31953918	154000
		CAMPA (WL 13124380	-
2018-19	2657074	Budget 40366385	-
		CAMPA	-
		CAMPA (WL)	-
2019-20	883463	Budget 36867431	
		CAMPA 23725248	890970
		CAMPA (WL) 21576490	4776226
	11,865,194	82169169	5667196

CHAPTER-12

STATISTICS OF GROWTH AND YIELD

12.1 PAST STATISTICS

12.1.1 In absence of adequate information on time series data at local level and for want of appropriate analytical tools, the past Plans relied mainly on the following literatures:

SAL (*Shorea robusta*):

a) Yield and stand tables for Sal (*Shorea robusta*) High forests, by A. L. Griffith and Bakshi Santram, Indian Forest Records (New series), Volume 4 (A), No. 4, 1943.

b) Yield tables for clear felled Sal (*Shorea robusta*) coppice by S. H. Howard, Indian Forest Records (Silviculture Series), Volume XII, Part - IV, 1962.

c) General volume tables for Sal (*Shorea robusta*) by S. H. Howard, Indian Forest Records (Silviculture series), Volume X, Part - IV, 1924.

d) Volume and outturn tables for Sal (*Shorea robusta*) by S. H. Howard, Indian Forest Records (Silviculture Series) Volume XII, Part - I, 1925.

e) The uneven aged Sal Forests of Ramnagar Forest Division, Uttar Pradesh, their constitution, rate of growth etc. along with empirical yield and stands tables for selection type of Sal crop by Sri G. S. Mathanda, Indian Forester, Volume 84, 1958.

f) Branch, small wood tables for *Shorea robusta*, *Tectona grandis*, *Pinus excelsa* and *Pinus longifolia,* Indian Forest Records (Silviculture series), Volume XVI, Part - VI, 1932.

TEAK (*Tectona grandis*):

a) Yield and stand tables for plantation Teak (*Tectona grandis*), Indian Forest Records (New Series), Silviculture, Volume IX, No. 4, 1959.

ASAN (*Terminalia tomentosa*):

a) General standard and commercial volume tables for Asan (*Terminalia tomentosa*) by A. L. Griffith and Bakshi Santram, Indian Forest Records (New Series), Silviculture, Volume 4 (A), No. 5, 1947.

HALAND (*Adina cordifolia*):

a) An approximate volume table for Haldu (*Adina cordifolia*) by H. C. Mobbs, Uttar Pradesh Forest Leaflet No. 6.

KHAIRA (*Acacia catechu*):

a) Commercial timber (Katha) and heart wood volume tables for Khaira (*Acacia catechu*) in North India by H. G. Champion, I. D. Mahendru and P. N. Suri, Indian Forest Records (Silviculture Series), Volume XIII, Part - IX, 1929.

b) Standard commercial and heartwood volume tables (Factory Working) for Khaira (*Acacia catechu*) in North India by H. G. Champion and I. D. Mahendru, Indian Forest Records (Silviculture Series), Volume XV, Part - III, 1931.

SISSOO (*Dalbergia sissoo*):

a) Preliminary yield table for *Dalbergia sissoo* by S. H. Howard, Forest Bulletin No. 52, (Silviculture), 1925.

b) Provisional yield tables for *Dalbergia sissoo* in the irrigated plantation of the Punjab by Bakshi Santram, Indian Forest Records (New Series), Volume 4 (A), No. 2, 1941.

c) Standard and commercial volume tables for *Dalbergia sissoo* by M. A. Kazi, Indian Forest Records (Silviculture series), Volume II, No. 2, 1936.

SEMAL (*Bombax ceiba*):

a) Volume tables and diameter growth for semal (*Bombax ceiba*) by I. D. Mahendru, Indian Forest Records (Silviculture Series), Volume XV, Part - IV, 1932.

DHAURANG (*Holoptelea integrifolia*) & PANIGAMBHAR (*Trewia nudiflora*):

a) Provisional volume tables and diameter growth for *Holoptelea integrifolia* & *Trewia nudiflora* by I. D. Mahendru, Indian Forest Records (Silviculture Series), Volume XV, Part - VII, 1933.

KARADA (*Cleistanthus collinus*), PIASAL (*Pterocarpus marsupium*), & S. MAI (*Lannea coromandelica*):

a) Standard and commercial volume tables for (*Cleistanthus collinus*) by S. N. Dabral, P. K. Bhattacharya, R. C. Jain and Tarlok Singh.

b) Standard and commercial volume tables for *Pterocarpus marsupium* by S. N. Dabral, P. K. Bhattacharya, Tarlok Singh and D. S. Rawat.

c) Standard volume tables for *Lannea coromandelica* by S. N. Dabral, and D. C. Sharma, Indian Forest Records (New Series), Silviculture, Volume II, No. 7.

12.1.2 The literatures mentioned above are very old and generalized. These data has been collected from the localities that were different from the conditions prevalent in the Division. The local volume and yield table could not be developed because of the constraints in the available resources. Therefore the statistics provided in these literatures were not used for the present Working Plan.

12.1.3 In the past working plan ,the mean annual increment (MAI) could not be calculated because of non-availability of complete past enumeration data. Compartment wise enumeration data was not available, and it is also difficult to get complete details of legal and illegal removal of timber from the forest for the last 20 years. Prior to Previous Plan growing stock assessment was not done. In the previous plan attempt has been made to assess the total volume of the growing stock by 1% systematic strip sampling method and by using the volume equations developed by Forest Survey of India (FSI) for Orissa. The data collected creates a bench mark and has helped the present revision of the working plan for comparing the future crop conditions

12.2 LOCAL VOLUME EQUATIONS

12.2.1 For the purpose of this Plan, the volume equations of different species prescribed by NRSC Hyderabad through ORSAC, Bhbaneswar based on field emumuretion report from the different given points are followed. The detail of calculation furnished by NRSC are annexed.

12.2.2 The following quality classes for Sal, as given in the All India Yield and Volume Table for Sal has been adopted in this Plan.

Quality-I	Localities where the height of mature crop is over 33 m.
Quality-II	Localities where the height of mature crop is 27m to 33 m.
Quality-III	Localities where the height of mature crop is 15m to 27m.
Quality-IV	Localities where the height of mature crop is less than 15m.

12.3 ANALYSIS OF ENUMERATION

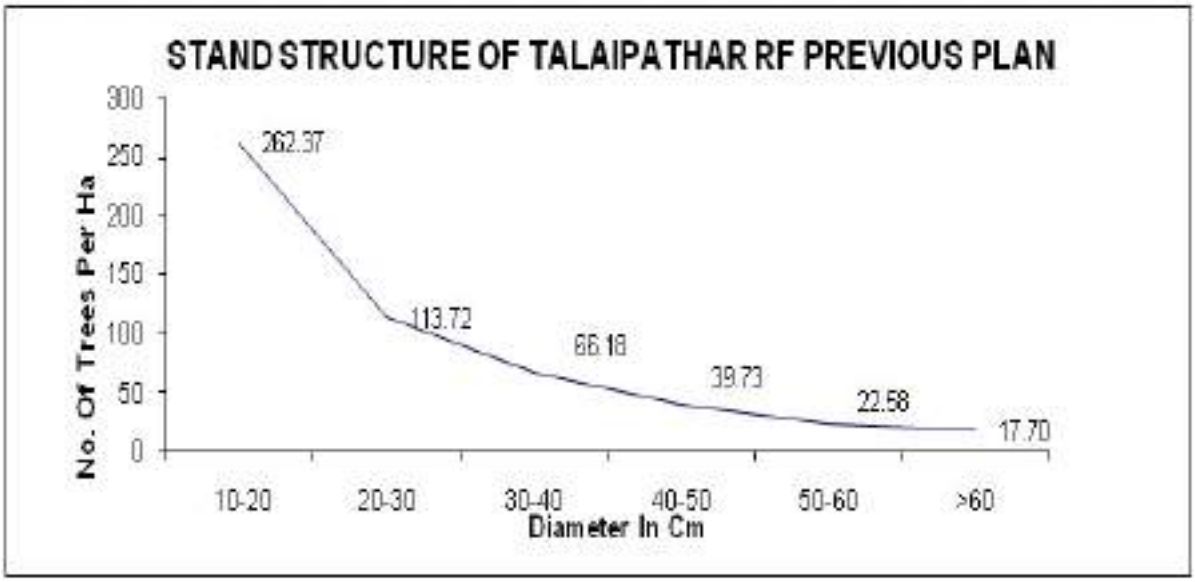
12.3.1 Analysis of enumeration was done only in 4 RFs, which are allotted to the Selection Working Circle in the previous working plan.. These blocks are Talaipathar, Hatidhara, Handapa, and Northern. These four blocks were in the selection working circle and they cover almost 80% of the total Reserved Forest area of the division.

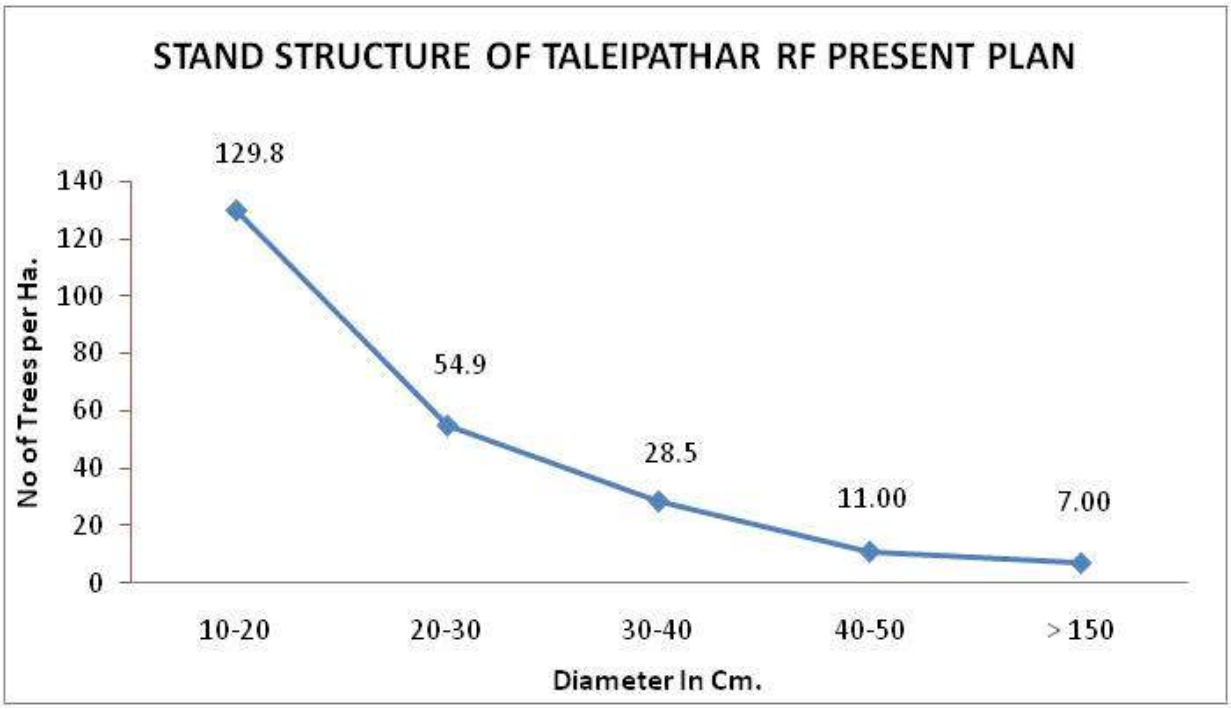
12.3.2 Methodology: The intensity of sample enumeration in the 4 RFs was 1%, done by "strip sampling" method during the previous working plan. In the present working plan, sample point enumeration is done over an area of 0.1Ha (31.62mtx31.62mt) in difffrent points allotted by NRSC through ORSAC, Bhubaneswar.

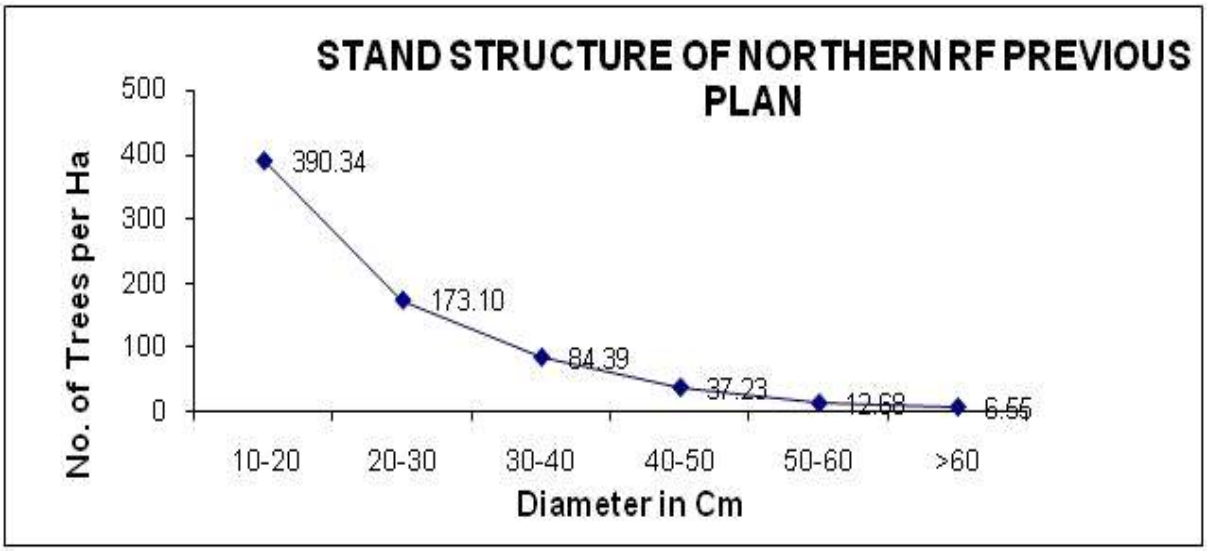
12.4 COMPARISON OF ENUMERATION RESULTS

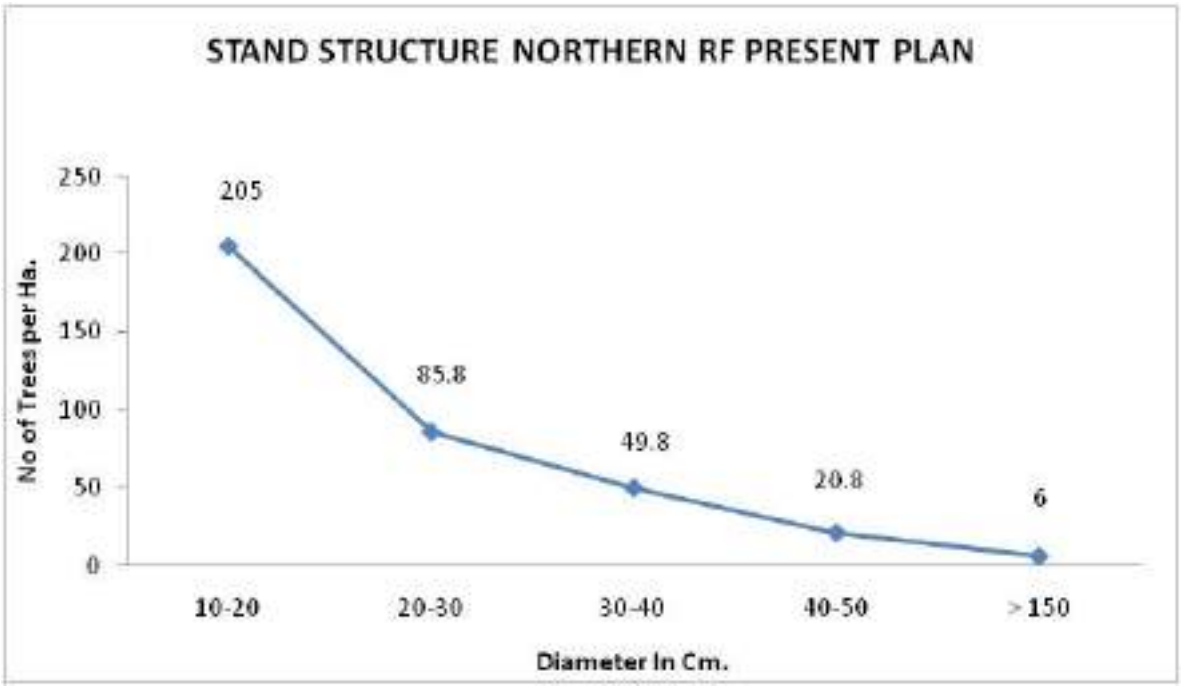
12.4.1 Each enumeration strip was taken as a sample. The number of trees recorded in each enumeration strip was classified as per girth at breast height submitted to NRSC for calculation of yield.

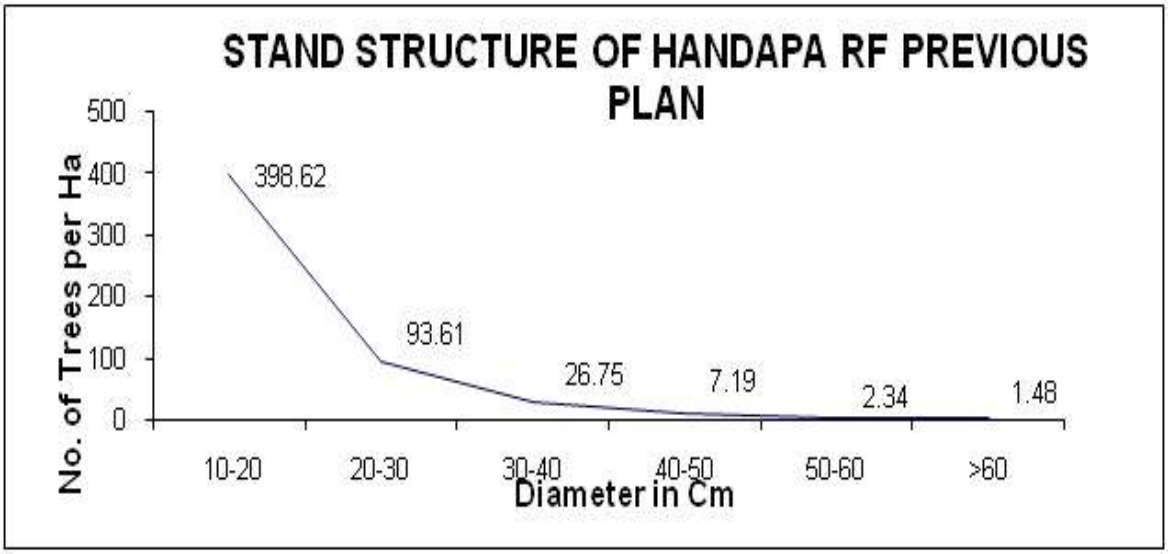
12.4.2 The result obtained is used to estimate the number of trees present per hectare species wise in different dia classes. The number of trees per hectare of every compartment of forest block is added up. This gives the number of trees per hectare in each dia class of various species in different forest blocks. The percentage of various species, which constitute the forest crop and their dia wise contribution, is also calculated. In the ideal selection forests, the number of trees in successive diameter classes should be in a geometric series as per **De Liocourt's Law**. It follows that if the number of trees is plotted against diameter classes (or girth class), the resultant curve will be a laterally inverted J shape. Those forests, where the number of stems by diameter class (or girth class) decreases in a constant geometric progression, can be termed as balanced forest. The smooth inverted J curve will indicate the balanced stand structure of the forest block. The curves for the four forest blocks as well as for the total of the Athmallik Division obtained during last plan and during the present plan for three forerst blocks is furnished as below.

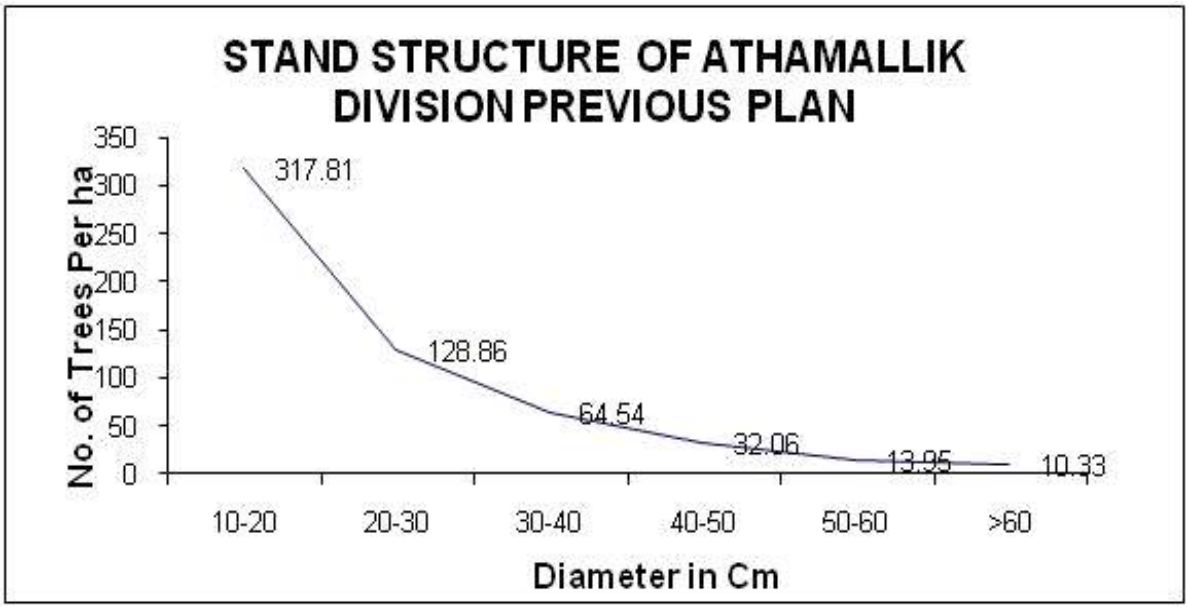


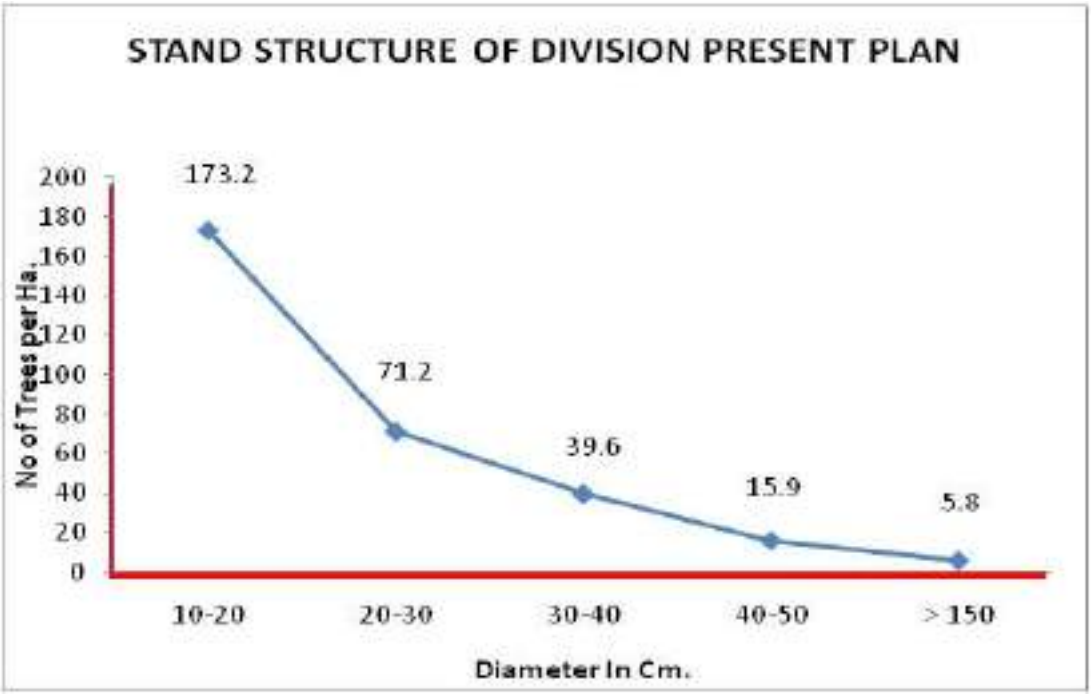

STAND STRUCTURE OF TALEIPATHAR RF PRESENT PLAN
No of Trees per Ha.
140
120
100
80
60
40
20
0
129.8
54.9
28.5
11.00
7.00
10-20
20-30
30-40
40-50
> 150
Diameter In Cm.


STAND STRUCTURE OF NORTHERN RF PREVIOUS PLAN
No. of Trees per Ha
500
400
300
200
100
0
390.34
173.10
84.39
37.23
12.68
6.55
10-20
20-30
30-40
40-50
50-60
>60
Diameter in Cm


STAND STRUCTURE NORTHERN RF PRESENT PLAN
No of Trees per Ha.
250
200
150
100
50
0
205
85.8
49.8
20.8
6
10-20
20-30
30-40
40-50
>150
Diameter In Cm.


STAND STRUCTURE OF HANDAPA RF PREVIOUS PLAN
No. of Trees per Ha
500
400
300
200
100
0
398.62
93.61
26.75
7.19
2.34
1.48
10-20
20-30
30-40
40-50
50-60
>60
Diameter in Cm


STAND STRUCTURE OF ATHAMALLIK DIVISION PREVIOUS PLAN
No. of Trees Per ha
350
300
250
200
150
100
50
0
317.81
128.86
64.54
32.06
13.95
10.33
10-20
20-30
30-40
40-50
50-60
>60
Diameter in Cm


STAND STRUCTURE OF DIVISION PRESENT PLAN
No of Trees per Ha.
200
180
160
140
120
100
80
60
40
20
0
173.2
71.2
39.6
15.9
5.8
10-20
20-30
30-40
40-50
> 150
Diameter In Cm.

12.5 ANALYSIS OF De Liocourt's "J" CURVE FOR EACH BLOCK

12.5.1 Talaipathar: In the previous plan; De Liocourt's quotient for successive girth classes from 30-60 was 2.3, 1.7, 1.7, 1.8 and 1.3. These values show that the forest is more or less balanced except for the 10-20 cm dia class. The percentage of trees in this class is slightly more (50.24%). The average number of trees was 522.26 per ha. Sal constitutes 14.5% of the total crop. The other important species present are Asan, Dhaura, Mahula, Kendu and Karada.

In the present plan; De Liocourt's quotient for successive dia classes from 10-20 dia class was 2.36, 1.92, 2.59, and 1.57.These values show that the forest is more or less balanced. The percentage of trees in 10-20 dia class is slightly more (61.13%). The average number of trees is 212.3 per ha. Sal constitutes major portion of the total crop. The other important species present are Asan, Dhaura, Mahula, Kendu and Karada.

12.5.2 Northern: In the previous plan; De Liocourt's quotient for successive dia classes from 10-20 dia class was 2.3, 2.1, 2.3, 2.9 and 1.9. The crop composition is quiet balanced with 57 trees per ha in 40 cm and above dia classes.. The percentage of trees in the 10-20 cm dia class was 55.42. The average number of trees per ha is 704. Sal is in major proportion (41.07%), followed by Kendu, Mahula and Asan.

In the present plan; De Liocourt's quotient for successive dia classes from 10-20 is 2.39, 1.73, 4.13,and 3.46. The crop composition is quiet balanced. The percentage of trees in the 10-20 cm dia class is 55.79. The average number of trees per ha is 367.4. Sal is in major proportion followed by Kendu, Mahula and Asan.

12.5.3 Handapa: In the previous plan; De Liocourt's quotient for successive dia classes from 10-20 is 4.3, 3.5, 3.7, 3.1 and 1.6. This block has maximum number of trees in 10-20 cm dia class (75.2%) and the number of matured trees in 120 cm and above girth classes is 11. There is a sharp decline in the curve from 10-20 cm to 20-30 cm dia class.

In the present plan; De Liocourt's quotient for successive dia classes from 10-20 is 2.53, 1.79, 2.56,and 3.57. This block has maximum number of trees in 10-20 cm dia class (57.94%). The forest is highly unbalanced. Sal is in major proportion in the forest.

In the present plan; De Liocourt's quotient for successive dia classes from 10-20 is 2.53, 1.79, 2.56,and 3.57. This block has maximum number of trees in 10-20 cm dia class (57.94%). The forest is highly unbalanced. Sal is in major proportion in the forest.

12.5.4 Athamallik Division: In the previous plan; De Liocourt's quotient for successive dia classes from 10-20 was 2.5, 2.0, 2.0, 2.3 and 1.4. The forest of this division is a balanced forest, with 57 trees per ha in 120 cm and above girth classes. The average number of trees per ha is 567.54 , the percentage of trees in 10-20 cm dia class is 56% and the percentage of Sal in the forest is 30%.

In the present plan; De Liocourt's quotient for successive dia classes from 10-20 was 2.43, 1.79, 2.49, and 2.74.There is a sharp decline from 10-20 cm dia class to 20-30 cm dia class & again sharp increase from 40-50 cm dia and above 50 cm dia. The average number of trees per ha is 305.7 the percentage of trees in 10-20 cm dia class is 56.66% with sal as the major species.

12.6Statistics of forest carbon stock:

No estimation of forest carbon has been carried out in the past. Research Mal Vol. 1 Ground-Based Inventory of Research and Development Centre, Japan is followed for calculation of carbon stock.

12.6.1 Calculation of aboveground biomass:

To estimate plant carbon stock in plot, first, calculate the above-ground biomass (AGB) using allometric equation. The following generic equation is used.

AGB= 0.0673*(åD²H)°·y w v

Here D(cm) is DBH, H(m) is total height, and å (g cm É¾") is wood density.

In the absence of wood density data of tree species, try to find the mean value at the genus level and then the mean value at the family level. Still, if related data cannot be found, the default value by continent can be used. The wood density default value in Tropical Asia is 0.57 g cm É¾".

For a tree that has a DBH of 20.5 cm, a total height of 16.1 m, and a wood density of 0.60 g mÉ¾", the AGB is calculated as follows:

AGB= 0.0673* (0.60*(20.5)²ß * 16.1) °·y w v

_= 0.0673*(4059.6) °·y w v = 223.8 kg.

After summation of the calculated AGB using tree census data in the plot, AGB per hectare can be calculated as follows.

AGB(per hectare)= (Area in hectare Mg haÉ¹ /Area of the plot)*AGB(of the plot)

12.6.2.Calculation of below ground biomass:

Similar to AGB,below ground biomass(BGB),consisting of coarse & fine roots,is also estimated using some equations. The following generic equation is used:

BGB(per hectare) =0.489*AGBÚ˙x y p

12.6.3 Litter layer mass:

Because a sample of the litter layer is collected in a determined plot, the coefficient for converting the sampling area per hectare need to be determined. Where 150 gram of dry weight of litter layer is obtained in a 50mx50m square, litter layer mass per hectare value is calculated as follows.

Litter layer mass per hectare= litter layer mass in the plot(g)*(10000/sampling area in sq mt)

= 150*(10000/.25) = 150*(40000)=6,000,000 g =6,000 kg.

12.6.4 Calculation of dead wood mass:

To estimate dead wood mass, the volume of each dead wood piece need to be calculated. Then, convert the volume to dry mass using wood densities based on decomposition class. Some literature values are useful to adopt estimation of dead wood mass.

12.6.4.1 Stump:

Volume of stump can be calculated using the Huber's formula.

V= A*L*100 where V is volume(cm ¾"), A is the sectional area at the middle(cm 2), and L is the height of the stump(m). If the cutting end is shaped like an ellipse, the sectional area is calculated using the following equation

A=(d /2)* (d, /2)* π, where d & d, are the two orthogonal diameters.

For example, for a stump that has 64 cm and 70 cm as the orthogonal diameters and 0.7 m height, the volume is calculated as follows.

V= A* L* 100 =(64/2)* (70/2)* *0.7*100= 246.301 cm ¾".

If the stump has "class 2" decomposition class, the mass will be calculated as follows.

Mass= Volume* wood density(decomposition class 2)

12.6.4.2 Standing dead trees:

Volume of standing dead trees be calculated can be calculated using the Huber's formula.

V= A*L*100 where V is volume(cm ¾"), A is the sectional area at the middle(cm 2), and L is the height of the stump(m). The area of breast height of standing dead trees is a substitute for the sectional area of middle(A) in some cases. For example, for a dead tree that has a DBH of 25.6 cm and a height of 6.5 mt, the volume is calculated as follows.

V= A* L* 100 = (25.6/2) ² * 6.5 * 100= 334.567 cm ¾".

If the stump has "class 2" decomposition class, the mass will be calculated as follows.

Mass= Volume* wood density(decomposition class 2)

If the dead tree has "class 2" decomposition class, the mass will be calculated as follows.

Mass= Volume* wood density(decomposition class 2)

12.6.4.3 Fallen trees:

The volume of fallen trees,V can be calculated using Smalian's formula as follows.

$$V = \frac{L\left[\pi\left(\frac{D_1}{2}\right)^2 + \pi\left(\frac{D_2}{2}\right)^2\right]}{2}$$

Where L(m) is the length of the piece of the fallen tree, and D is the diameter(cm) at either end. For example, for a fallen log that has 20 cm and 10 cm at either end and a length of 1.8m,the volume is calculated as follows.

$$V = \frac{100 * 1.8\left[\pi\left(\frac{20}{2}\right)^2 + \pi(\frac{10}{2})^2\right]}{2}$$

= 180* (314.2+78.5)/2 = 35,343 cm ¾".

If the fallen log has "class 2" decomposition class,the mass will be calculated as follows.

Mass= Volume* wood density(decomposition class 2)

For a fallen log that has rectangular cross-sections with 20 cm and 10 cm on sides at both ends and 1.8 m in length, its volume and mass("class 2" decomposition class)are simply calculated as follows. V= 100*1.8*20*10= 36,000 cm ¾".

Mass= Volume* wood density(decomposition class 2)

12.6.5 Calculation of dead wood mass:

Similar to AGB,dead wood mass also needs to be reported as per hectare estimate. If the total amount of dead wood is 800 kg in a 0.16 ha plot, the per hectare estimate of dead wood mass is calculated as follows.

Dead Wood Mass = 800* (1/0.16) = 5,000 kg = 5.00 Mg haÉ¹

Mass= Volume* wood density(decomposition class 2)

12.6.6 Conversion from biomass to carbon stock:

To estimate carbon stock of biomass and dead wood mass, " carbon fraction of drymatter" defined by IPCC 2006 GPG will be used.

IF AGB is 125 Mg haÉ¹ in a sample plot, carbon stock can be calculated as follows.

Carbon stock= AGB*CF= 125 *0.47 = 58.75 Mg C haÉ¹ .

PART-II

1 BASIS OF PROPOSAL

INTRODUCTION

Working plan is an indispensable document of planning and managing the forest. All silvicultural interventions and management techniques had the sole objective of obtaining sustained yield of commercially important species. The present revision of working plan is proposed to be prepared on traditional methods guided by the principles laid out in the National Working Plan Code 2014 prepared by Ministry of Environment and Forest & Climate change, Government of India. The past management of the forests in the Division and the results of implementation of the current working plan, its prescriptions and deviations have been discussed and analyzed in detail. The future management objective and the principles to follow to achieve them are reflected below.

1.1The proposed main objectives of management of forests in the present Plan are enlisted below:

(i) To give emphasis on the conservation and protection of flora and fauna of these forests including micro-organisms and take all steps to prevent further degradation of environment.

(ii) To conserve and improve the existing vegetative-cover for soil and water conservation with a view to ensure ecological, enhancing fertility of the soil, enhancing water conservation capacity of the forest ecosystem, assisting in regulating the flow of water from its catchment and environmental stability.

(iii) To endeavour to meet the requirements of people in general and weaker sections including scheduled Castes / Tribes and women in particular, for agricultural, small timbers, firewood, bamboos and other forest produces.

(iv) To improve the composition and productivity of the forests for the production of timber and non-timber products through appropriate / scientific management and maintain the vitality.

(v) To protect and manage wildlife resources with a view to conserve and help enriching bio-diversity.

(vi) To promote development of sustainable and non-destructive livelihood opportunities for local communities, enhancing employment opportunities, ensuring usufruct/benefit sharing and protection of their traditional/indigenous knowledge and traditional/cultural practices, etc.

(vii) To promote JFM involving VSS for sustainable management of forests.

(viii) To ensure sustainable production of Non-timber forest products and thus enhance livelihood opportunities of the communities dependent on forests.

(ix) Reducing GHG emissions, enhancing mitigation/ carbon sequestration capacity of the forests and finding ways for adaptation with change in climate.

1.1.1 Performance indicators:

The following performance indicators are identified for different objective of managements as cited above.

- Assessment of change in Forest Cover as per FSI report.
- To study the Forest Soil in the assigned sample points to ascertain the change in the level of pH, EC, Organic carbon, Phosphorus & Potassium.
- To study the change in the micro climate of the area by measurement of Physical Parameters i.e. Temperature. Relative Humidity & Rainfall pattern.
- To study the change in Ground water level.
- To study the change in flow level of surface water.
- To study the water level & its quality in the reservoir & nallahs.
- To study the change in the phenology of plants.
- To ascertain the status of improvement of standard of living of the people through socio-economic study.
- To study the status of regeneration in the assigned sample points.
- Biodiversity assessment in the assigned sample points.
- Assessment of NTFPs in the assigned sample points.
- To study carbon sequestration by following the procedure adopted in REDD+.
- Assessment of fire incidences.
- Assessment of Growing Stock.
- Yield Percentage.

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1.2. METHOD OF TREATMENT TO BE ADOPTED:

In order to achieve the aforesaid objectives keeping the ground reality in view, an approach for management of these forests has been prescribed based on the following considerations:

a) Reconnaissance survey of all the forest areas,
b) Stock mapping,
c) Sample point enumeration of trees, bamboos, shrubs, herbs.
d) Study of Soil to assess soil carbon.
e) Biodiversity and regeneration survey of sample plots in all the Forest Blocks,
f) Extensive survey of potentiality of NTFP resources and the dependence of the people on various NTFP items for their livelihood needs.
g) Recording of physical parameters at different locations in Athmallik Division.
h) Study of Ground water.
i) Socio-economic survey in the fringe villages.
j) Study of carbon stock.
k) Inspection of forest blocks and discussions with officers and field staff of the Division regarding the nature of treatment required there in.

1.2.1 Method of treatment:

For sustainable management of different identified forests, the following ecological and silvicultural requirements are proposed.

- Division of high yield area under selection working.
- Removal of dead, dying and diseased trees under improvement working.
- Rehabilitation of degraded forest by aided natural regeneration (with & without gap) supported with soil & moisture conservation measures.
- Protection of Forests to meet the habitat requirements of wild animals.
- Improvement of Bamboo crop by silvicultural operation and regeneration.
- Development of eco-tourism.
- Sustainable harvest of NTFPs & effective mechanism to avoid distress sale.
- Effective implementation of JFM resolution.
- Effective step to protect the forest from all possible drivers of un-sustainability.
- Plantation of firewood, fodder species in the village community areas to meet the daily requirements of villagers and in the process to reduce the dependency on forests.
- Income generation activities in the villages to sustain their livelihood through alternative means.

1.3 CONSTITUTION OF WORKING CIRCLE

The plantation raised by Forest Department on revenue lands under the Social Forestry Project (SFD) have been declared as village forests. The plan includes village forests, forests raised by compensatory plantations (P.F), existing forests, un-classed forests, D.P.Fs and 19 RFs in the territorial jurisdiction of Athmallik Division. The total area in the proposed plan is 45521.9078 Ha. It is proposed to create following circles in the new plan.

1. The Selection Working Circle (19969.72 Ha)
2. The Rehabilitation Working Circle (15288.9606 Ha)
3. The Plantation Working Circle(1826.7372 Ha)
4. The Protection Working Circle (8436.49 Ha)
5. The Bamboo improvement (Over Lapping) Working Circle (7012.54 Ha)
6. The NTFP (Over lapping) Working Circle (37085.4178)
7. The Wildlife (Over lapping) Working Circle (entire working plan area of the division)
8. The Joint Forest Management (Over lapping) Working Circle (3059.91 Ha)

1.3.1 ALLOCATION OF AREA TO EXISTING AND PROPOSED PLAN.

A comparative view of the facts stated above in the past system of management and area allotted to future prescriptions in proposed plan is given below in the table. In view of the facts stated above in the past system of management, the area allotted to future prescriptions in proposed plan is given below in Table.

Area allotment

Area allotted in outgoing working plan	Total area allotted in revised working plan
Reserve Forest - 53,892.05 Ha.	Reserve Forest - 38912.6306 Ha.
DPF---------- 5,925.95 Ha.	DPF (19 Nos.)---- 6,276.94 Ha.
Total---------- **59,818.00 Ha.**	P.F (6 Nos.)---------- 195.3952 Ha.
	V.F (24 Nos.)------- 136.942 Ha.
	Total---------- 45521.9078 Ha.

Sl No.	Working Circles	Area as per outgoing working plan in Ha.	Area proposed in the revised working plan in Ha.	Area statement for the revised working plan	Area in Ha.
1	2	3	4	5	6
1	Selection working circle (S.W.C)	42001.5	19969.72 Ha.	Existing Area of SWC of outgoing W.P	(+) 42001.5
				Area deducted from outgoing S.W.C to be included in proposed Satkosia tiger landscape and tiger corridor	(-)21672.72
				Area deducted from outgoing S.W.C under Block plantation	(-) 80.00
				Area from S.W.C deducted and taken to R.W.C	(-) 324.06
				Area proposed under RWC in PWPR	(+) 45.00
				Total	**19969.72**
2	Rehabilitation working circle (R.W.C)	9149.26	15288.9606	Existing Area of RWC of outgoing W.P	(+) 9149.26
				Un worked area of outgoing P.W.C taken to R.W.C	(+) 120.00
				Area from outgoing S.W.C taken to R.W.C	(+) 324.06
				Deduction of tiger corridor area from outgoing R.W.C to Protection W.C	(-) 426.56
				Deduction of area where Block Plantation carried out in outgoing R.W.C and taken to plantation working circle	(-) 100.00
				Add total DPF area (19 Nos.)	(+) 6276.94
				Deduct area under FC Act.	(-)54.7394
				Total	**15288.9606**

3	Plantation working circle (P.W.C)	1314.4	1826.7372	Existing plantation area of PWC of outgoing W.P	(+) 1314.4
				Add Block plantation area under outgoing SWC to Plantation W.C	(+) 80.00
				Add Block plantation area from outgoing RWC to Plantation W.C	(+) 100.00
				Add protected forest area (6 Nos.)	(+) 195.3952
				Add village forest area (24 Nos.)	(+) 136.942
				Total	**1826.7372**
4	Protection working circle	444.08 (RF Area)	8436.49 Ha.	Existing area of protection W.C of outgoing W.P RF area excluding DPF	(+) 444.08
				Addition of area deducted from outgoing SWC to be included in proposed tiger corridor area to Protection W.C	(+)7566.75
				Addition of area deducted from outgoing RWC included in proposed tiger corridor.	(+)426.56
				Deduct area under FC Act.	(-)0.9
				Total	**8436.49 Ha.**
5	Bamboo improvement over lapping working circle	21936.32	7017.54 Ha.	Only Taleipathar R.F	
6	NTFP over lapping working circle	59818	37085.4178 Ha.	Entire W.P area except area under protection working circle.	
7	Wildlife over lapping working circle	59818	45521.9078 Ha.	Entire W.P area	
8	J.F.M over lapping working circle	2154.81	3059.91 Ha.	Assigned VSS area	
	Total	59818	45521.9078		

Compartment wise area of different Forest Blocks area allotted to different working circles are furnished Annexure-VI

CONSTITUTION OF WORKING CIRCLES (ALLOTMENT OF AREA TO DIFFERENT WORKING CIRCLES In Ha.)												
SL No.	Name of the Forest Block	Area of Forest Block (in Ha)	Area Diverted under FC (in Ha)	Area under this Plan (in Ha)	Area allotted to different Working Circles							
					Selection WC	RWC	Plantation WC	Protection WC	Bambo(OL) WC	NTFP(OL) WC	Wild life (OL) WC	JFM(OL) WC
1	2	3	5	6	7	8	10	11	9	12	13	14
	Athamallik Range											
1	Kusumkuhuri RF	612.04	0	612.04	0	609.04	0	3	0	609.04	612.04	159
2	*Talaipathar RF	1806.04	0	1806.04	1806.04	0	0	0	1806.04	1806.04	1806.04	0
3	Mahendrapur RF	434.07	0	434.07	0	333.96	100.11	0	0	434.07	434.07	0
	Range RF Total	**2852.15**	**0**	**2852.15**	**1806.04**	**943**	**100.11**	**3**	**1806.04**	**2849.15**	**2852.15**	**159**
	Dhenkatopa Range											
4	*Talaipathar RF	2054.99	0	2054.99	2014.76	0	40.23	0	2054.99	2054.99	2054.99	0
5	Kutulsingha RF	1646.64	2.55	1644.09	0	1507.59	120	16.5	0	1627.59	1644.09	0
6	Dantarikhol RF	527.32	0	527.32	0	247.32	280	0	0	527.32	527.32	0
	Range Total	**4228.95**	**2.55**	**4226.4**	**2014.76**	**1754.91**	**440.23**	**16.5**	**2054.99**	**4209.9**	**4226.4**	**0**
	Madhapur Range											
7	*Talaipathar RF	3151.51	0	3151.51	3151.51	0	0	0	3151.51	3151.51	3151.51	0
8	East Baruni RF	1606.54	0	1606.54	0	1472.16	30	104.38	0	1502.16	1606.54	366
9	West Baruni RF	400.21	0	400.21	0	400.21	0	0	0	400.21	400.21	144.68
10	Nuagan RF	1258.93	52	1206.93	0	1096.93	110	0	0	1206.93	1206.93	309
	Range RF Total	**6417.19**	**52**	**6365.19**	**3151.51**	**2969.3**	**140**	**104.38**	**3151.51**	**6260.81**	**6365.19**	**819.68**
	Handapa Range											
11	*Northern RF	12336.29	0	12336.29	6239.03	0	0	6097.26	0	6239.03	12336.29	250
12	Handapa RF	1799.21	0	1799.21	0	324.06	0	1475.15	0	324.06	1799.21	260
13	Dandaruguda RF	162.31	0	162.31	0	0	162.31	0	0	162.31	162.31	140
14	Kholdangiani RF	221.11	0	221.11	0	167.18	53.93	0	0	221.11	221.11	100
15	Kadalimunda RF	298.23	0.9	297.33	0	0	59.5	237.83	0	59.5	297.33	200
16	Dantarikhol RF	1097.32	0	1097.32	0	756.42	153.07	187.83	0	909.49	1097.32	162.13
17	Bankimundi RF	393.07	0	393.07	0	269.84	123.23	0	0	393.07	393.07	230.1
	Range RF Total	**16307.54**	**0.9**	**16306.64**	**6239.03**	**1517.5**	**552.04**	**7998.07**	**0**	**8308.57**	**16306.64**	**1342.23**

	Barnur Range											
18	*Northern RF	6838.38	0	6838.38	6758.38	0	80	0	0	6838.38	6838.38	119
19	Bindhyabasini RF	275.84	0	275.84	0	263.35	12.49	0	0	275.84	275.84	20
20	Kishoreban RF	344.56	0	344.56	0	310.03	34.53	0	0	344.56	344.56	100
21	Ghosar RF	1140.53	0.1894	1140.3406	0	772.3406	80	288	0	852.3406	1140.3406	450
22	Bijamalhia RF	216.95	0	216.95	0	135.41	55	26.54	0	190.41	216.95	0
23	Guja RF	346.18	0	346.18	0	346.18	0	0	0	346.18	346.18	0
	E Barunei		0	0	0	0	0	0	0	0	0	50
	Range RF Total	**9162.44**	**0.1894**	**9162.2506**	**6758.38**	**1827.3106**	**262.02**	**314.54**	**0**	**8847.7106**	**9162.2506**	**739**
	Division RF Total	**38968.27**	**55.45**	**38912.6306**	**19969.72**	**9012.0206**	**1494.4**	**8436.49**	**7012.54**	**30476.1406**	**38912.6306**	**3059.91**
	Athamallik Range											
24	Kuber Hill DPF	412.54	0	412.54	0	412.54	0	0	0	412.54	412.54	0
	Range DPF Total	**412.54**	**0**	**412.54**	**0**	**412.54**	**0**	**0**	**0**	**412.54**	**412.54**	**0**
25	**Dhondatopa Range**											
26	Patabalibahal DPF	160	0	160	0	160	0	0	0	160	160	0
27	Thakurgarh DPF	139.62	0	139.62	0	139.62	0	0	0	139.62	139.62	0
4	Rampur DPF	114.33	0	114.33	0	114.33	0	0	0	114.33	114.33	0
	Range DPF Total	**413.95**	**0**	**413.95**	**0**	**413.95**	**0**	**0**	**0**	**413.95**	**413.95**	**0**
	Madhapur Range											
28	Purunapani DPF	132	0	132	0	132	0	0	0	132	132	0
29	Muchhapur A DPF	54.58	0	54.58	0	54.58	0	0	0	54.58	54.58	0
30	Muchhapur B DPF	28.77	0	28.77	0	28.77	0	0	0	28.77	28.77	0
31	Mangalur DPF	87.79	0	87.79	0	87.79	0	0	0	87.79	87.79	0
	Range DPF Total	**303.14**	**0**	**303.14**	**0**	**303.14**	**0**	**0**	**0**	**303.14**	**303.14**	**0**
	Handapa Range											
32	Gundurijharan DPF	802.91	0	802.91	0	802.91	0	0	0	802.91	802.91	0
33	Kuturukani DPF	1226.13	0	1226.13	0	1226.13	0	0	0	1226.13	1226.13	0
34	Solonda DPF	189.8	0	189.8	0	189.8	0	0	0	189.8	189.8	0
35	Berham DPF	185.35	0	185.35	0	185.35	0	0	0	185.35	185.35	0
36	Batipurunapani DPF	1214.08	0	1214.08	0	1214.08	0	0	0	1214.08	1214.08	0
37	Tileswar DPF	1022.07	0	1022.07	0	1022.07	0	0	0	1022.07	1022.07	0
	Range DPF Total	**4640.34**	**0**	**4640.34**	**0**	**4640.34**	**0**	**0**	**0**	**4640.34**	**4640.34**	**0**

	Bamur Range											
33	Susaba DPF	141.64	0	141.64	0	141.64	0	0	0	141.64	141.64	0
34	Bhagangamunda DPF	111.22	0	111.22	0	111.22	0	0	0	111.22	111.22	0
35	Digi DPF	141	0	141	0	141	0	0	0	141	141	0
36	Tulasipur DPF	43.99	0	43.99	0	43.99	0	0	0	43.99	43.99	0
37	Bajpur DPF	69.12	0	69.12	0	69.12	0	0	0	69.12	69.12	0
	Range DPF Total	**506.97**	**0**	**506.97**	**0**	**506.97**	**0**	**0**	**0**	**506.97**	**506.97**	**0**
	Division DPF Total	**6276.94**	**0**	**6276.94**	**0**	**6276.94**	**0**	**0**	**0**	**6276.94**	**6276.94**	**0**
	Madhapur Range											
38	Naktideul PF	12.869	0	12.869	0	0	12.869	0	0	12.869	12.869	0
	Range PF Total	**12.869**	**0**	**12.869**	**0**	**0**	**12.869**	**0**	**0**	**12.869**	**12.869**	**0**
	Handapa Range											
39	Papsara PF	22.9262	0	22.9262	0	0	22.9262	0	0	22.9262	22.9262	0
40	Bilcimali PF	9.8139	0	9.8139	0	0	9.8139	0	0	9.8139	9.8139	0
41	Kunjhari PF	49.7619	0	49.7619	0	0	49.7619	0	0	49.7619	49.7619	0
42	Nuakunjhari PF	60.8749	0	60.8749	0	0	60.8749	0	0	60.8749	60.8749	0
	Range PF Total	**143.3769**	**0**	**143.3769**	**0**	**0**	**143.3769**	**0**	**0**	**143.3769**	**143.3769**	**0**
	Bamur Range											
43	Barapadar PF	39.1493	0	39.1493	0	0	39.1493	0	0	39.1493	39.1493	0
	Range PF Total	**39.1493**	**0**	**39.1493**	**0**	**0**	**39.1493**	**0**	**0**	**39.1493**	**39.1493**	**0**
	Division PF Total	**195.3952**	**0**	**195.3952**	**0**	**0**	**195.3952**	**0**	**0**	**195.3952**	**195.3952**	**0**
	Athamallik Range											
44	Mahipadar VF	7	0	7	0	0	7	0	0	7	7	7
45	Manikapathar VF	5	0	5	0	0	5	0	0	5	5	5
	Range VF Total	**12**	**0**	**12**	**0**	**0**	**12**	**0**	**0**	**12**	**12**	**12**

	Madhapur Range	12	0	12	0	0	12	0	0	12	12	12
46	Goutampur VF	5	0	5	0	0	5	0	0	5	5	5
47	Singhagrimunda VF	13	0	13	0	0	13	0	0	13	13	13
48	Ratanpada VF	5	0	5	0	0	5	0	0	5	5	5
49	Bardakata VF	10	0	10	0	0	10	0	0	10	10	10
50	Hatuapada VF	1.6188	0	1.6188	0	0	1.6188	0	0	1.6188	1.6188	1.6188
51	Mundapada VF	5	0	5	0	0	5	0	0	5	5	5
52	Bunaghat VF	5	0	5	0	0	5	0	0	5	5	5
53	Kaikata VF	8.2639	0	8.2639	0	0	8.2639	0	0	8.2639	8.2639	8.2639
54	Dhuliapada VF	5	0	5	0	0	5	0	0	5	5	5
	Range VF Total	**57.8827**	**0**	**57.8827**	**0**	**0**	**57.8827**	**0**	**0**	**57.8827**	**57.8827**	**57.8827**
	Handapa Range											
48	Madhapur VF	5	0	5	0	0	5	0	0	5	5	5
49	Jhurboinda VF	0.6	0	0.6	0	0	0.6	0	0	0.6	0.6	0.6
50	Jhurboinda VF	5	0	5	0	0	5	0	0	5	5	5
51	Asurbahal VF	10	0	10	0	0	10	0	0	10	10	10
52	Gundurimunda VF	5	0	5	0	0	5	0	0	5	5	5
53	Baninali VF	5	0	5	0	0	5	0	0	5	5	5
54	Banunali VF	5	0	5	0	0	5	0	0	5	5	5
55	Thelkunali VF	3.76	0	3.76	0	0	3.76	0	0	3.8	3.8	3.76
	Range VF Total	**39.36**	**0**	**39.36**	**0**	**0**	**39.36**	**0**	**0**	**39.4**	**39.4**	**39.36**
	Banur Range											
56	Gurunjang VF	10	0	10	0	0	10	0	0	10	10	10
57	Sirabhanguni VF	5	0	5	0	0	5	0	0	5	5	5
58	Dakuamunda VF	5	0	5	0	0	5	0	0	5	5	5
59	Bairagipali VF	5	0	5	0	0	5	0	0	5	5	5
60	Nakitinali VF	2.6993	0	2.6993	0	0	2.6993	0	0	2.6993	2.6993	2.6993
	Range VF Total	**27.6993**	**0**	**27.6993**	**0**	**0**	**27.6993**	**0**	**0**	**27.6993**	**27.6993**	**27.6993**
	Division VF Total	**136.942**	**0**	**136.942**	**0**	**0**	**136.942**	**0**	**0**	**136.982**	**136.982**	**136.942**
	Grand Total	**45577.5472**	**55.45**	**45521.9078**	**1996.72**	**15288.9606**	**1826.7372**	**8436.49**	**7012.54**	**37085.4578**	**45521.9478**	**3146.852**
N.B. No area has been diverted under FRA in Athamallik Forest Division.												

1.4 Period of working plan and necessity for intermediate revision: The period of working plan is for 10 years i.e., 2020-21 to 2029-30. There is no necessity of intermediate revision. However if the situation warrants an intermediate revision can be taken up at the behest of the Working Plans Committee.

CHAPTER-2

2.1 Name of working circle: Selection working circle

2.2 General constitution of working circle:

The total area included in this working circle is **19,969.72 Ha**. In the PWPR, the total area was 19,924.72 Ha. The additional area of 45 Ha of Taleipathar RF included under rehabilitation working circle in the PWPR has been brought under the above working circle as this is the only area excluded from selection working circle in the entire Taleipathar RF. The area statement by ranges, blocks, compartments included in the circle indicating gross area is furnished in **Table No. 2.1** as below.

2.2.1 Area statement by Ranges, Blocks, Compartments:

Table No. 2.1: Area Statement by Ranges, Blocks & Compartments

Name of the Range.	Forest Block.	Compartment No.	Area in Ha.
Athmallik	**Taleipathar RF**	16	327.39
		17	193.09
		18	280.87
		19	462.85
		20	314.22
		21	227.62
TOTAL			**1806.04**
Dhandatopa	**Taleipathar RF**	1(p)	363.52
		2	219.43
		3	231.48
		4	307.12
		15	145.11
		22	315.98
		23	231.13
		24	200.99
		TOTAL	**2014.76**
Madhapur	**Taleipathar RF**	5	322.97
		6	355.43
		7	374.49
		8	428.11
		9	167.93
		10	190.75
		11	233.47
		12	187.24
		13	425.4
		14	465.72
		TOTAL	**3151.51**
TOTAL AREA OF TALEIPATHAR FELLING SERIES			**6972.31**

Handapa	**Northern RF**	15	460.79
		19	426.6
		21	559.03
		22	689.3
		23	446.86
		25	353.64
		26	318.51
		38	425.08
		40	351.3
		43	425.66
		44	408.68
		45	452.59
		46	596.04
		47	324.95
TOTAL AREA OF UDOL FELLING SERIES			**6239.03**
Bamur	**Northern RF**	1	350.13
		2	266.75
		3	383.5
		4	403.38
		5(p)	457.41
		6	415.1
		7	216.48
		8	370.62
		9	380.93
		10	333.74
		11	357.16
		12(p)	564.33
		13(p)	424.45
		14	381.14
		16	281.02
		17	336.37
		18	326.48
		20	509.39
TOTAL AREA OF PATHARGARH FELLING SERIES			**6758.38**
TOTAL AREA SELECTION WORKING CIRCLE:			**19969.72 Ha**

2.2.2 Forest Types : The Forest types coming under this working circle is furnished in **Table No. 2.2** as below.

Table No : 2.2 BLOCKWISE FOREST TYPES OF FOREST BLOCKS INCLUDED IN T				
S .No.	**RF Block**	**Type of Forest**	**Area in Ha**	**% Area**
1	Talaipathar	(i) 3C/C2e Moist Peninsular Sal Forest	4210	7.81
		(ii) 5B/C2 Northern Dry Mixed Deciduous Forest	2802.54	5.2
2	Northern	(I) 5B/C1c Dry Peninsular Sal Forest	15280	28.35
		(ii) 3C/C2e Moist Peninsular Sal Forest	3894.67	7.22

2.2.3 Density Classes(as adopted by FSI)

The density classes of Forest Blocks as adopted by FSI is furnished in **Table No. 2.3** as below.

Table No: 2.3 Density classes as adopted by FSI			
Sl. No.	Forest Blocks	Density	Type of Forest
1	Taleipathar RF	0.5--0.6	Moderately dense
2	Northern RF	0.5--0.6	Moderately dense

2.3 General characteristics of vegetation:

2.3.1 Crop Composition:

2.3.1.1 3C/C2e NORTH INDIAN TROPICAL MOIST PENINSULAR SAL

Group 3	Tropical Moist Deciduous Forests
Sub group	3C North Indian Moist Deciduous Forests
Type	3C/C2 Moist Sal bearing Forests
Sub type	3C/C2e (i) Moist Peninsular High level Sal
	3C/C2e (ii) Moist Peninsular Low level Sal

2.3.1.1.1 Floristic Composition

It is characterized by the presence of Sal as principal species, constituting 50 to 70 percent of the stock of different site qualities. Both the Sub-types i.e. (a) 3C/C2e (i) North Indian Tropical Moist Peninsular high level Sal and (b) 3c/C2e (ii) North Indian Tropical Moist Peninsular low level Sal occur in the forests. The high level Sal forests are associated with species like *Anogeissus latifolia, Terminaia tomentosa, Ougeinia dalbergioides* etc. which are more akin to the dry deciduous forest, where as the low level Sal forests are characterized by dense undergrowth because of its comparatively cooler climate and species like S*yzygium cumini, Albizzia species, Emblica officinalis,* etc. are the common associates.

The main species present in the top storey are *Shorea robusta, Terminalia tomentosa, Anogeissus latifolia, Pterocarpus marsupium, Adina cordifolia, Syzygium cumini, Mytragyna parvifolia and Albizzia procera*

The middle storey contains *Dalbergia latifolia, Ougeinia oojinensis, Gmelina arborea, Bridelia retusa, Aegle marmelos, Careya arborea, Mallotus philippinensis, Cleistanthus collinus, Dillenia pentagyna* etc.

The ground flora comprises *Holarrhena antidysentrica, Nyctanthes arbortristis, Ixora arobrea, Indigofera pulchella, Casearia tomentosa* etc. The important climbers present are *Bauhinia vahlii, Combretum decandrum, Smilax macrophylla, Butea superba* etc.

2.3.1.1.2 Occurrence

It occurs over an area of 3894.67 ha and this type of forests occurs in Talaipathar, Northern Reserved Forests, this comes to approximately 10.1% percent of the total RF area.

2.3.1.2 5B/C1c DRY PENINSULAR SAL FORESTS

Group 5	Tropical Dry Deciduous Forests
Sub group	5B Northern Tropical Dry Deciduous Forests
Type	5B/C1c Dry Peninsular Sal Forests

2.3.1.2.1. Floristic Composition

In these forests the proportion of Sal is high, sometimes even up to 90 percent purity. It occurs mainly on sandstone, Khondalite. The quality class of Sal is poor on the upper slopes, where the soil is shallow and in the plains and valleys good quality Sal of Q III and Q IV is present especially in Northern Reserved Forest. The Sal is associated with *Syzygium cumini, Terminalia tomentosa, Dalbergia paniculata, Madhuca indica, Albizzia procera, Diosporys melanoxylon, Glochidion zeylanicum* in Northern RF. Bamboo is completely absent in Northern RF. In Talaipathar RF Sal is mixed with *Terminalia tomentosa, Anogeissus latifolia, Terminalia bellirica, Terminalia chebula, Pterocarpus marsupium* etc.

The middle storey comprises Dalbergia latifolia, *Bridelia retusa,Careya arborea, Cleistanthus collinus, Buchnania lanzan, Lagerstromia parviflora, Aegle marmelos, Emblica officinalis, Mallotus philipinensis and Gmelina arborea* etc.

The ground flora comprises *Holarrhena antidysenterica. Omdogpfera cassopodos. Ixora arborea, Chloroxylon swietenia, Phoenix acaulis, Woodfordia fructicosa, Lantana camara, Flemingia chappar,* etc. The important climbers present are *Bauhinia vahalii, Butea superba, Asparagus recemosus, Combretum decandrum, Millettia auriculata* etc.

2.3.1.2.2 Occurrence

This type of forests occurs in Northern and Handapa blocks. In Northern RF, this type extends over an area of 15,280 ha and in Handapa over an area of 1,620 ha. This type of forests also occurs in Kuturukani, Gundurijharan, and Batipurunapani Protected Forests.

2.3.1.3 5B/C2- NORTHERN TROPICAL DRY MIXED DECIDUOUS FORESTS.

Group 5	Tropical Dry Deciduous Forests
Sub group	5B Northern Tropical Dry Deciduous Forests
Type	5B/C2 Northern Tropical Dry Mixed Deciduous Forests

2.3.1.3.1 Floristic Composition

This type of forests generally occurs on the basic rocks and also occurs over a considerable area on khondalite. The upper canopy is light often a broken canopy and is usually with trees having relatively short boles and poor form. There is usually thin shrubby undergrowth. The forest is entirely leafless and soil is fully exposed in the hot weather condition and in the monsoon it takes a luxuriant appearance.

The main species found in the top canopy are *Terminalia tomentosa, Anogeissus latifolia, Pterocarpus marsupium, Bombax ceiba, Dalbergia paniculata, Lannea coromandelica, Terminalia bellirica, Madhuca indica, Boswellia serrata, Adina cordifolia, Ficus sps., Albizia lebbeck, Schleichera oleosa, Stereospermum colais, Mitragyna parviflora* etc. Sal is generally either absent or present as scattered individuals.

The main species present in the middle storey are *Diospyros melanoxylon, Buchanania lanzan, Sterculia urens, Dillenia petagyna, Bridelia retusa, Diospyros montana, Dalbergia sisso, Terminalia chebula, Careya arborea, Erythrina variegata*, *Soymida febrifuga, Semecarpus anacardium, Emblica officinalis, Syzygium cumini, Lagerstroemia parviflora, Cleistanthus collinus, Diosyros embryopteris* etc.

The main species present in the ground flora are *Bauhinia retusa, Bauhinia purpuria, Indigofera pulchella, Holarrhena antidysenterica, Cassia fistula, Helicteres isora, Woodfordia fructicosa, Choloroxylon swietenia, Ixora arborea,Gardenia*

latifolia, Gardenia gummifera, Phoenix acaulis, Grewia tiliaefolia, Clerodendron vixcosum, Oroxylon indicum, Litsea glutinosa etc. The important climbers are *Bauhinia vahlii, Butea superba, Acacia pennata, Smilax macrophylla, Combretum decandrum, Solena amplexicaulis, Asparagus recemosus, Dioscorea oppositifolia, Dioscorea bulbifera, Ichnocarpus frustescens, Cissampelos pareira* etc., *Dendrocalamus strictus* (Salia Bamboo) is also found.

2.3.2 Age Class Distribution:

The crop is of middle age class.

2.3.3 Density: 0.5-0.6(Moderately dense) as per classification adopted by FSI.

2.3.4 Growing Stock:

2.3.4.1 Growing Stock of Taleipathar RF:

.The Growing Stock of Taleipathar RF is furnished in **Table No. 2.4** as follows.

Table No 2.4 VOLUME OF THE GROWING STOCK (cumt) OF TALEIPATHAR							
Enumerated Area : 7011.64 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 <30	30 < 40	40 < 50	50 >	Total
	Total	132365	130345	140821	96873	102060	602464

2.3.4.2 Growing Stock of Northern (part) RF:

The Growing Stock of Northern RF is furnished in **Table No. 2.4** as follows.

VOLUME OF THE GROWING STOCK (cumt) OF NORTHERN R.F.							
Enumerated Area : 19,174.67 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 <30	30 < 40	40 < 50	50 >	Total
	Total	340774	469409	631176	484686	246596	2.2E+07

2.3.5 Status of regeneration:

During the sample point exercise; the status of regeneration was studied. The status of regeneration in respect of Northern RF & Taleipathar RF is furnished in **Table. No. 2.5.1 & 2.5.2** as below

Table No 2.5. Status of Regeneration of Northern RF						
Sl No.	UID No	Compt. N	No of seedlings	No of Saplings	No of Adults	Remarks
1	71	1	11	3	3	Fair
2	72	1	18	9	1	Good
3	68	1	10	13	1	Good
4	69	1	8	12	1	Good
5	70	1	10	10	0	New
6	107	2	4	4	0	New
7	106	2	7	7	2	Good
8	22	3	4	8	0	New
9	75	3	4	8	0	New
10	76	3	5	7	1	Fair
11	77	3	4	9	0	New
12	44	4	9	8	0	New
13	42	4	10	9	2	Good
14	45	4	11	8	0	New
15	46	4	9	7	1	Good
16	43	4	9	5	1	Good
17	55	5	6	10	0	New
18	59	5	5	9	0	New
19	53	5	5	6	2	Deficient
20	58	5	7	7	0	New
21	57	5	7	5	0	New
22	56	5	6	5	1	Good
23	54	5	8	5	0	New
24	49	6	7	6	1	Good
25	48	6	7	4	1	Good
26	51	6	11	4	0	New
27	50	6	7	6	0	New
28	52	6	9	7	2	Good
29	41	7	6	5	2	Good
30	1	7	5	5	2	Good
31	79	8	8	6	0	New
32	25	8	20	6	2	Good
33	78	8	19		1	Fair
34	157	9	13	12	0	New
35	156	9	13	6	1	Good
36	158	9	8	6	2	Good
37	155	9	11	11	0	New
38	105	10	11	5	2	Good
39	104	10	8	6	1	Good
40	103	10	10	6	1	Good

41	102	10	11	7	1	Good
42	101	10	10	9	1	Good
43	170	11	6	6	2	Deficient
44	169	11	10	3	3	Fair
45	168	11	9	4	2	Good
46	172	11	8	6	2	Good
47	173	11	8	8	2	Deficient
48	195	12	7	8	2	Deficient
49	191	12	13	12	1	Good
50	194	12	8	9	1	Deficient
51	192	12	12	2	0	New
52	193	12	20	1	3	Fair
53	214	13	13	7	1	Good
54	33	13	5	8	2	Deficient
55	31	13	8	7	0	New
56	215	13	21	3	1	Good
57	217	13	5	3	0	New
58	216	13	21	7	0	New
59	240	14	14	4	8	Fair
60	238	14	15	4	10	Fair
61	241	14	15	4	8	Fair
62	236	15	15	6	4	Good
63	232	15	13	2	10	Fair
64	233	15	9	4	6	Fair
65	234	15	9	8	1	Good
66	235	15	13	8	2	Good
67	237	15	11	6	4	Good
68	203	16	9	6	0	New
69	204	16	14	8	0	New
70	201	16	7	8	1	Deficient
71	205	16	6	6	0	New
72	150	17	9	9	0	New
73	149	17	7	11	0	New
74	152	17	9	10	0	New
75	148	17	7	7	0	New
76	151	17	5	1	0	New
77	110	18	12	12	0	New
78	109	18	8	8	1	Deficient
79	8	18	8	7	1	Good
80	111	18	15	4	1	Good

81	180	19	16	4	1	Good
82	182	19	11	1	0	New
83	179	19	11	2	1	Good
84	181	19	10	6	1	Good
85	183	19	29	0	3	Fair
86	190	20	11	2	2	Fair
87	188	20	12	1	4	Fair
88	187	20	15	0	4	Fair
89	184	20	11	1	6	Fair
90	185	20	12	3	4	Fair
91	267	21	10	1	3	Fair
92	268	21	5	9	1	Deficient
93	245	22	10	3	2	Good
94	248	22	15	0	4	Fair
95	244	22	11	1	3	Fair
96	247	22	9	1	4	Fair
97	246	22	12	0	3	Fair
98	243	22	13	0	4	Fair
99	127	23	8	5	0	New
100	278	23	3	6	3	Deficient
101	276	23	10	3	2	Good
102	270	23	11	12	0	New
103	272	23	10	4	2	Good
104	273	23	11	4	1	Good
105	274	23	12	3	0	New
106	271	23	14	2	1	Good
107	135	25	13	2	4	Fair
108	136	25	10	3	0	New
109	133	25	13	1	1	Fair
110	84	26	15	3	4	Fair
111	82	26	13	3	4	Fair
112	83	26	10	5	3	Good
113	85	26	7	5	2	Good
114	81	26	9	7	3	Good
115	80	26	6	8	2	Deficient
116	139	38	5	10	1	Deficient
117	137	38	5	5	5	Good
118	138	38	4	5	2	Fair
119	142	40	4	2	4	Fair
120	147	40	4	2	8	Fair

121	143	40	3	1	7	Fair
122	145	40	4	2	4	Fair
123	141	40	4	2	3	Fair
124	224	43	4	0	7	Fair
125	225	43	4	0	5	Fair
126	223	43	4	2	5	Fair
127	222	43	4	0	9	Fair
128	175	44	6	0	5	Fair
129	174	44	2	1	4	Fair
130	176	44	5	1	9	Fair
131	177	44	3	0	6	Fair
132	159	45	6	0	6	Fair
133	161	45	3	0	3	Fair
134	162	45	3	0	5	Fair
135	92	46	3	0	7	Fair
136	91	46	4	0	5	Fair
137	93	46	5	2	3	Fair
138	90	46	4	2	4	Fair
139	88	46	5	0	7	Fair
140	37	46	4	1	6	Fair
141	89	46	4	0	7	Fair
142	160	46	4	0	4	Fair
143	86	47	4	0	6	Fair
144	34	47	4	0	7	Fair
145	87	47	3	0	7	Fair
Total			**1294**	**677**	**358**	**GOOD**

Since the seedlings are more than saplings and likewise the saplings are more than adults; the status of regeneration of Northern RF is GOOD.

Status of Regeneration of Taleipathar RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	421	1	7	14	0	New
2	6	1	23	3	2	Good
3	420	1	7	7	7	Fair
4	419	1	7	1	9	Fair
5	407	2	4	7	4	Good
6	408	2	5	9	4	Good
7	406	2	7	6	5	Good
8	390	3	14	15	3	Fair
9	375	4	9	9	4	Good
10	376	4	15	5	7	Fair
11	17	4	10	3	4	Fair
12	374	4	13	4	14	Fair
13	368	5	12	8	4	Good
14	367	5	11	6	4	Good
15	369	5	6	2	6	Fair
16	369	5	9	5	7	Fair
17	13	5	12	10	4	Good
18	357	6	3	1	2	Fair
19	5	6	4	6	0	New
20	9	7	8	7	0	New
21	360	7	16	11	0	New
22	358	7	13	8	0	New
23	359	7	17	11	0	New
24	362	8	15	8	0	New
25	364	8	19	17	0	New
26	365	8	12	9	0	New
27	363	8	34	19	0	New
28	355	9	9	5	0	New
29	395	9	8	1	11	Fair
30	401	9	5	5	4	Deficient
31	400	9	8	0	13	Fair
32	405	10	5	3	7	Fair
33	398	11	1	2	0	New
34	399	11	13	4	8	Fair
35	397	11	9	2	10	Fair
36	423	12	10	4	9	Fair
37	412	13	5	0	10	Fair
38	414	13	4	0	7	Fair

39	413	13	5	6	5	Good
40	410	13	5	0	10	Fair
41	411	13	8	14	2	Good
42	415	13	4	0	9	Fair
43	381	14	8	2	6	Fair
44	378	14	6	1	10	Fair
45	382	14	13	14	2	Fair
46	379	14	12	11	0	New
47	380	14	17	5	9	Fair
48	377	14	8	6	6	Fair
49	384	15	13	11	5	Good
50	386	15	15	10	6	Good
51	385	15	6		10	Fair
52	428	16	9	13	3	Fair
53	425	16	8	8	0	New
54	426	16	11	8	0	New
55	429	17	8	7	1	Good
56	430	17	8	6	1	Good
57	444	18	11	11	2	Good
58	443	18	3	2	2	Fair
59	446	19	12	10	2	Good
60	445	19	10	9	2	Good
61	350	19	12	11	3	Good
62	448	19	12	13	5	Fair
63	449	19	14	13	2	Good
64	447	19	17	12	2	Good
65	457	20	35	14	3	Good
66	456	20	9	4	2	Good
67	458	20	9	5	6	Fair
68	431	21	12	15	2	Fair
69	432	21	2	1	0	New
70	416	22	15	10	6	Good
71	417	22	15	10	6	Good
72	418	22	12	4	6	Fair
73	435	23	5	4	10	Fair
74	436	23	16	4	9	Fair
75	434	23	10	10	4	Fair
76	440	24	1	0	9	Fair
77	442	24	7	12	0	New
Total			**792**	**533**	**337**	**GOOD**

Since the seedlings are more than saplings and likewise the saplings are more than adults; the status of regeneration of Taleipathar RF is GOOD.

2.3.6 Special problems like menace of weeds and invasive species growth:

Weeds compete for food and light and chokes valuable plants particularly the young ones. *Eupatorium* and *Lantana* are the common weeds in the forests. Nevertheless, it is not a serious problem in this chunk of Forest.

2.4 Felling Series, cutting sections and JFM areas:

In the previous working plan; 06 Felling Series were proposed under selection working circle. As against the enumeration of trees ; only 6.8% trees are felled. The details of number of trees marked/ felled. timber production and production of firewood are as shown in **Table No 2.6.** as below. Further Handapa FS and part of Northern Forest Block coming under previous Udol felling Series has been included under proposed tiger corridor. More to add the entire Hatidhara reserved Forests is merged with Satkosia Gorge Wildlife sanctuary. Hence it is proposed to take up selection working in three felling series only.

Table No 2.6. ABSTARCT OF TREE MARKED AND FELLED IN THE PREVIOUS SWC

Name of felling series	No of trees as per Working Pan - 2006-07 to 2014-15	No of trees marked/ felled	Timber Production (In cum)	Firewood (in stack)	Remarks
2	**3**	**4**	**5**	**6**	**7**
Talaipathar F.S	57098	2569/ 2486	869.9114	273.5	During 2010-11 Compt. No. V not taken delivery due to being un-economical to OFDC, Ltd.
Pathargarh F.S	56436	4273	1992.73	1107	
Udal F.S	62522	4287	2287.463	1438.25	
Handapa F.S	46879	4261	1739.971	1244.75	
Hatidhara-Sou	59542	1694	783.769	201	
Hatidhara-Nor	52762	5758	3281.173	1323	
Total	**335239**	**22842/ 22759**	**10955.0174**	**5587.5**	

2.4.1 : Felling series, cutting sections and JFM areas :

The proposed Felling series, cutting sections and JFM areas are furnished in Table. No. 2.7 as below.

Table No.2.7 Felling series, cutting sections and JFM areas						
Sl.No	**Felling Series**	**Name of the Range.**	**Forest Block.**	**Compartment No.**	**Area in Ha.**	**JFM area in Ha.**
1	Taleipathar	Athmallik	Taleipathar RF	16	327.39	Nil
				17	193.09	Nil
				18	280.87	Nil
				19	462.85	Nil
				20	314.22	Nil
				21	227.62	Nil
				TOTAL	**1806.04**	
		Dhandatopa	Taleipathar RF	1(p)	363.52	Nil
				2	219.43	Nil
				3	231.48	Nil
				4	307.12	Nil
				15	145.11	Nil
				22	315.98	Nil
				23	231.13	Nil
				24	200.99	Nil
				TOTAL	**2014.76**	
		Madhapur	Taleipathar RF	5	322.97	Nil
				6	355.43	Nil
				7	374.49	Nil
				8	428.11	Nil
				9	167.93	Nil
				10	190.75	Nil
				11	233.47	Nil
				12	187.24	Nil
				13	425.4	Nil
				14	465.72	Nil
				TOTAL	**3151.51**	
TOTAL AREA OF TALEIPATHAR FELLING SERIES					6972.31	
2	Udol	Handapa	Northern RF	15	460.79	Nil
				19	426.6	Nil
				21	559.03	Nil
				22	689.3	Nil
				23	446.86	Nil
				25	353.64	Nil
				26	318.51	Nil
				38	425.08	Nil
				40	351.3	Nil
				43	425.66	40
				44	408.68	180
				45	452.59	Nil
				46	596.04	Nil
				47	324.95	Nil
				TOTAL	**6239.03**	

TOTAL AREA OF UDOL FELLING SERIES					6239.03	
3	Pathargarh	Bamur	Northern RF	1	350.13	50
				2	266.75	Nil
				3	383.5	Nil
				4	403.38	Nil
				5(p)	457.41	Nil
				6	415.1	Nil
				7	216.48	Nil
				8	370.62	19
				9	380.93	Nil
				10	333.74	Nil
				11	357.16	Nil
				12(p)	564.33	Nil
				13(p)	424.45	Nil
				14	381.14	50
				16	281.02	Nil
				17	336.37	Nil
				18	326.48	Nil
				20	509.39	Nil
TOTAL					**6758.38**	
TOTAL AREA OF PATHARGARH FELLING SERIES					**6758.38**	

2.5 Blocks, compartments and JFM areas(marked on GIS based maps)

The felling series, Ranges, blocks , compartments, area in hectare, quality and JFM areas are furnished in **Table No.2.8** as below.

Table No.2.8 Felling Series, Ranges, Blocks, compartments, area in Ha,quality and JFM areas							
Sl.No	Felling Series	Name of the Range.	Forest Block.	Compartment No.	Area in Ha.	JFM area in Ha.	Quality of area.
1	Taleipathar	Athmallik	Taleipathar RF	16	327.39	Nil	
				17	193.09	Nil	
				18	280.87	Nil	
				19	462.85	Nil	
				20	314.22	Nil	
				21	227.62	Nil	
				TOTAL	**1806.04**		
		Dhandatopa	Taleipathar RF	1(p)	363.52	Nil	
				2	219.43	Nil	
				3	231.48	Nil	
				4	307.12	Nil	
				15	145.11	Nil	
				22	315.98	Nil	
				23	231.13	Nil	
				24	200.99	Nil	
				TOTAL	**2014.76**		
		Madhapur	Taleipathar RF	5	322.97	Nil	
				6	355.43	Nil	
				7	374.49	Nil	
				8	428.11	Nil	
				9	167.93	Nil	
				10	190.75	Nil	
				11	233.47	Nil	
				12	187.24	Nil	
				13	425.4	Nil	
				14	465.72	Nil	
				TOTAL	**3151.51**		
TOTAL AREA OF TALEIPATHAR FELLING SERIES					6972.31		

2	Udol	Handapa	Northern RF	15	460.79	Nil	
				19	426.6	Nil	
				21	559.03	Nil	
				22	689.3	Nil	
				23	446.86	Nil	
				25	353.64	Nil	
				26	318.51	Nil	
				38	425.08	Nil	
				40	351.3	Nil	
				43	425.66	40	
				44	408.68	180	
				45	452.59	Nil	
				46	596.04	Nil	
				47	324.95	Nil	
				TOTAL	**6239.03**		
TOTAL AREA OF UDOL FELLING SERIES					**6239.03**		
3	Pathargarh	Bamur	Northern RF	1	350.13	50	
				2	266.75	Nil	
				3	383.5	Nil	
				4	403.38	Nil	
				5(p)	457.41	Nil	
				6	415.1	Nil	
				7	216.48	Nil	
				8	370.62	19	
				9	380.93	Nil	
				10	333.74	Nil	
				11	357.16	Nil	
				12(p)	564.33	Nil	
				13(p)	424.45	Nil	
				14	381.14	50	
				16	281.02	Nil	
				17	336.37	Nil	
				18	326.48	Nil	
				20	509.39	Nil	
				TOTAL	**6758.38**		
TOTAL AREA OF PATHARGARH FELLING SERIES					**6758.38**		
TOTAL AREA SELECTION WORKING CIRCLE:					**19969.72 Ha**		

2.6 : Special objectives of management :

General objectives:

The objectives of the management of the Selection Working Circle are within the scope of general objectives of the management of the entire division. These are as follows: -

(i) To conserve and improve the forest cover by soil and water conservation method following the principles of watershed development.

(ii) To maintain and improve the biodiversity of the forest blocks.

(iii) To build up the growing stock and improve stand structure by silvicultural operations.

(iv) To establish natural regeneration of indigenous species.

(v) To obtain the yield on sustainable basis so as to cater the need of the people subject to environmental and silvicultural availability.

Specific objectives:

(i) To remove the mature and silviculturally available trees on sustainable basis before they become unsound.

(ii) To remove only dead and uprooted trees in consistence with the general objectives of management.

(iii) To remove congestion in the coppice crop by way of thinning operations so that conducive situation is created for better growth of existing crop and the upcoming natural regeneration.

(iv) To build up the growing stock and improve the stand structure and encourage natural regeneration by taking suitable silvicultural operations with emphasis on soil and water conservation measures.

(v) To maintain and improve biodiversity of forest blocks.

(vi) To restore the area by protection from biotic interference, especially grazing fire and to ensure ecological equilibrium and to manage the forest aiming to derive maximum sustainable yield.

2.6.1 : Analysis of the crop :

Sample plot enumeration of trees in different girth classes varying from 30 cm to 180 cm and above with 30 cm interval has been carried out on the basis of UID Nos. assigned by NRSC through ORSAC. Analysis of result reveals that Sal is the principal species in Northern RF whereas in Talaipathar Sal is present with its associates like Dhaura, Asan, Mahula, Kendu etc. it is generally observed that the number of trees are more in the Northern aspect than the Southern. The number of trees is more in the interior compartments than the compartments adjoining to the villages. That is why in the enumeration, in some compartments number of trees per ha are found to be more than that of other compartments.

In Northern RF pure Sal crop of Quality II to III is present. The Sal crop is sound up to 120 cm girth class, above which there are instances of becoming unsound. Bamboo is almost absent in the area except for few scattered clumps.

. The regeneration is found to be good and in some compartments excellent regeneration of Sal is found. The details of the regeneration survey are given in the **chapter 2.3.** The enumeration results revealed that there are fairly good number of trees in the exploitable and above exploitable girth classes. These trees need to be felled, otherwise there is an increased tendency of getting unsound with over maturity. Selection-Cum-Conversion and Coppice un-worked areas of the past plans were included in this Working Circle. Forest blocks with adequate number of maturing/matured trees has been incorporated in the revised working plan.

2.6.1.1 : Assessment of NTFPs :

During the sample point exercise, assessment of NTFP bearing species have also been conducted. The result is furnished in **Table. No. 2.9** as below.

Table. No. 2.9:

Table. No. 2.9 Abstract of NTFPs of Taleipathar RF Area surveyed: 7.70 Ha

Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	1009	9	Bahada Fruit	475
2	Chara Seed	245	10	Amala Fruit	29
3	Kendu fruit	1380	11	Kusuma seed	146
4	Jamun berry	595	12	Simil cotton	5
5	Mahula flower	3206	13	Mango fruit	200
6	Mahua seed	1672	14	Mango Kernel	20
7	Kumbhi bark	42	15	Bhalia fruit	166
8	Harida fruit	174	16	Bela Fruit	267
			17	Dantari Fruit	0

Abstract of NTFPs of Northern RF Area surveyed: 14.5 Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	3514	11	Kusuma seed	414
2	Chara Seed	502	12	Simil cotton	10
3	Kendu fruit	3084	13	Mango fruit	0
4	Jamun berry	1551	14	Mango Kernel	0
5	Mahula flower	4076	15	Bhalia fruit	2
6	Mahua seed	2399	16	Bela Fruit	0
7	Kumbhi bark	24	17	Dantari Fruit	1
8	Harida fruit	34	18	Lodha gum	1
9	Bahada Fruit	25	19	Jayasandha	1
10	Amala Fruit	3	20	Neem	0

Status of regeneration has improved from moderate to good in comparison to previous data collected during the last working plan period.

2.6.2 Silvicultural System

The silvicultural system will be selection-cum-improvement system with basic aim to maintain and develop the forest cover by removing the dead, dry, hollow, fallen and seriously diseased and silviculturally available mature trees with adequate moisture conservation measure and artificial regeneration. The emphasis will be on sustainable production and stability of the ecosystem. The crop and soil condition will be improved by selective opening of the canopy. Marking is very important exercise, requiring judicious application of skill. It should therefore be carried out by a Range Officer under proper supervision of the Assistant Conservator of Forests.

2.6.3 : Rotation Period :

The silvicultural rotation period of 120 years is fixed for all the species as stipulated vide letter no.13-FCWP/BH/KOLHAN dated13/1/1997 of the Chief

Conservator of Forests(Central),Ministry of Environment & Forests, Govt. of India, Regional Office, Bhubaneswar. Since the improvement of growing stock is the primary objective of management, it is desirable to have shorter felling cycle. It will help the area receive improvement treatment more often and the crop will respond to such treatment quicker than in a longer cycle. Therefore, a rotation period of 10 years has been fixed to synchronize with the current plan period.

2.6.4 : Harvestable diameters :

The exploitable girth class fixed for various species is based on the silvicultural rotation. The other factors such as production capacity, growth, yield and market demand etc. have also been taken into account. The exploitable girth of different species is provided in **Table No: 2.10**

Table: 2.10 Exploitable Girth at Breast Height		
Species	**Exploitable Girth At Breast Height**	**Approach Class Brest Hight**
1. Sal, Piasal, Sissoo, Gambhar, Asan, Kasi, Asan, Mundi, Kusum, Jamun.	120 cm & above	90cm <120 cm
2. Bandhan	90 cm & above	60 cm < 90 cm
3. Simili	150 Cm	120 cm <150 cm
3. Miscellaneous	120 cm & above	90 cm < 120 cm

The parameters that have been taken into consideration for fixing the exploitable girth for sal and other species in different forest blocks are as follows:-

- The size beyond which the unsoundness develops; it is mostly observed that unsoundness develops after the tree crosses diameter of 40 cms.
- The site quality.
- Data available in the yield stand table for different species.
- Enumeration figures available for different forest blocks.
- Growth & market demand.

2.6.5 : Reducing factors and reduced areas :

The basal area and relative basal area calculated for various species has already been reflected in Chapter 3.1.

2.6.6 : Felling cycle :

The felling cycle has been fixed at 10 years, which synchronizes with the Plan period. In case of a longer felling cycle, the crop will remain unattended for over a long period of time. With a shorter felling cycle improvement operations can be taken up at short intervals to bring back the forests to healthy condition.

2.6.7: Division into periods and allotment to periodic blocks (PB):

This is done for the shelter wood systems and hence not applicable.

2.6.8: Calculation of the yield:

According to the Smythies' safeguarding formula the number of Class - II trees (x) per hectare that pass into Class - I within the felling cycle is determined by following formula.

$$X = \frac{F}{T} \text{ (II - Z \% of II)} \quad \text{——————} \quad (1)$$

Where

II = No. of trees in pre exploitable girth class or approach class (90-120 cm for Sal and others; 60-90 cm for Bandhan.120-150 Cm for Simili)

X = Number of trees in approach class, which passes into the exploitable class.

F = Felling cycle (10 years)

T = Time period in years that takes approach class to pass into exploitable class (40 years)

Z = Percentage of Class II trees that do not pass into class I in 'T' years, due to mortality or removal in thinnings etc. It is taken 45%

The percentage of the trees available for exploitation (Y) is calculated as follows.

$$Y = \frac{X}{(I + X / 2)} \times 100 \pm A \quad \text{——————} \quad (2)$$

Where

A = Arbitrary value to get the round figure of Y

X = Number of trees in approach class which passes into the exploitable class

I = Number of trees already existing in the exploitable class.

If the value of 'X' as in equation (1) is substituted in the equation (2) the resulting equation is as follows

$$Y = \frac{2 F II (100 - Z)}{200 I T + F II (100 - Z)} \times 100 \pm A \qquad (3)$$

But in this plan the yield has been regulated by area with a percentage check on the removal of exploitable trees as calculated by NRSC, Hydrabad. **Annexure No- VIII**

(i) The exploitable (Selection) trees already exist and are being recruited everywhere (and not in any particular compartments only) and that fallings pass regularly through the forests in consecutive annual coupes in a felling cycle of 10 years.

(ii) The basic object of management is to ensure, as far as possible, sustained yield of exploitable trees above the exploitation limit at every felling cycle.

(iii)The middle aged and younger diameter classes are well represented and the present rate of recruitment into the two highest diameter classes (**I** and **II)** will not decrease for quite a few decades.

(iv) Sustained yield of Selection trees is adequately safeguarded, if in any area, the number that may be felled is limited to the number that will pass up from below by the time fellings come round again.

Table-2.11 Name of the Felling series -Pathargarh Felling series

Sl No	Coupe No	Name of the Forest Block	Compartment		Coupe Area (In Ha)	Exploitable (Trees/Ha.)		Approach Class (Trees/Ha.)		Yield (Trees/ha.)		Proposed Yield (Trees/Ha.)	
			No	Area In Ha.		Sal	Non-Sal	Sal	Non-Sal	Sal	Non-Sal	Sal	Non-Sal
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	I	Northern	12(P)	564.33	564.33	11.66	19.95	18.83	12.66	1.17	0.83	1.17	0.83
			16	281.02		20.36	16.08	33.04	25.25	2.04	1.57	2.04	1.57
			17	336.37		24.3	12.04	43.37	28.67	2.65	1.69	2.65	1.69
2	II				617.39					**1.56**	**1.09**	**1.56**	**1.09**
			13(P)	424.45		15.48	5.74	44.72	22.42	2.57	1.22	2.57	1.22
			14	381.14		16.54	6.34	33.36	13.78	2.01	2.82	2.01	2.82
3	III				805.59					**2.29**	**2.02**	**2.29**	**2.02**
			18	326.48		13.16	6.24	2.67	13.28	0.53	2.52	0.53	2.52
			20	509.39		11.05	3.25	31.05	18.24	1.79	0.91	1.79	0.91
4	IV				835.87					**1.16**	**1.72**	**1.16**	**1.72**
			8	370.62		20.27	16.13	32.25	25.68	2	1.59	2	1.59
			9	380.93		47.8	11.95	49.05	25	3.15	1.5	3.15	1.5
5	V				751.55					**2.58**	**1.55**	**2.58**	**1.55**
			1	350.13		25.77	19.07	29.7	30.02	1.89	1.86	1.89	1.86
			2	266.75		17.35	15.07	27.95	23.73	1.73	1.47	1.73	1.47
6	VI			616.88	616.88					**1.81**	**1.67**	**1.81**	**1.67**
7	VII		5(P)	457.41	457.41	16.94	9.9	43.83	31.49	2.56	1.78	2.56	1.78
			3	383.5		19.38	15.91	31.68	24.88	1.96	1.54	1.96	1.54
			4	403.38		28.47	22.72	29.91	20.62	1.92	1.33	1.92	1.33
8	VIII				786.88					**1.94**	**1.44**	**1.94**	**1.44**
			6	415.1		18.72	15.13	31.34	23.69	1.93	1.47	1.93	1.47
			7	216.48		20.7	16.13	33.47	25.31	2.07	1.57	2.07	1.57
9	IX				631.58					**1.33**	**1.01**	**1.33**	**1.01**
			10	333.74		19.7	14.29	29.77	22.88	1.85	1.42	1.85	1.42
			11	357.16		17.84	13.57	25.77	21.99	1.61	1.36	1.61	1.36
10	X				690.9					**1.73**	**1.39**	**1.73**	**1.39**
							Total			**14.4**	**11.89**	**14.4**	**11.89**
							Avg.			**1.44**	**1.19**	**1.44**	**1.19**

Table-2.12 Name of the Felling series -Taleipathar Felling series

Sl No	Coupe No	Name of the Forest Block	Compartment		Coupe Area (In Ha)	Exploitable (Trees/Ha.)		Approach Class (Trees/Ha.)	
			No	**Area In Ha.**		**Sal**	**Non-Sal**	**Sal**	**Non-Sal**
1	2	3	4	5	6	7	8	9	10
Sl No	Coupe No	Name of the Forest Block	Compartment		Coupe Area (In Ha)	Exploitable (Trees/Ha.)		Approach Class (Trees/Ha.)	
			No	**Area In Ha.**		**Sal**	**Non-Sal**	**Sal**	**Non-Sal**
			19	462.85		9.47	8.87	16.61	13.51
			20	314.22		8.89	7.27	16.93	11.27
1	I				777.07				
			22	315.98		6.04	18.5	11.08	24.8
			23	231.13		2.46	20.26	5.89	25.97
			24	200.99		1.53	21.76	4.63	27.55
2	II				748.1				
			5	322.97		6.8	9.84	13.19	14.95
			6	355.43		5.73	9.47	11.12	14.3
3	III				678.4				
			3	231.48		9.72	16.83	17.45	24.43
			4	307.12		10.81	19	20.04	26.89
4	IV				538.6				
			1	363.52		9.5	17.69	17.45	24.67
			2	219.43		8.39	22.14	16.17	30.16
5	V	**Taleipathar**			582.95				

6	VI	7	37449	8026	376	946	767	1374	046	086	046	086
		8	42811		65	964	13	1359	079	085	079	085
									063	**086**	**063**	**086**
7	VII	14	46572	61083	744	1605	2241	1686	128	108	128	108
		15	14511		426	2601	916	3363	055	212	055	212
									092	**16**	**092**	**16**
8	VIII	9	16793	77939	133	319	313	371	018	024	018	024
		10	19075		073	303	174	376	01	024	01	024
		11	23847		365	803	748	1157	045	072	045	072
		12	18724		084	384	226	442	013	028	013	028
									022	**037**	**022**	**037**
9	IX	13	4254	63002	539	815	1041	1198	063	075	063	075
		21	27162		1331	1109	243	1719	148	107	148	107
									106	**091**	**106**	**091**
10	X	16	32739	80135	439	555	736	862	045	054	045	054
		17	19809		982	826	1675	1298	103	081	103	081
		18	28087		1079	91	1777	1428	11	089	11	089
									086	**075**	**086**	**075**
					Total				**807**	**1116**	**807**	**1116**
					Avg				**081**	**112**	**081**	**112**

Table No-2.13 Name of the Felling series - Udal Felling series													
Sl No	Coupe No	Name of the Forest Block	Compartment		Coupe Area (In Ha)	Exploitable (Trees/Ha)		Approach Class (Trees/Ha)		Yield (Trees/ha)		Proposed Yield (Trees/Ha)	
			No	Area In Ha.		Sal	Non-Sal	Sal	Non-Sal	Sal	Non-Sal	Sal	Non-Sal
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	I	Northern	19	426.6	426.6	19.21	8.38	37.75	10.77	**2.29**	**0.68**	**2.29**	**0.68**
2	I		15	460.79	460.79	13.03	11.9	19.84	9.41	**1.23**	**0.61**	**1.23**	**0.61**
3	III		21	559.03	559.03	17.62	6.26	35.15	14.18	**2.13**	**0.84**	**2.13**	**0.84**
4	IV		22	689.3	689.3	11.19	4.05	33.54	13.91	**1.91**	**0.77**	**1.91**	**0.77**
5	V		23	446.86	446.86	17.66	5.08	36.36	12.32	**2.19**	**0.73**	**2.19**	**0.73**
6	VI		46	596.04	596.04	24.53	5.69	25.69	10.27	**1.65**	**0.63**	**1.65**	**0.63**
7	VII		45	452.59	777.54	12.86	4.28	43.02	10.47	2.4	0.62	2.4	0.62
			47	324.95		18.13	1.62	18.41	21.57	1.18	0.78	1.18	0.78
										1.74	**0.68**	**1.74**	**0.68**
8	VIII		25	353.64	672.15	16.05	5.65	30.92	12.68	1.88	0.76	1.88	0.76
			26	318.51		15.71	5.86	31.49	13.73	1.9	0.81	1.9	0.81
										1.89	**0.79**	**1.89**	**0.79**
9	IX		43	425.66	834.34	9.78	3.63	31.36	18.84	1.77	0.96	1.77	0.96
			44	408.68		11.41	4.61	24.01	11.07	1.44	0.64	1.44	0.64
										1.61	**0.8**	**1.61**	**0.8**
10	X		38	425.08	776.38	25.09	8.69	40.83	10.25	2.52	0.65	2.52	0.65
			40	351.3		10.73	7.99	55.02	22.32	2.8	1.29	2.8	1.29
										2.66	**0.97**	**2.66**	**0.97**
							Total			**19.3**	**7.5**	**19.3**	**7.5**
							Avg.			**1.93**	**0.75**	**1.93**	**0.75**

Table:2.14 ABSTRACT OF YIELD REGULATION & ASSESSMENT ON REMOVAL OF TREES				
Sl.No.	Name of the Felling Series	Average Tree Limit / ha		
		Sal	Others	Total
1	Talaipathar	0.81	1.12	1.93
2	Udol	1.96	0.82	2.78
3	Pathargarh	1.83	1.45	3.28
	Average	1.53	1.13	2.66
	No of trees actually available for marking	2	1	3

2.6.9: Table of Felling

The table of felling has been made by taking into account the natural features, compartment boundaries, administrative boundaries of different ranges & calculation of yield.. Taleipathar,Pathargarh and udol felling series is divided into 10 annual coupes so that the entire area of the felling series is covered in the plan period. The table of felling is furnished in the **Table No 2.15** as below.

Table No- 2.15 S WC Pathargarh Felling Series								
Year	Coupe No	Range	Forest Block	Status	Compartment No	Area (In Ha.)		
						Compartment Area	Area included in Coupe Area	Coupe Area
2021-22	I	Barnur	Northern	RF	12(P)	584.33	564.33	564.33
2022-23	II				16	281.02	281.02	
					17	336.37	336.37	617.39
2023-24	III				13(P)	454.45	424.45	
					14	381.14	381.14	805.59
2024-25	IV				18	326.48	326.48	
					20	509.39	509.39	835.87
2025-26	V				8	370.62	370.62	
					9	380.93	380.93	751.55
2026-27	VI				1	350.13	350.13	
					2	266.75	266.75	616.88
2027-28	VII				5(P)	487.41	457.41	457.41
2028-29	VIII				3	383.5	383.5	
					4	403.38	403.38	786.88
2029-30	IX				6	415.1	415.1	
					7	216.48	216.48	631.58
2030-31	X				10	333.74	333.74	
					11	357.16	357.16	690.9
						6838.38	**6758.38**	**6758.38**

S WC Udol Felling Series								
Year	Coupe No	Range	Forest Block	Status	Compartment No	Area (In Ha.)		
						Compartment Area	Area included in Coupe Area	Coupe Area
2021-22	I	Handapa	Northern	RF	19	426.6	426.6	426.6
2022-23	II				15	460.79	460.79	460.79
2023-24	III				21	559.03	559.03	559.03
2024-25	IV				22	689.3	689.3	689.3
2025-26	V				23	446.86	446.86	446.86
2026-27	VI				46	596.04	596.04	596.04
2027-28	VII				45	452.59	452.59	777.54
					47	324.95	324.95	
2028-29	VIII				25	353.64	353.64	672.15
					26	318.51	318.51	
2029-30	IX				43	425.66	425.66	834.34
					44	408.68	408.68	
2030-31	X				38	425.08	425.08	776.38
					40	351.3	351.3	
						6239.03	**6239.03**	**6239.03**

S WC Taleipather Felling Series								
Year	Coupe No	Range	Forest Block	Status	Compartment No	Area (In Ha.)		
						Compartment Area	Area included in Coupe Area	Coupe Area
2021-22	I	Athmallik	Taleipathar	RF	19	462.85	462.85	777.07
					20	314.22	314.22	
2022-23	II	Dhandatopa			22	315.98	315.98	748.1
					23	231.13	231.13	
					24	200.99	200.99	
2023-24	III	Madhapur			5	322.97	322.97	678.4
					6	355.43	355.43	
2024-25	IV	Dhandatopa			3	231.48	231.48	538.6
					4	307.12	307.12	
2025-26	V	Dhandatopa			1	363.52	363.52	582.95
					2	219.43	219.43	
2026-27	VI	Madhapur			7	374.49	374.49	802.6
					8	428.11	428.11	
2027-28	VII	Madhapur			14	465.72	465.72	610.83
		Dhandatopa			15	145.11	145.11	
2028-29	VIII	Madhapur			9	167.93	167.93	779.39
					10	190.75	190.75	
					11	233.47	233.47	
					12	187.24	187.24	
2029-30	IX	Madhapur			13	425.4	425.4	653.02
		Athmallik			21	227.62	227.62	
2030-31	X	Athmallik			16	327.39	327.39	801.35
					17	193.09	193.09	
					18	280.87	280.87	
						6972.31	**6972.31**	**6972.31**

2.6.10 Method of executing the felling :

2.6.10.1 : Demarcation of annual coupes

(i) The annual coupes shall be demarcated in the winter season (October to December) in the year preceding to the year of working.

(ii)In majority of the cases the coupes are divided on the basis of compartments. Hence it is essential to maintain the compartment line by putting double white paint rings.

(iii)The other portions of coupe line shall be laid down by clearance of 1.5 mt. with along with stone Cairns (white painted) at visible distance. Clearance shall be restricted for the purpose of identification and visibility. No fellings of any kind shall be done on the strip. Double coal tar rings shall be given.

(iv) In case, a coupe overlaps two or more compartments, each portion shall be treated as a separate lot. This will ensure the proper maintenance of compartment history. In all these cases, the lot line should be demarcated with single coal tar ring along the compartment / sub-compartment line.

(v)Coupes shall be indicated by signboards at corners or at points of intersection with roads, inspection paths, boundary lines of Reserved forests. The signboards should contain the name of the felling series, the serial number of the coupe, its area, year of working and number of the compartment

(vi) Coupes shall be demarcated by a Forest Officer not below the rank of a Forest Ranger and demarcation shall be checked by an Officer not below the rank of Assistant Conservator of Forests before the marking is taken up.

2.6.10.2 Marking Rules

(i)All dead, dying, seriously diseased, uprooted and fallen trees shall be marked for felling. A tree whose top one third is already dead shall be treated as a dying tree. Marking of unsound trees shall be preferred over sound trees in annual coupes.

(ii)All trees above the exploitable girth class shall be marked. The individual coupe wise yield is given elaborately in the tables above.

(iii)The trees retained should be well grown and vigorous. The reserved trees shall be painted with single white paint ring at breast height and at base and serially numbered in each coupe. The list of such trees shall be maintained in the compartment history and coupe register.

(iv)All trees to be marked for felling shall be given two blazes approximately of size 15 cm x 15 cm, one at the breast height and the other as close to the ground as possible and marked with a departmental hammer and numbered serially.

(v)Marking shall not be done within 50 meters of roadside and either side of nallah banks. Marking shall not be done within 50 meters radius around the key habitat of wild animals such as den, saltlick, wallows, game tank and water holes.

(vi)If a tree is marked for felling the other tree should not be marked for felling within the radius of 15 meters.

(vii)Marking should not be done in areas where the slope of terrain is more than 30º except for dead and uprooted trees.

(viii)Marking should be done only for those trees whose removal will not create a permanent gap in the canopy and will not affect regeneration and the fauna.

(ix)The fruit trees such as Mahula, Mango, Amla, Chara, Kendu, Bahada, Harida and Bela etc. shall not be marked for felling.

(x) Climbers which is actually available in the tree marked for felling shall be cut prior to marking and it is mandatory.

(xi)Trees standing on the bank of nallahs, streams, rivers and 10 meters from their banks shall not be marked for felling.

(xii)For plantation raised inside the coupes the marking rules are not applicable. For working the plantations inside the coupes, site specific schemes should be prepared by the DFO and get the concurrence of the competent authority.

(xiii)Trees standing on the blank patch having no established regeneration of any species underneath shall not be marked.

(xiv)A tree forked at the breast height and above shall be treated as one tree and forked below breast height shall be treated as two trees.

2.6.10.3 Execution of marking and felling

(i)The marking shall be done by an officer not below the rank of Range Officer and shall be checked as per provisions of the Orissa Forest Department Code, 1979, as modified by Government from time to time.

(ii)The method of disposal of trees marked for felling shall be as per Chapter - XIV of the Orissa Forest Department Code, 1979 as modified by Government from time to time.

(iii)Felling and extraction in any annual coupe shall be allowed from 1st October to 30th June. No felling, logging, passing and dragging shall be allowed between the period of 1st July to 30th September. The Divisional Forest Officer shall allow extension of time only after the physical verification of stock inside the annual coupe.

(iv)Trees shall be lopped before felling to avoid damage to the regeneration and the standing crops. The trees should be felled towards upper hill slope in hilly coupes.

(v)Trees shall be felled as close to the ground as possible by saw to minimize the wastage.

(vi)The stumps of felled trees shall be given a smooth and slanting cut without damaging the cambium layer.

(vii)Felling in the coupe shall proceed in a systematic manner from one end to another.

(viii)Works undertaken, number of lots formed, detailed passing list, deviations if any must be mentioned in the compartment history and control forms.

2.6.10.4 Improvement Marking:

The marking is mainly intended for improvement of the crop with practically no objective of any yield. However, the following rules are prescribed which are applicable to only the Improvement Felling Series.

- Marking of all dead, diseased and hollow trees irrespective of girth class and inclusive of even fallen trees as well. However, some such standing trees shall be retained if required to meet the habitat requirements of some specific wild animals. A tree whose top one third is already dead shall be treated as a dying tree.

- Marking of unsound or malformed trees irrespective of girth class which are unlikely to survive or which will further deteriorate before the next felling unless they are required for seed or soil cover. Such marking and removal shall be subject to the following additional conditions :-

  I. Such removal will benefit better growth.

  II. The marked tree forms part of the congested crop and the principle of thinning warrants its removal.

  III. There shall exist saplings, poles, or established regeneration to take its place.

  IV. No marking of fruit bearing trees such as Mahula, Mango, Tamarind, Amla, Chara, Harida, Bahada, Bela, Kusum etc shall be done for felling.

  V. This marking shall be done in a very conservative manner so that it does not result in felling for revenue and in no case, the number of such marked trees shall not be more than one tree per hectare that is just about half of the tree limit per hectare in case of Selection felling.

  VI. Such marking of trees shall be 100% checked by the Assistant Conservator of Forests followed by at least 25 % test check by the DFO as it requires greater technical skills.

2.6.10.5 Marking of trees:

As cited above, before felling of trees marking has to be done through a rigorous process. Lot of trees has to be retained considering the marking rule prescribed. Both Talaipathar RF & Northern RF are situated in hilly terrain with numerous nallahs. Eumeration of trees has been done irrespective of location of trees. During previous working plan period, hardly 10-12% of trees of the above Forest Blocks were marked for felling. Considering the above, it would be wise to anticipate the no of trees that would be practically feasible for marking, the details of which is furnished in **Table No.2.16** as follows.

Table No.2.16: Anticipated No. of trees practically feasible for marking			
Felling Series.	Area of the felling series(Ha).	No of trees as per yield.	Trees suitable for marking.
Talaipathar	6972.31	6900	6900
Pathargarh	6758.38	13500	6700
Udol	6239.03	12400	6200
TOTAL	**19969.72**	**32800**	**19800**

2.6.11 Subsidiary silvicultural operations cleaning and thinning;

2.6.11.1 Subsidiary silvicultural operations cleaning:

Subsidiary silvicultural operation shall be done in the year following the main felling. This departmental operation shall be done over the entire coupe area except in very degraded areas and steep slopes. The following operations are prescribed.

(i) All marked trees left standing by the coupe purchaser (the OFDC Ltd) shall be felled and removed from annual coupes.

(ii) All these trees damaged in the main fellings and does not have any scope for survival shall be felled and removed from annual coupes.

(iii) All high stumps shall be cut.

(iv) Climbers which are available in marked trees shall only be cut back. In no case other climbers shall be cut as they serve habitat requirements of some specific wild animals.

(v) All fallen pieces of branches, small wood left during the main felling shall be removed to avoid fire hazards and harboring of insect and disease causing organisms.

(vi) Soil and moisture conservation measures required shall be assessed. The cultural operation such as gully plugging, contour bunding, dry stone packing, construction of check dams etc. shall be carried out in subsequent years.

(vii) The blank areas created due to encroachment or any other reasons (more than half hectare of any blank patch can be considered as blank area) shall be planted by the local indigenous species.

2.6.11.2 Thinning :

If after marking under the above rules, the crop is found to be congested, thinning operations shall be carried out so as to afford better opportunity of growth to the crop so retained after thinning. It shall be executed mainly in the Improvement felling series but if the conditions warrant, thinning operations may be carried out in the Selection felling Series as well. However, the thinning in general would include the following conditional operations :-

- It should be restricted to the congested pole crop only that is younger age classes and limited to the species with girth at breast height less than 90 cms.
- Marking shall be done on the lines of "C" grade thinning which is restricted to removal of only 'dominated' &'suppressed' stems besides removal of some 'co-dominant' stems as well [Dominated stems have height about 3/4th where as Suppressed stems are about half to 5/8th of the height of the predominant stems. The Dominant stems comprise of all trees which form the upper most canopy and are divided into (i) Predominant trees comprising of the tallest trees which determine the general top level of canopy and (ii) Co- dominant trees which are about 5/6th the height of the predominant.]
- No thinning shall be carried out in open areas nor any fruit bearing species such as Mahula, Mango, Tamarind, Amla, Chara, Harida, Bahada, Bela, Kusum etc shall be thinned out whatever be the extent of congestion.
- Limit on removal of stems vis-a-vis retention per hectare shall be governed by the formula D=0.5[(G/10)+1] where 'D' is the distance between two stems in meters after thinning and 'G' is the average girth at breast height of stems in cms.
- As thinning markings are to be done very sparingly with meticulous reflection of mind and extreme silvicultural restraints, this will need prior approval of DFO.

2.6.12: Regeneration: The status of regeneration has been found to be good. It only needs protection. However, ANR with gap planting shall be taken up of indigenous species in the bigger gaps available after felling of trees to supplement the regeneration status. It is proposed to take up ANR with gap planting (200 plants/Ha) over 300 Ha i.e. 100 Ha in each felling series. 10 Ha should be treated under the above activity in each coupe annually.

2.6.13: Associated regulations and measures

2.6.13.1 Grazing: Livestock grazing affects the regeneration sustainability of the Forests. Hence it is proposed not to allow grazing within the working circle. Lopping is strictly prohibited.

2.6.13.2: Regulated firewood removals:

In case of coming under VSS areas; firewood has to be allowed for removal as per JFM Resolution. In areas not protected by VSS; the fallen trees fit for firewood has to be stacked and delivered to OFDC Limited to avoid fire hazard.

2.6.13.3: **Fire Protection:** The coupes shall be protected against fire by all sort of stringent measures. The Orissa Forest (Fire Protection) Rules 1979 shall be strictly followed. The coupe and plantations area should be rigidly protected from fire. Awareness regarding fire hazard and fire safety should be created in the villages adjacent to the forest area. Appointment of suitable temporary firewatchers from the village adjoining to the forest blocks should form a part of the subsidiary operations. Detail fire protection measures has been suggested under fire plan which will be applicable to entire forest areas.

2.6.13.4. Forest protection from illicit felling :

The coupe shall be protected against illegal felling of trees by conducting frequent patrolling in the coupe areas and supplemented by deployment of protection squads.

2.6.13.5.Unregulated removal of NTFP and MAPs :

The coupe shall be protected against unregulated removal of NTFP and MAPs by generating awareness among the primary gatherers.

2.6.13.6. Soil and moisture conservation measures:

Soil and moisture conservation measures required shall be assessed. The cultural operations such as gully plugging, contour bunding, dry stone packing, construction of check dams etc. shall be carried out in subsequent years.

2.6.13.7. Encroachments, illegal mining, jhumming:

All possible sincere efforts need to be taken to prohibit encroachments, illegal mining and jhumming by frequent patrolling of the coupe areas.

2.6.13.8 Restriction on felling along rivers, highways, hill slopes :

It has been prescribed for retention of exploitable trees also along the nallahs and steep slopes to reduce the rate of soil erosion and conservation of moisture regime of soil. Felling is also not prescribed in the blank areas so as to prevent permanent canopy opening.

2.7 Control Forms: The following control forms are suggested.

(a) Silvicultural Control Form: For the control of all silvicultural operations, such as felling, subsidiary cultural operations, cleanings, thinning, burnings etc., the silvicultural control form suggested is as follows.

SILVICULTURAL CONTROL FORM									
The format of coupe control form is as under									
Working circle periodic block		Felling series cutting section	Localities prescribed localities suggested				Coupe control form		
			As carried out				Coupe No.		Page
							Excess(+) or deficit (-)		
Prescription in brief	W.P. para	Year due	Year	Block/ Compt.	Area	Volume	Area	Volume	Remarks and Sanction
1	2	3	4	5	6	7	8	9	10

(b) Felling Control Form: For controlling and maintaining the record of all trees marked for felling and trees retained; the felling control form suggested is as follows.

FELLING CONTROL FORM									
The format of felling control form is as under									
Working circle periodic block		Felling series cutting section		Localities prescribed localities suggested (with area)				Coupe control form	
								Coupe No.	Page
Range wise	Area	Species	Diameter class	Trees marked	Unit factor	volume marked	Trees retained	% trees retained	Remarks and Sanction

(c) NTFP Control Form: For controlling and maintaining a record of all NTFPs harvest so as to make the removal/ harvest of NTFPs remain sustainable; the following control form is suggested.

NTFP CONTROL FORM										
Format to incorporate the NTFPs:										
Working circle periodic block		Felling series cutting section	Localities prescribed localities suggested					Coupe control form		
			As carried out					Coupe No.		Page
								Excess(+) or deficit (-)		
Prescription in brief	W.P. para	Year due	Year	Block/ Compt.	Area	Name of NTFP with scientific name of species	Vol/ Qty	Area	Vol/ Qty	Remarks and Sanction
1	2	3	4	5	6	7	8	9	10	11
*Quantity may be given in specified unit viz. number/weight/volume according to type of NTFP. Bamboos may be quantified in notional										

CHAPTER-3

3.1 Name of working circle: Rehabilitation Working Circle

The forest blocks that are in various stages of degradation are allotted to this working circle. Degradation of these forests is due to unrelenting biotic interference such as illicit felling, repeated fire, grazing, encroachment and inadequacy of coppice regeneration. The top soil is washed away in some of the places resulting in the exposure of the rocks. On the other hand, these forests contain sufficient rootstock, which if tended and protected has the potentiality to convert to high forests. These blocks need immediate attention to arrest the process of degradation. The area allotted to this Working Circle is **15288.9606 Ha**. Comprising of 16 Reserved Forests, 19 DPFs. The area covered under Village Forest blocks constitute plantations made under social forestry project and not suitable for block plantation. More over this block are covered under Rehabilitation Working Circle as per approved PWPR.

3.2 General constitution of working circle:

The working circle area by Ranges, Blocks and compartments indicating gross area is furnished in **Table No. 3.1** as follows.

Table No. 3.1 The working circle area by Ranges, Blocks and compartments

Sl No	Range	Block	Compartment No	Area in Ha
1	Athamallik	Kusumkuhuri	1	269.88
			2(p)	180.13
			3	159.03
			TOTAL	**609.04**
2		Mahendrapur	1(p)	324.49
			2	9.47
			TOTAL	**333.96**
3	Dhandatopa	Kutulsingha	1(p)	142.06
			2	172.02
			3(p)	203.19
			4(p)	331.69
			5	126.05
			6(p)	336.16
			7(p)	196.42
			TOTAL	**1507.59**
4		Dantarikhol	2(p)	156.49
			3(p)	90.83
			TOTAL	**247.32**
5	Madhapur	East Baruni	1	253.04
			2	237.37
			3(p)	267.3
			4(p)	181.37
			5(p)	218.33
			6	160.46
			7	154.29
			TOTAL	**1472.16**
6		West Baruni	1	84.93
			2	184.04
			3	131.24
			TOTAL	**400.21**
7		Nuagan	1	313.71
			2(p)	131.51
			3(p)	205.57
			4	280.36
			5	165.78
			TOTAL	**1096.93**

8	Handapa	Dantarikhol	1(p)	110.42
			4	115.49
			6	195.41
			7(p)	235.34
			8(p)	99.76
			TOTAL	**756.42**
9		Bankimundi	1(p)	75.48
			2(p)	123.72
			3(p)	70.64
			TOTAL	**269.84**
10		Kholdangiani	1(p)	167.18
			TOTAL	**167.18**
11		Handapa	4	324.06
			TOTAL	**324.06**
11	Bamur	Bindhyabasini	1(p)	263.35
			Total	**263.35**
12		Kishoreban	1(p)	310.03
			Total	**310.03**
13		Ghosar	1(p)	133.67
			2(p)	274.22
			3(p)	364.4506
			Total	**772.3406**
14		Bijamaliha	1(p)	135.41
			Total	**135.41**
15		Guja	1	346.18
			Total	**346.18**
TOTAL AREA UNDER RESERVED FORESTS **9012.0206**				

BLOCK WISE AREA (DPF) OF REHABILITATION WORKING CIRCLE

Sl No.	Name of the Range	Name of D.P.F	Area in Ha.
1	**2**	**4**	**5**
1	Athmallik	Kuber Hill	412.54
2	Dhandatopa	Thakurgarh	139.62
3		Pitabalibahal	160
4		Rampur	114.33
5	Madhapur	Purunapani	132
6		Muchhapur 'A'	54.58
7		Muchhapur 'B'	28.77
8		Mangalpur	87.79
9	Handapa	Gundurijharan	802.91
10		Kuturukani	1226.13
11		Solanda	189.8
12		Berham	185.35
13		Batipurunapani	1214.08
14		Tileswar	1022.07
15	Bamur	Susaba	141.64
16		Bhagamunda	111.22
17		Digi	141
18		Tulasipur	43.99
19		Bajpur	69.12
TOTAL AREA OF DPFs			**6276.94**

Total RF area 9012.0206 Ha.

Total DPF area 6276.94 Ha.

G.Total **15288.9606 Ha.**

3.2.1: Forest type and Density classes: The details of Forest Blocks coming under different Forest Types are furnished in Table . **3.2**

Table: 3.2 EXTENT OF VARIOUS FOREST TYPES IN RF BLOCKS

Type of Forest	Forest Block	Area in Ha (Approx)
5B/C2 Northern Dry Mixed Deciduous Forest	East Baruni	1,445.54
	Bankim undi	275
	Dantarikhol	975
	Kutulsingha	1,150.09
	Guja	310
	Bindhyabasini	275.84
	Kishoreban	344.56
	Kadalim unda	267.1
	Kholdangiani	88.4
	Bijam alhia	108.5
	Kusum kuhuri	120.4
	Kusum kuhuri	120.4
	Mahendrapur	85.8
	Ghosar	740.3406
	Nuagan	598
	West Baruni	240.21
	Dandarugudi	32
5B/DS1 Dry Deciduous Scrub	East Baruni	161
	Bankim undi	118.07
	Dantarikhol	649.64
	Kutulsingha	494
	Guja	36.18
	Kadalim unda	30.23
	Kholdangiani	132.71
	Bijam alhia	108.45
	Kusum kuhuri	491.64
	Mahendrapur	348.27
	Ghosar	400
	Nuagan	608.93
	Dandarugudi	130.31
	West Baruni	160
5B/E9 Dry Bamboo Brakes	Dantarikhol	
	Kadalim unda	
	Kutulsingha	
	Bankim undi	
5B/C1c Dry Peninsular Sal Forest	Handapa	324.06

Table: 3.3 BLOCK WISE FOREST TYPES OF ATHAMALLIK DIVISION				
S.No.	RF Block	Type of Forest	Area in Ha	% Area
1	Kusumkuhuri	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	120.4	0.31
		(ii) 5B/DS1 Dry Deciduous Scrub	491.64	1.26
2	Talaipathar	(i) 3C/C2e Moist Peninsular Sal Forest	4210	10.82
		(ii) 5B/C2 Northern Dry Mixed Deciduous Forest	2802.54	7.2
3	Mahendrapur	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	85.8	0.22
		(ii) 5B/DS1 Dry Deciduous Scrub	348.27	0.89
4	Kutulsingha	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	1150.09	2.96
		(ii) 5B/DS1 Dry Deciduous Scrub	494	1.27
5	Dantarikhol	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	975	2.51
		(ii) 5B/DS1 Dry Deciduous Scrub	649.64	1.67
6	East Baruni	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	1445.54	3.71
		(ii) 5B/DS1 Dry Deciduous Scrub	161	0.41
7	West Baruni	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	240.21	0.61
		(ii) 5B/DS1 Dry Deciduous Scrub	160	0.41
8	Nuagan	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	598	1.54
		(ii) 5B/DS1 Dry Deciduous Scrub	608.93	1.56
9	Handapa	(I) 5B/C1c Dry Peninsular Sal Forest	1620	4.16
		(ii) 5B/C2 Northern Dry Mixed Deciduous Forest	179.21	0.46
10	Kholdangiani	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	88.4	0.23
		(ii) 5B/DS1 Dry Deciduous Scrub	132.71	0.34
11	Barkimundi	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	275	0.71
		(ii) 5B/DS1 Dry Deciduous Scrub	118.07	0.3
12	Bindhyabasini	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	275.84	0.71
13	Kishoreban	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	344.56	0.89
14	Ghosar	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	740.3406	1.9
		(ii) 5B/DS1 Dry Deciduous Scrub	400	1.02
15	Guja	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	310	0.8
		(ii) 5B/DS1 Dry Deciduous Scrub	36.18	0.93
16	Bijamalhia	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	108.5	0.28
		(ii) 5B/DS1 Dry Deciduous Scrub	108.45	0.28

FOREST TYPES IN PROTECTED FORESTS			
S.No.	**Forest Type**	**Name of PF Block**	**Area in Ha (Approx)**
1	5B/C1c Dry Peninsular Sal Forest	Kuturukani	920
		Gundurijharan	480.91
		Batipurunapani	580
		Total	**1980.91**
2	5B/C2 Northern Dry Mixed Deciduous Forests	Kuber Hill	10
		Thakurgarh	110.62
		Pitabalibahal	160
		Rampur	114.33
		Purunapani	125.55
		Muchhapur 'A'	24
		Muchhapur 'B'	8
		Gundurijharan	322
		Kuturukani	306.13
		Batipurunapani	634.08
		Mangalpur	15.79
		Solanda	170
		Berham	150
		Susab	90
		Bhangamunda	111.22
		Digi	141
		Tileswar	1022.07
		Tulusipur	43.99
		Bajpur	20
		Total	**3578.78**
3	5B/DS1 Dry Deciduous Scrub	Kuber Hill	50
		Thakurgarh	29
		Purunapani	8
		Muchhapur 'A'	30.58
		Muchhapur 'B'	20.77
		Mangalpur	72
		Solanda	19.8
		Berham	35.35
		Susab	51.64
		Bajpur	49.12
		Total	**366.26**
4	5B/E9 Dry Bamboo Brakes	Tileswar	
		Rampur	
		Total	**5925.95**

3.2.2 Density: The details of Forest wise density classes as adopted by FSI is furnished in **Table No.3.3.&Table No. 3.4.**

Table: 3.4 FOREST CONDITION IN DIFFERENT RESERVED FOREST BLOCKS					
S.No.	Range	Forest Block	Density	Type of Forest	Remarks
1	Athamalik	Mahendrapur	0.2 - 0.3	Open Forests	Degraded due to biotic interference from villages like Mahendrapur, Athamallik etc.
2		Kusumkuhuri	0.2 - 0.3	Open Forests	Degraded due to biotic interference from villages like Pataka,
3	Dhandatopa	Kutulsingha	0.2 - 0.3	Open Forests	Degraded due to biotic interference from villages like Kutulsingha, Kantapada, etc.
4	Madhapur	Nuagan	0.2 - 0.3	Open Forests	Degraded due to biotic interference, Construction of Manjore Irrigation Project
5		East Baruni	0.2 - 0.3	Open Forests	Degraded due to pressure from Boudh people for firewood, small timber, etc.
6		West Baruni	0.2 - 0.5	Open Forests	Do
7		Kadalimunda	0.2 - 0.3	Open Forests	Degraded, now improving due to protection by Kadalimunda VSS members
8	Handapa	Kholdangiani	0.2 - 0.3	Open Forests	Degraded, now improving due to protection by Kholdangiani VSS members
9		Bankimundi	0.2 - 0.3	Open Forests	Degraded, now improving due to protection by Gobindapur, Tileswar VSS members
10		Dantarikhol	0.2 - 0.3	Open Forests	Degraded due to interference by the villages like Bantol, Berham, Sissookata, etc.
11	Bamur	Kishoreban	0.2 - 0.3	Open Forests	Degraded due to interference by the villages like Bamur, Susab, Laxmipriyapamur, etc.
12		Ghosar	0.1 - 0.2	Scrub to Open	Biotic interference and Encroachment
13		Bindhyabasini	0.3 -0.4	Open Forests	Biotic interference is increasing

T Table: 3.5 CONDITION OF FOREST IN DIFFERENT DPF BLOCKS					
Sl.No.	Range	Forest Block	Crop Density	Type of Forest	Remarks
1	Athamallik	Kuber Hill	0.1 -0.2	Open to Scrub	Degraded due to Biotic interference from villages like Purunapani, Armpur, etc
2		Thakurgarh	0.1 -0.3	Open to Scrub	Biotic interference from adjoining villages
3		Pitabalibahal	0.2 - 0.3	Open forest	Degraded, now being protected by villages like Kansab, Jhatikibahal, etc.
4	Dhandatopa	Rampur	0.2 - 0.3	Open forest	Degraded, now being protected by villages like Kurab, Rampur, etc.
5		Muchhapur 'A'	0.1 -0.2	Open to Scrub	Biotic interference from villages like Muchhapur, Boudh, Gautampuri, etc.
6		Muchhapur 'B'	0.1 -0.2	Open to Scrub	Biotic interference from villages like Muchhapur, Boudh, Gautampuri etc.
7		Mangalpur	0.1 -0.2	Open to Scrub	Biotic interference from villages like kiakata,Kodapada, etc.
8	Madhapur	Purunapani	0.2 - 0.3	Open forest	Now crop condition is improving due to protection by villages like Purunapani, Bharatapur and Nimitir, etc.
9		Batipurunapani	0.3 -0.4	Dense to Open	Now crop condition is improving due to protection by villages like Bati Purnapani, Nakchi, Nuabhuin, etc.
10		Gundurijharan	0.3 -0.5	Dense to Open	Now crop condition is improving due to protection by villages like Gundurijharan, Rajanpal, etc.
11		Berham	0.1 -0.2	Open to Scrub	Degraded due to Biotic interference from villages like Bantol, Loharapada, etc.
12		Tileswar	0.1 -0.2	Open to Scrub	Degraded due to Biotic interference from villages like Tileswar,Tentulipadar, etc.
13		Solanda	0.2 - 0.3	Open forest	Crop condition is improving due to protection by Solanda, Ganboinda VSS

3.3 General characteristics of vegetation:

3.3.1 Crop composition:

3.3.1.1 5B/C1c DRY PENINSULAR SAL FORESTS

Group 5	Tropical Dry Deciduous Forests
Sub group	5B Northern Tropical Dry Deciduous Forests
Type	5B/C1c Dry Peninsular Sal Forests

3.3.1.1.1 Floristic Composition

In these forests the proportion of Sal is high, sometimes even up to 90 percent purity. It occurs mainly on sandstone, Khondalite. The quality class of Sal is poor on the upper slopes, where the soil is shallow and in the plains and valleys good quality Sal of Q III and Q IV is present especially in Northern Reserved Forest. The Sal is associated with *Syzygium cumini, Terminalia tomentosa, Dalbergia paniculata, Madhuca indica, Albizzia procera, Diosporys melanoxylon, Glochidion zeylanicum* in Northern RF. Bamboo is completely absent in Northern RF. In Talaipathar RF Sal is mixed with *Terminalia tomentosa, Anogeissus latifolia, Terminalia bellirica, Terminalia chebula, Pterocarpus marsupium* etc.

The middle storey comprises Dalbergia latifolia, *Bridelia retusa, Careya arborea, Cleistanthus collinus, Buchnania lanzan, Lagerstromia parviflora, Aegle marmelos, Emblica officinalis, Mallotus philipinensis and Gmelina arborea* etc.

The ground flora comprises *Holarrhena antidysenterica. Omdogpfera cassopodos. Ixora arborea, Chloroxylon swietenia, Phoenix acaulis, Woodfordia fructicosa, Lantana camara, Flemingia chappar,* etc. The important climbers present are *Bauhinia vahalii, Butea superba, Asparagus recemosus, Combretum decandrum, Millettia auriculata* etc.

3.3.1.1.2.2 Occurrence

This type of forests occurs in Northern and Handapa blocks. In Northern RF, this type extends over an area of 15,280 ha and in Handapa over an area of 1,620 ha. This type of forests also occurs in Kuturukani, Gundurijharan, and Batipurunapani Demarcated Protected Forests.

3.3.1.2 5B/C2- NORTHERN TROPICAL DRY MIXED DECIDUOUS FORESTS.

Group 5	Tropical Dry Deciduous Forests
Sub group	5B Northern Tropical Dry Deciduous Forests
Type	5B/C2 Northern Tropical Dry Mixed Deciduous Forests

3.3.1.2.1Floristic Composition

This type of forests generally occurs on the basic rocks and also occurs over a considerable area on khondalite. The upper canopy is light often a broken canopy and is usually with trees having relatively short boles and poor form. There is usually thin shrubby undergrowth. The forest is entirely leafless and soil is fully exposed in the hot weather condition and in the monsoon it takes a luxuriant appearance.

The main species found in the top canopy are *Terminalia tomentosa, Anogeissus latifolia, Pterocarpus marsupium, Bombax ceiba, Dalbergia paniculata, Lannea coromandelica, Terminalia bellirica, Madhuca indica, Boswellia serrata, Adina cordifolia, Ficus sps., Albizia lebbeck, Schleichera oleosa, Stereospermum colais, Mitragyna parviflora* etc. Sal is generally either absent or present as scattered individuals.

The main species present in the middle storey are *Diospyros melanoxylon, Buchanania lanzan, Sterculia urens, Dillenia petagyna, Bridelia retusa, Diospyros montana, Dalbergia sisso, Terminalia chebula, Careya arborea, Erythrina variegata*, *Soymida febrifuga, Semecarpus anacardium, Emblica officinalis, Syzygium cumini, Lagerstroemia parviflora, Cleistanthus collinus, Diosyros embryopteris* etc.

The main species present in the ground flora are *Bauhinia retusa, Bauhinia purpuria, Indigofera pulchella, Holarrhena antidysenterica, Cassia fistula, Helicteres isora, Woodfordia fructicosa, Choloroxylon swietenia, Ixora arborea,Gardenia latifolia, Gardenia gummifera, Phoenix acaulis, Grewia tiliaefolia, Clerodendron vixcosum, Oroxylon indicum, Litsea glutinosa etc.* The important climbers are *Bauhinia vahlii, Butea superba, Acacia pennata, Smilax macrophylla, Combretum decandrum, Solena amplexicaulis, Asparagus recemosus, Dioscorea oppositifolia, Dioscorea bulbifera, Ichnocarpus frustescens, Cissampelos pareira* etc., *Dendrocalamus strictus* (Salia Bamboo) is also found. Frequent occurrence of fire disturbs the establishment of regeneration of all kinds of species and tends to favour xerophytic and fire resistant species.

3.3.1.2.2 Occurrence

This type occurs extensively in East Baruni, Bankimundi, Dantarikhol, Kutulsingha, Guja, Bindhyabasini, Kishoreban, Kadalimunda, Kholdangiani, Bijamalhia, Kusumkuhuri, Mahendrapur, Handapa, Ghosar, Nuagan, Talaipathar, West Baruni, and Dandarugudi blocks. This is the most common type in many Demarcated Protected Forests like Kuber hill, Thakurgarh, Pitabalibahal, Rampur, Purunapani, Muchhapur 'A' and Muchhapur 'B', Gundurijharan, Kuturukani, Batipurunapani, Mangalpur, Solanda, Berham, Susab, Bhangamunda, Digi, Tileswar, Tulusipur, Bajpur.

3.3.1.3 5B/ DS1 DRY DECIDUOUS SCRUBS

Group 5	Tropical Dry Deciduous Forests
Sub group	5B Northern Tropical Dry Deciduous Forests
Type	5B/DS1 Dry Deciduous Scrub

3.3.1.3.1 Floristic Composition

In this forest, the soil has become unproductive and supports shrubby growth of 3-6 mts height and some tree species also stemmed from the base. The forest is on various stages of degradation, which are directly or indirectly connected with felling, lopping, grazing, and frequent fires. The main species present in the top canopy are *Acacia catechu, Zizyphus xylocarpus, Zizyphus mauritiana, Boswellia serrata, Terminalia tomentosa, Gardenia sps, Holarrhena antidysenterica, Woodfordia fructicosa, Carrisa apaca, Lannea coromandelica, Phoenix sylvestris, Randia malabarica, Cleistanthus collinus*, *Diosporyros melanoxylon, Cassia fistula, Lagerstroemia parviflora* etc. The lower canopy includes *Ageratum conyzoides, Alangium salvifolium, Ixora arborea, Gardenia gummifera, and Mimosa rubicaulis. The important climbers are Combretum decandrum, Butea superba* etc. Bamboo is also present here and there but it has a bushy growth. Sal also occurs occasionally.

3.3.1.3.2 Occurrence

This type of forests occur in number of blocks like East Baruni, Bankimundi, Dantarikhol, Kutulsingha, Guja, Kadalimunda, Kholdangiani, Bijamalhia, Kusumkuhuri, Mahendrapur, Ghosar, Nuagan, Dandarugudi, West Baruni, etc. The detailed extent of area in each block is given in the table. They also occur in Kuber hill, Thakurgarh, Purunapani, Muchhapur 'A', Muchhapur 'B', Mangalpur, Solanda, Berham, Susab and Bajpur DPFs.

3.3.1.4 5/E9 DRY BAMBOO BRAKES

Group 5 Tropical Dry Deciduous Forests
Edaphic type E9 Dry Bamboo Brakes

3.3.1.4.1 Floristic Composition

Mainly Bamboo occur in the division as a part of second storey in Northern Dry Mixed Deciduous Forest and in Dry Peninsular Sal Forest, but Bamboo constitutes main crop with a few scattered trees on some of the very dry hill slopes and hill tops. In some of the blocks bamboo is in a much degraded condition. Mainly one species of bamboo i.e., *Dendrocalamus strictus* form dense brakes. Annual fires are common in these forests.

3.3.1.4.2 Occurrence

Bamboo growth occurs in Talaipathar RFs. It is in a degraded state in Dantarikhol, Kadalimunda, Kutulsingha, and Bankimundi. Bamboo brakes also exist in Tileswar and Rampur DPFs.

3.3.2 Age class distribution: Middle aged.

3.3.3 Density:

Table No. 3.6 Density as per FSI prescription

Sl. No.	Category of Forests	Density
1	Reserved Forests	Open Forest
2	Demarcated Protected Forests	Open & Scrub
3	Village Forests	Non-Forests

3.3.4 Growing Stock:

Basing on the sample point enumeration of trees, Growing Stock has been calculated which is furnished in **Table No 3.7** as follows.

Table No 3.7 VOLUME OF THE GROWING STOCK (Cum) OF EAST BARUNI R.F.							
Enumerated Area : 1606.54 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50>	Total
1	Total	26728	13886	8645	5310	7010	61579

VOLUME OF THE GROWING STOCK (Cum) OF KUSUMKUHURI.							
Enumerated Area : 612.04 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	964	1119	1319	1041	778	5221

VOLUME OF THE GROWING STOCK (Cum) OF MAHENDRAPUR							
Enumerated Area : 434.07 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50>	Total
	Total	8823	8313	9133	7513	6238	40021

VOLUME OF THE GROWING STOCK (Cum) OF BINDHYABASINI							
Enumerated Area :275.84 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	4953	5811	4970	3355	2006	21095

VOLUME OF THE GROWING STOCK (Cum) OF BANKIMUNDI							
Enumerated Area :393.07 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	4704	5764	7439	5182	2757	25847

VOLUME OF THE GROWING STOCK (Cum) OF GHOSAR							
Enumerated Area :1140.3406 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50>	Total
	Total	4314	6375	8183	8501	4338	31711

VOLUME OF THE GROWING STOCK (Cum) OF KADALIMUNDA							
Enumerated Area :297.33 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	3753	4568	5912	4077	2214	20525

VOLUME OF THE GROWING STOCK (Cum) OF WEST BARUNI							
Enumerated Area 400.21ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
1	Total	6274	5299	4089	2830	2113	20604

VOLUME OF THE GROWING STOCK (Cum) OF KUTULSINGHA							
Enumerated Area 1644.09 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	25873	27447	32532	24377	28481	138711

VOLUME OF THE GROWING STOCK (Cum) OF KUTULSINGHA							
Enumerated Area 1644.09 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	25873	27447	32532	24377	28481	138711

VOLUME OF THE GROWING STOCK (Cum) OF BIJAMALIA							
Enumerated Area 216.95 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	3480	5063	6920	6407	3660	25530

VOLUME OF THE GROWING STOCK (Cum) OF HANDAPA R.F.							
Enumerated Area : 1799.21 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	28607	36204	48118	34046	16725	163701

VOLUME OF THE GROWING STOCK (Cum) OF GUJA R.F.							
Enumerated Area : 346.18 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	4879	6952	9375	8437	5007	34650

VOLUME OF THE GROWING STOCK (Cum) OF DANTARIKHOL.							
Enumerated Area : 1623.64 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	19911	23262	29377	20939	13384	106874

VOLUME OF THE GROWING STOCK (Cum) OF NUAGAON.							
Enumerated Area : 1206.93 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	34922	18558	11666	7081	9159	81386

3.3.4 Status of regeneration:

During sample point exercise, status of regeneration has been studied which is furnished in **Table No. 3.8**as follows.

Table No. 3.8 STATUS OF REGENERATION						
Status of Regeneration of Guja RF						
Sl No.	UID No	Compt. N	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	10	-----	9	6	5	Good
2	302	-----	10	8	5	Good
3	303	-----	11	8	5	Good
4	305	-----	10	9	1	Good
		TOTAL	**40**	**31**	**16**	**Good**

The overall regeneration status of Guja RF is GOOD.

Status of Regeneration of Bijamaliha RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	308	-----	3	6	0	New
2	309	-----	5	6	0	New
3	310	-----	5	3	3	Fair
		TOTAL	**13**	**15**	**3**	**FAIR**

The overall regeneration status of Bijamaliha RF is FAIR.

Status of Regeneration of Kholadangiani RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	299	1	4	2	4	**FAIR**

VOLUME OF THE GROWING STOCK (Cum) OF BINDHYABASINI							
Enumerated Area :275.84 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
1	Total	4953	5811	4970	3355	2006	21095

VOLUME OF THE GROWING STOCK (Cum) OF BANKIMUNDI							
Enumerated Area :393.07 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	4704	5764	7439	5182	2757	25847

VOLUME OF THE GROWING STOCK (Cum) OF GHOSAR							
Enumerated Area :1140.3406 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50>	Total
	Total	4314	6375	8183	8501	4338	31711

VOLUME OF THE GROWING STOCK (Cum) OF KADALIMUNDA							
Enumerated Area :297.33 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	3753	4568	5912	4077	2214	20525

VOLUME OF THE GROWING STOCK (Cum) OF WEST BARUNI							
Enumerated Area 400.21ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
1	Total	6274	5299	4089	2830	2113	20604

VOLUME OF THE GROWING STOCK (Cum) OF KUTULSINGHA							
Enumerated Area 1644.09 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	25873	27447	32532	24377	28481	138711

VOLUME OF THE GROWING STOCK (Cum) OF KHOLADANGINI							
Enumerated Area 221.11 ha							
Volume by Species wise and DiaClass wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	2500	3049	3941	2737	1499	13726

VOLUME OF THE GROWING STOCK (Cum) OF BIJAMALIA							
Enumerated Area 216.95 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	3480	5063	6920	6407	3660	25530

VOLUME OF THE GROWING STOCK (Cum) OF HANDAPA R.F.							
Enumerated Area : 1799.21 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	28607	36204	48118	34046	16725	163701

VOLUME OF THE GROWING STOCK (Cum) OF GUJA R.F.							
Enumerated Area : 346.18 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	4879	6952	9375	8437	5007	34650

VOLUME OF THE GROWING STOCK (Cum) OF DANTARIKHOL.							
Enumerated Area : 1623.64 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	19911	23262	29377	20939	13384	106874

VOLUME OF THE GROWING STOCK (Cum) OF DANTARIKHOL.							
Enumerated Area : 1623.64 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	19911	23262	29377	20939	13384	106874

VOLUME OF THE GROWING STOCK (Cum) OF NUAGAON.							
Enumerated Area : 1206.93 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	34922	18558	11666	7081	9159	81386

3.3.4 Status of regeneration:

During sample point exercise, status of regeneration has been studied which is furnished in **Table No. 3.8**as follows.

Table No. 3.8STATUS OF REGENERATION						
Status of Regeneration of Guja RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	10	-----	9	6	5	Good
2	302	-----	10	8	5	Good
3	303	-----	11	8	5	Good
4	305	-----	10	9	1	Good
		TOTAL	**40**	**31**	**16**	**Good**

The overall regeneration status of Guja RF is GOOD.

Status of Regeneration of Bijamaliha RF						
Sl No.	UID No	Compt. N	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	308	-----	3	6	0	New
2	309	-----	5	6	0	New
3	310	-----	5	3	3	Fair
		TOTAL	**13**	**15**	**3**	**FAIR**

The overall regeneration status of Bijamaliha RF is FAIR.

Status of Regeneration of Kholadangiani RF						
Sl No.	UID No	Compt. N	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	299	1	4	2	4	**FAIR**
Status of Regeneration of Kadalimunda RF						
Sl No.	UID No	Compt. N	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	11	-----	5	3	5	Fair
2	306	-----	6	4	4	Fair
		TOTAL	**11**	**7**	**9**	**FAIR**

The overall regeneration status of Kadalimunda RF is FAIR

Status of Regeneration of Bindhyabasini RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	39	-----	8	7	1	Good
2	207	-----	6	11	3	Fair
3	228	-----	5	6	5	Fair
4	229	-----	8	7	3	Good
5	230	-----	8	11	2	Fair
		TOTAL	**35**	**42**	**14**	**Fair**

The overall regeneration status of Bindhyabasini RF is FAIR.

Status of Regeneration of West Baruni RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	311	1	1	0	3	Fair
2	312	2	4	5	1	Deficient
3	313	2	4	9	1	Deficient
4	314	2	9	8	0	New
5	319	3	8	9	2	Fair
6	320	3	12	13	1	Fair
		TOTAL	**38**	**44**	**8**	**Deficient**

The overall regeneration status of West Baruni RF is DEFICIENT.

Status of Regeneration of East Baruni RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	2	2	7	6	0	New
2	21	6	35	6	4	Good
3	29	4	33	4	3	Good
4	40	2	9	2	7	Fair
5	316	7	21	2	5	Fair
6	317	7	30	1	4	Fair
7	322	5	23	4	6	Fair
8	326	6	30	4	4	Fair
9	332	4	27	1	4	Fair
10	335	3	7	5	1	Good
11	336	3	9	3	2	Good
12	337	3	7	4	1	Good
13	339	3	21	2	3	Fair
14	347	1	16	6	3	Good
15	348	1	8	5	3	Good
16	349	1	4	5	0	New
17	351	1	10	5	2	Good
18	352	2	8	5	2	Good
		TOTAL	**305**	**70**	**54**	**GOOD**

The overall regeneration status of East Baruni RF is GOOD.

Status of Regeneration of Kutulsingha RF						
Sl No.	UID No	Compt. N	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	511	1	13	5	5	Fair
2	12	2	13	8	5	Good
3	24	3	13	4	5	Fair
4	451	3	18	4	6	Fair
5	468	3	25	4	6	Fair
6	452	4	30	7	5	Good
7	28	4	43	6	6	Fair
8	454	4	23	3	7	Fair
9	332	4	2	0	0	Fair
11	438	6	0	10	0	Poor
12	439	6	0	6	0	Poor
13	38	7	0	8	0	Poor
		TOTAL	**180**	**65**	**45**	**GOOD**

The overall regeneration status of Kutulsingha RF is GOOD

Status of Regeneration of Bankimundi RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	327	1	3	2	2	Fair
2	19	2	10	10	1	Fair
3	342	3	10	7	3	Good
TOTAL			23	19	6	GOOD

The overall regeneration status of Bankimundi RF is GOOD.

Status of Regeneration of Kusumkhuri RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	639	2	15	6	6	Fair
2	640	2	9	3	6	Fair
TOTAL			**24**	**9**	**12**	**FAIR**

The overall regeneration status of Kusumkhuri RF is FAIR.

Status of Regeneration of Ghosar RF						
Sl No.	UID No	Compt. N	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	3	2	0	0	0	No
2	7	2	7	8	0	New
3	300	3	0	0	0	No
4	301	1	4	9	0	New
		TOTAL	**11**	**17**	**0**	**New**

The overall regeneration status of Ghosar RF is FAIR.

Status of Regeneration of Nuagaon RF						
Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	395	1	5	6	3	Deficient
2	32	1	4	7	1	Deficient
3	392	1	7	3	0	New
4	393	1	7	1	3	Fair
5	394	1	4	4	1	Deficient
6	402	2	4	3	3	Fair
7	403	2	4	4	3	Deficient
8	404	2	6	5	2	Good
9	378	3	5	7	1	Deficient
10	388	3	3	4	1	Deficient
11	389	3	5	8	6	Fair
12	366	5	6	3	1	Good
13	370	4	5	3	2	Good
14	372	4	6	5	3	Good
15	371	4	5	4	1	Good
		TOTAL	**76**	**67**	**31**	**GOOD**

The overall regeneration status of Nuagaon RF is GOOD.

Status of Regeneration of Dantarikhol RF						
Sl No.	UID No	Compt. N	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	343	2	0	8	2	Poor
2	344	2	6	6	4	Deficient
3	345	2	7	8	7	Fair
4	348	2	6	6	6	Fair
5	333	3	0	6	2	Poor
6	334	3	0	6	3	Poor
7	23	4	6	6	4	Deficient
8	455	5	14	2	7	Fair
9	329	6	7	4	4	Fair
10	330	6	4	6	4	Deficient
11	323	7	7	10	5	Fair
12	324	7	6	8	5	Fair
13	325	7	7	7	4	Fair
14	328	8	6	9	3	Fair
		TOTAL	**76**	**92**	**60**	**Deficient**

The overall regeneration status of Dantarikhol RF is GOOD.

The overall regeneration status of Dantarikhol RF is DEFICIENT.

3.3.6 Special problems like menace of weeds and invasive species growth:

Weeds compete for food and light and chokes valuable plants particularly the young ones. *Eupatorium* and *Lantana* are the common weeds in the forests. Nevertheless, it is not a serious problem in this chunk of Forest.

3.4 Felling series, cutting sections and JFM areas:

Considering Rehabilitation Working Circle, no felling series is prescribed. However treatment series are constituted by taking each range as a unit. While constituting such series, care has been taken to restrict the series as far as possible within the range jurisdiction to which the particular forest block belongs; this has been done mainly for administrative convenience and better implementation of the prescriptions. Accordingly 5 Treatment series are proposed. The details of treatment series showing existing village level JFM committees is furnished in Table No. **3.9.**

Table No. 3.9 Treatment series, Cutting sections & JFM areas					
Name of the Range.	Name of the Treatment series.	Forest Block/ Village Forest	Area in Hectare.	Name of the JFM Committee	Area under JFM Committee in Hectare.
Athamallik	Kusumkuhuri	Kusumkuhuri	609.04		
		Mahendrapur	333.96		
		Kuber Hill DPF	412.54		
		Malipadar VF	7		
		Manikpathar VF	5		
		TOTAL	**1367.54**		
Dhandatopa	Kutulsingha	Kutulsingha	1507.59		
		Dantarikhol	247.32		
		Thakurgarh DPF	139.62		
		Pitabalibahal DPF	160		
		Rampur DPF	114.33		
		TOTAL	**2168.86**		
Madhapur	Nuagaon	East Baruni	1472.16		
		West Baruni	400.21		
		Nuagan	**1096.93**		
		Purunapani DPF	132		
		Muchhapur 'A' DPF	54.58		
		Muchhapur 'B' DPF	28.77		
		Mangalpur DPF	87.79		
		Gautampur VF	5		
		Singarimunda VF	13		
		Ratanapada VF	5		
		Baradakata VF	10		
		Hatuapada VF	1.6188		
		Mundapada VF	5		
		Buraghta VF	5		
		Kiakata VF	8.2639		
		Dhuliapada VF	5		
		TOTAL	**3330.3227**		

Handapa	Dantarikhol	Dantarikhol	756.42		
		Handapa	324.06		
		Bankimundi	269.84		
		Kholdangiani	167.18		
		Gundurijharan DPF	802.91		
		Kuturukani DPF	1226.13		
		Solanda DPF	189.8		
		Berham DPF	185.35		
		Madhupur VF	5		
		Jharboinda VF	0.6		
		Jharboinda VF	5		
		Asurabahal VF	10		
		Gunurimunda VF	5		
		Baninali VF	5		
		Baninali VF	5		
		Thelukunali VF	3.76		
		TOTAL	**3961.05**		
Bamur	Ghosar	Bindhyabasini	263.35		
		Kishoreban	310.03		
		Ghosar	772.3406		
		Bijamaliha	135.41		
		Guja	346.18		
		Susaba	141.64		
		Bhagamunda	111.22		
		Digi	141		
		Tulasipur	43.99		
		Bajpur	69.12		
		Gurujanga	10		
		Sarabhanguni	5		
		Dakuamunda	5		
		Bairagipali	5		
		Naktinali	2.6993		
Handapa		Batipurunapani DPF	1214.08		
		Tileswar	1022.07		
		TOTAL	**4598.1299**		

3.5 Blocks,compartments and JFM areas:

The blocks, compartments & JFM areas are furnished in **Table No 3.10** as follows.

Table No 3.10: List of Blocks, Compartments, Area & JFM areas						
Sl.No.	Name of the Range.	Forest Block.	Compartment No.	Area in Ha.	JFM area in Ha.	Quality of area.
1	Athamallik	Kusumkuhuri	1	269.88	Nil	
			2(p)	180.13	Nil	
			3	159.03	159	
		Mahendrapur	1(p)	324.49	Nil	
			2	9.47	Nil	
		Kuber Hill		412.54	Nil	
		MalipadarVF		7	Nil	
		ManikpatharVF		5	Nil	
		TOTAL		1367.54		
2	Dhandatopa	Kutulsingha	1(p)	142.06	Nil	
			2	172.02	Nil	
			3(p)	203.19	Nil	
			4(p)	331.69	Nil	
			5	126.05	Nil	
			6(p)	336.16	Nil	
			7(p)	196.42	Nil	
		Dantarikhol	2(p)	156.49	Nil	
			3(p)	90.83	Nil	
		Thakurgarh		139.62	Nil	
		Pitabalibahal		160	Nil	
		Rampur		114.33	Nil	
		TOTAL		2168.86		
3	Madhapur	East Baruni	1	253.04	50	
			2	237.37	Nil	
			3(p)	267.3	160	
			4(p)	181.37	Nil	
			5(p)	218.33	Nil	
			6	160.46	160	
			7	154.29	46	
		West Baruni	1	84.93	32.68	
			2	184.04	50	
			3	131.24	62	
		Nuagan	1	313.71	Nil	
			2(p)	183.51	137	
			3(p)	205.57	Nil	
			4	280.36	172	
			5	165.78	Nil	
		Purunapani		132	Nil	

		Muchhapur 'A'		54.58	Nil	
		Muchhapur 'B'		28.77	Nil	
		Mangalpur		87.79	Nil	
		Gautampur		5	Nil	
		Singarimunda		13	Nil	
		Ratanapada		5	Nil	
		Baradakata		10	Nil	
		Hatuapada		1.6188	Nil	
		Mundapada		5	Nil	
		Buraghta		5	Nil	
		Kiakata		8.2639	Nil	
		Dhuliapada		5	Nil	
		TOTAL		3382.3227		
4	Handapa	Dantarikhol	1(p)	110.42	Nil	
			4	115.49	Nil	
			6	195.41	99.6	
			7(p)	235.34	Nil	
			8(p)	99.76	Nil	
		Bankimundi	1(p)	75.48	60	
			2(p)	123.72	60.1	
			3(p)	70.64	70	
		Kholdangiani	1(p)	167.18	100	
		Handapa	4	324.06	Nil	
		Gundurijharan		802.91	Nil	
		Kuturukani		1226.13	Nil	
		Solanda		189.8	Nil	
		Berham		185.35	Nil	
		Madhupur		5	Nil	
		Jharboinda		0.6	Nil	
		Jharboinda		5	Nil	
		Asurabahal		10	Nil	
		Gunurimunda		5	Nil	
		Baninali		5	Nil	
		Baninali		5	Nil	
		Thelukunali		3.76	Nil	
		TOTAL		3961.05		

5	Bamur	Bindhyabasini	1(p)	263.35	20	
		Kishoreban	1(p)	310.03	100	
		Ghosar	1(p)	133.67	60	
			2(p)	274.22	110	
			3(p)	364.4506	280	
		Bijamaliha	1(p)	135.41	Nil	
		Guja	1	346.18	Nil	
		Batipurunapani		1214.08	Nil	
		Tileswar		1022.07	Nil	
		Susaba		141.64	Nil	
		Bhagamunda		111.22	Nil	
		Digi		141	Nil	
		Tulasipur		43.99	Nil	
		Bajpur		69.12	Nil	
		Gurujanga		10	Nil	
		Sarabharguni		5	Nil	
		Dakuamunda		5	Nil	
		Bairagipali		5	Nil	
		Naktinali		2.6993	Nil	
		TOTAL		**4598.1299**		

3.6 Special objectives of management:

The following special objectives of management are set for the Working Circle which is within the ambit of the general objectives of management.

1. To improve the condition of existing forests through protection against grazing, fires and illicit felling.

2. To enhance soil productivity through soil and moisture conservation measure.

3. To stabilize the ratio between water runoff during rainy season and that of during dry season.

4. To restock barren areas though artificial regeneration with most desirable indigenous species.

5. To involve the local community in protection and management of the forest.

6. To restock and improve the microclimate and micro edaphic condition.

7. To increase the biodiversity and heterogeneity in the forest crop by encouraging natural regeneration.

8. To increase the water retaining capacity of the soil.

9. To meet the bonafide requirements of local inhabitants from re-stocked areas and ensuring active participation of such communities in the entire process of management through the concept o

3.6.1 Analysis of the crop:

Sample plot enumeration of trees in different girth classes varying from 30 cm to 180 cm and above with 30 cm interval has been carried out on the basis of UID Nos. assigned by the ORSAC in the Reserved Forests Crops in the forest blocks allotted to this working circle are in various stages of degradation and the soil is prone to different types of soil erosion. Mature trees are available in a scattered manner in most of the forest blocks. The regeneration study reveals that the regeneration of few species like Sal, Kendu, Asan and Chara is moderate to good in majority of the blocks. But the young shoots are affected due to frequent fires.

The main species present in the Dry Deciduous Scrub Forests are *Acacia catechu, Zizyphus xylocarpus, Zizyphus mauritiana, Boswellia serrata, Terminalia tomentosa, Gardenia sps, Holorrhena antidysenterica, Woodfordia fruticosa,* ***Carries caranda****, Lannea coromandelica, Phoenix sylvestris, Randia malabarica, Cleistanthus collinus, Diospyros melanoxylon, Cassia fistula, Lagerstroemia parviflora, etc. The lower canopy includes Ageratum conyzoides, Alangium salvifolium, Ixora arborea, Gardenia gummifera, and Mimosa pudica. The important climbers are Combretum decandrum, Butea superba,* etc. Bamboo is also present here and there but it has a bushy growth. Sal also occurs occasionally.

The important species of Northern Dry Mixed Decididous Forests are *Terminalia tomentosa, Anogeissus latifolia, Pterocarpus marsupium, Bamboo spp., Dalbergia panciculata, Lannea coromandelica, Terminalia bellerica, Madhuca indica, Boswellia serrata, Adina cordifolia, Ficus spp. Albizia lebbeck, Schleichera oleosa, Mitragyna parviflora* etc.

The forests are open, scrubby and miscellaneous in composition. There is no distinct storey in most of these forest areas. Main species include Shorea robusta, Terminalia tomentosa, Madhuca indica, Pterocarpus marsupium, Anogeissus latifolia, Boswellia serrata, Buchnania lanzan, Diospyros melanoxylon, Terminalia chebula, Emblica officinalis, Ougenia oojeinensis, Bauhinia retusa, Woodfordia fruticosa, Indigofera pulchella, Nyctanthes arbotritis, Ixora arborea, Grewia nudiflora, Phoenix acaulis, Bauhinia vahalii, Butea superba, Holorrhena antidysentrica, and Smilax macrophylla etc.

3.6.1.1Assessment of NTFP bearing species:

During the sample point exercise, assessment of NTFP bearing species have also been conducted. The result is furnished in **Table. No. 3.11** as below.

Table.No. 3.11:Abstract of NTFP items of Dantarikhol RF

Area surveyed: 1.40Ha

Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	31	9	Bahada Fruit	3
2	Chara Seed	26	10	Amala Fruit	10
3	Kendu fruit	70	11	Kusuma seed	56
4	Jamun berry	42	12	Simil cotton	0
5	Mahula flower	17	13	Mango fruit	0
6	Mahua seed	6	14	Mango Kernel	0
7	Kumbhi bark	9	15	Bhalia fruit	0
8	Harida fruit	0	16	Bela Fruit	23
			17	Dantari Fruit	0

Abstract of NTFP items of East Barunei RF					
Area surveyed: 1.80Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	10	9	Bahada Fruit	0
2	Chara Seed	49	10	Amala Fruit	0
3	Kendu fruit	0	11	Kusuma seed	0
4	Jamun berry	0	12	Simil cotton	0
5	Mahula flower	0	13	Mango fruit	0
6	Mahua seed	0	14	Mango Kernel	0
7	Kumbhi bark	0	15	Bhalia fruit	2
8	Harida fruit	0	16	Bela Fruit	0
			17	Dantari Fruit	0

Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	15	9	Bahada Fruit	60
2	Chara Seed	70	10	Amala Fruit	0
3	Kendu fruit	210	11	Kusuma seed	7
4	Jamun berry	0	12	Simil cotton	0
5	Mahula flower	122	13	Mango fruit	0
6	Mahua seed	46	14	Mango Kernel	0
7	Kumbhi bark	0	15	Bhalia fruit	4
8	Harida fruit	10	16	Bela Fruit	0
			17	Dantari Fruit	0

Abstract of NTFP items of West Barunei RF					
Area surveyed:0.60Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	20	9	Bahada Fruit	60
2	Chara Seed	101	10	Amala Fruit	0
3	Kendu fruit	290	11	Kusuma seed	14
4	Jamun berry	0	12	Simil cotton	0
5	Mahula flower	244	13	Mango fruit	0
6	Mahua seed	92	14	Mango Kernel	0
7	Kumbhi bark	2	15	Bhalia fruit	4
8	Harida fruit	10	16	Bela Fruit	20
			17	Dantari Fruit	0

Abstract of NTFP items of Nuagaon RF					
Area surveyed:1.50Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	90	9	Bahada Fruit	40
2	Chara Seed	82	10	Amala Fruit	0
3	Kendu fruit	65	11	Kusuma seed	0
4	Jamun berry	0	12	Simil cotton	0
5	Mahula flower	415	13	Mango fruit	0
6	Mahua seed	104	14	Mango Kernel	0
7	Kumbhi bark	0	15	Bhalia fruit	5
8	Harida fruit	0	16	Bela Fruit	0
			17	Dantari Fruit	0

Abstract of NTFP items of Ghosar RF					
Area surveyed:0.40Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	35	9	Bahada Fruit	0
2	Chara Seed	19	10	Amala Fruit	0
3	Kendu fruit	10	11	Kusuma seed	0
4	Jamun berry	21	12	Simil cotton	0
5	Mahula flower	55	13	Mango fruit	0
6	Mahua seed	18	14	Mango Kernel	0
7	Kumbhi bark	5	15	Bhalia fruit	0
8	Harida fruit	0	16	Bela Fruit	0
			17	Dantari Fruit	0

Abstract of NTFP items of Bijamalia RF					
Area surveyed:0.30Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	0	9	Bahada Fruit	15
2	Chara Seed	11	10	Amala Fruit	0
3	Kendu fruit	0	11	Kusuma seed	0
4	Jamun berry	0	12	Simil cotton	0
5	Mahula flower	0	13	Mango fruit	0
6	Mahua seed	0	14	Mango Kernel	0
7	Kumbhi bark	8	15	Bhalia fruit	0
8	Harida fruit	0	16	Bela Fruit	0
			17	Dantari Fruit	0

Abstract of NTFP items of Kholadangini RF					
Area surveyed:0.10Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	0	9	Bahada Fruit	0
2	Chara Seed	6	10	Amala Fruit	0
3	Kendu fruit	120	11	Kusuma seed	0
4	Jamun berry	0	12	Simil cotton	0
5	Mahula flower	50	13	Mango fruit	0
6	Mahua seed	15	14	Mango Kernel	0
7	Kumbhi bark	2	15	Bhalia fruit	0

Abstract of NTFP items of Bindhyabasini RF					
Area surveyed:0.50Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	0	9	Bahada Fruit	0
2	Chara Seed	3	10	Amala Fruit	0
3	Kendu fruit	0	11	Kusuma seed	0
4	Jamun berry	0	12	Simil cotton	0
5	Mahula flower	0	13	Mango fruit	0
6	Mahua seed	0	14	Mango Kernel	0
7	Kumbhi bark	0	15	Bhalia fruit	0
8	Harida fruit	0	16	Bela Fruit	210
			17	Dantari Fruit	0

Abstract of NTFP items of Bankimundi RF					
Area surveyed:0.30Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	5	9	Bahada Fruit	0
2	Chara Seed	0	10	Amala Fruit	0
3	Kendu fruit	120	11	Kusuma seed	50
4	Jamun berry	40	12	Simil cotton	0
5	Mahula flower	165	13	Mango fruit	0
6	Mahua seed	51	14	Mango Kernel	0
7	Kumbhi bark	0	15	Bhalia fruit	0
8	Harida fruit	0	16	Bela Fruit	0
			17	Dantari Fruit	0

Abstract of NTFP items of Mahendrapur RF					
Area surveyed:0.30Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	0	9	Bahada Fruit	21
2	Chara Seed	4	10	Amala Fruit	2
3	Kendu fruit	0	11	Kusuma seed	0
4	Jamun berry	0	12	Simil cotton	0
5	Mahula flower	0	13	Mango fruit	0
6	Mahua seed	0	14	Mango Kernel	0
7	Kumbhi bark	4	15	Bhalia fruit	0
8	Harida fruit	0	16	Bela Fruit	0
			17	Dantari Fruit	0

Abstract of NTFP items of Kadalimunda RF					
Area surveyed:0.20Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	0	9	Bahada Fruit	0
2	Chara Seed	3	10	Amala Fruit	0
3	Kendu fruit	9	11	Kusuma seed	0
4	Jamun berry	0	12	Simil cotton	0
5	Mahula flower	35	13	Mango fruit	0
6	Mahua seed	12	14	Mango Kernel	0
7	Kumbhi bark	0	15	Bhalia fruit	4
8	Harida fruit	0	16	Bela Fruit	10
			17	Dantari Fruit	0

Abstract of NTFP items of Guja RF					
Area surveyed:0.40Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	0	9	Bahada Fruit	0
2	Chara Seed	7	10	Amala Fruit	0
3	Kendu fruit	0	11	Kusuma seed	0
4	Jamun berry	0	12	Simil cotton	0
5	Mahula flower	0	13	Mango fruit	0
6	Mahua seed	0	14	Mango Kernel	0
7	Kumbhi bark	0	15	Bhalia fruit	0
8	Harida fruit	0	16	Bela Fruit	12
			17	Dantari Fruit	0

Abstract of NTFP items of Kusumkhuri RF					
Area surveyed:0.20Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	0	9	Bahada Fruit	0
2	Chara Seed	7	10	Amala Fruit	0
3	Kendu fruit	140	11	Kusuma seed	20
4	Jamun berry	0	12	Simil cotton	0
5	Mahula flower	0	13	Mango fruit	0
6	Mahua seed	0	14	Mango Kernel	0
7	Kumbhi bark	4	15	Bhalia fruit	0
8	Harida fruit	0	16	Bela Fruit	0
			17	Dantari Fruit	0

Detailed soil study, biodiversity study and regeneration study was carried out in the assigned sample points. There exists a variation in the crop condition of various blocks included in this circle. In some blocks the extent of degradation is more in comparison to the other blocks. The status of natural regeneration has already been described in **chapter 3.3.** The status of natural regeneration and Floristic diversity of the demarcated protected Forest Blocks in the outgoing plan is described as below.

S.No	Species	Kuber Hills	Thakurgarh	Pitabalibahal	Rampur	Purunapani	Muchhpur A
1	SAL	D	G	M	D	G	G
2	PIASAL	D	F	D	D	G	D
3	SISOO	D	D	D	D	D	D
4	BANDHAN	D	F	F	D	D	D
5	GAMBHAR	D	D	D	D	D	D
6	ASAN	F	M	F	F	F	F
7	KASI	F	D	D	D	D	D
8	KURUM	D	F	F	D	D	D
9	MUNDI	D	D	D	D	D	D
10	DHAURA	F	M	D	F	F	F
11	KENDU	D	M	M	M	E	F
12	JAMUN	D	D	D	F	D	D
13	MAHULA	M	F	M	D	M	F
14	SIRIS	F	D	D	D	D	D
15	KANGADA	D	D	D	D	D	D
16	AMLA	D	F	F	D	F	D
17	BAHADA	D	D	D	D	D	D
18	HARIDA	D	D	D	D	D	D
19	BEL	D	D	D	F	D	D
20	KUSUM	D	F	D	D	D	D
21	MANGO	D	D	D	D	D	D
22	SIDHA	F	D	D	D	D	D
23	CHARA	F	F	F	D	M	F
24	SIMILI	D	D	D	D	D	D
25	KARADA	D	F	F	D	F	F
26	MISC.	E	M	G	E	F	G

S.No	Species	Muchhapur B	Mangalpur	Gunduri jharan	Kuturukani	Solanda	Berham
1	SAL	G	D	G	G	F	D
2	PIASAL	D	D	D	D	D	D
3	SISOO	D	D	D	D	D	D
4	BANDHAN	D	D	D	D	D	D
5	GAMBHAR	D	D	D	D	D	D
6	ASAN	F	M	D	M	F	M
7	KASI	D	D	D	D	D	D
8	KURUM	D	F	D	D	D	D
9	MUNDI	D	D	D	D	D	D
10	DHAURA	F	M	F	F	F	F
11	KENDU	M	G	F	M	G	M
12	JAMUN	D	D	D	D	D	D
13	MAHULA	M	F	D	F	F	F
14	SIRIS	D	D	D	D	D	D
15	KANGADA	D	D	D	D	D	D
16	AMLA	F	D	D	D	D	F
17	BAHADA	D	D	D	D	D	D
18	HARIDA	D	D	D	D	D	D
19	BEL	D	F	D	D	D	D
20	KUSUM	D	D	D	D	D	D
21	MANGO	D	D	D	D	D	D
22	SIDHA	F	D	D	D	D	F
23	CHARA	M	F	D	F	M	M
24	SIMILI	D	D	D	D	D	D
25	KARADA	F	F	F	D	M	F
26	MISC.	E	G	G	M	G	G

Sl.No	Species	Susaba	Bhanga-munda	Digi	Bati - Purnapani	Tileswar	Tulusipur	Bajpur
1	SAL	D	E	D	M	D	D	D
2	PIASAL	D	F	D	D	F	D	D
3	SISOO	D	D	D	D	F	D	D
4	BANDHAN	D	D	D	D	D	D	D
5	GAMBHAR	D	D	D	D	D	D	D
6	ASAN	D	F	F	D	M	F	F
7	KASI	D	D	D	D	F	D	F
8	KURUM	D	D	D	D	F	D	D
9	MUNDI	D	D	D	D	D	D	D
10	DHAURA	F	F	F	D	F	F	F
11	KENDU	F	M	M	D	F	M	F
12	JAMUN	D	D	D	D	D	D	D
13	MAHULA	F	F	D	D	M	D	F
14	SIRIS	D	D	D	D	D	D	D
15	KANGADA	D	D	D	D	D	D	D
16	AMLA	D	F	D	F	M	D	D
17	BAHADA	D	D	D	D	D	D	F
18	HARIDA	D	D	D	D	D	D	D
19	BEL	D	F	D	D	D	F	D
20	KUSUM	D	D	D	D	D	D	D
21	MANGO	D	D	D	D	D	D	D
22	SIDHA	F	D	F	D	F	M	F
23	CHARA	F	F	F	D	F	M	F
24	SIMILI	D	D	D	D	D	D	D
25	KARADA	F	F	F	D	M	M	F
26	MISC.	G	G	E	G	M	E	G

Status of regeneration in RFs: In other blocks Sal regeneration is generally observed to be moderate to excellent. In few blocks like Kutulsingha, Kadalimunda, Kishoreban Sal regeneration is poor. The regeneration of other species like Asan, Dhaura, Kendu, Karada, Chara, Mahuala is found in all the blocks except few areas like Asan regeneration is deficient in Kusumkuhuri, Kadalimunda, Dhaura regeneration is poor in Kusumkuhuri, Kutulsingha etc. Some amount of regeneration of Kusum is observed in Dantarikhol and Kishoreban blocks.The status of regeneration of sal in Handapa RF is good.

Status of regeneration in Protected Forests: The status of regenerations is studied in all the 19 blocks, the Sal regeneration is found to be good only in few blocks like Thakurgarh, Purnapani, Muchhapur A & B, Bhangamunda, Gundurijharan, etc. The status of regeneration is fair to moderate in most of the blocks for Kendu, Dhaura, Mahula,Amla, Asan and Chara. Some amount of P.Sal regeneration is found in Purunapani, Thakurgarh, Bhangamunda and Tileswar blocks. The regeneration for the rest of the species is generally deficient barring one or two blocks.

In the outgoing plan, the status of Floristic Diversity Index of RFs & demarcated Forest Blocks are furnished in **Table No.3.12.**

Table: 3.12. ABSTRACT OF FLORISTIC DIVERSITY INDEX			
Sl. No.	**Name of the Block**	**Max No. Of Species**	**Floristic Diversity Index**
RESERVED FORESTS			
1	Kadalimunda	82	0.956959
2	Dandarugudi	59	0.895295
3	Kishoreban	78	0.958837
4	Kholdangiani	71	0.9102
5	Bankimundi	68	0.947756
6	Dantarikhol	74	0.916846
7	Kutulsingha	82	0.955783
8	Mahendrapur	63	0.959614
9	Nuagan	59	0.942657
10	Kusumkuhuri	80	0.93534
11	Bindhyabasini	83	0.957414
12	Ghosar	57	0.851175
13	East Baruni	70	0.9601
14	West Baruni	68	0.960261
15	Bijam alhia	74	0.959252
16	Guja	63	0.936813
PROTECTED FORESTS			
1	Kuber Hills	60	0.96313
2	Thakurgarh	46	0.909672
3	Pitabalibahal	60	0.94779
4	Rampur	56	0.918588
5	Purunapani	50	0.943707
6	Muchhapur A	55	0.952025
7	Muchhapur B	45	0.928612
8	Mangalpur	52	0.952549
9	Gundurijharan	76	0.948411
10	Kuturukani	64	0.92127
11	Solanda	57	0.950263
12	Berham	55	0.948155
13	Susab	62	0.933622
14	Bhangamunda	52	0.943733
15	Digi	41	0.947203
16	Batipuranapani	65	0.924809
17	Tileswar	72	0.953378
18	Tulusipur	52	0.941279
19	Bajpur	43	0.928956

In the present working plan; Biodiversity assessment and Regeneration Status is done as per the prescribed procedure of working plan code,2014 as follows.

The data collected during enumeration such as the number of individuals of each species and the DBH of each tree are utilized to derive secondary attributes like basal area (BA, m2/ ha), density (D, trees per ha) and frequency (F, number of quadrates where trees are present in relation to total plots observed). Relative values of BA, D and F will be calculated. The Importance Value Index (IVI) is calculated by adding up relative dominance (RBAF), relative density (RD) and relative frequency (RF).

However, in case of shrubs, herbs, saplings and for regeneration, the IVI is calculated on the basis of relative values, i.e. relative frequency and relative density.

It is assumed that the dominance of a species increases with an increasing importance value and that the species with lowest importance value is the least dominant one.

The maximum IVI value is 300 (100 each for RBA, RD and RF).

Basal area and density of the tree species should be converted to hectare basis.

To estimate the stand structure, all tree species should be grouped under different DBH classes. The total number of individuals belonging to each DBH class should be calculated for each species for each site.

Ds = Total number of individuals of a species/Total area of quadrats studied.

Fs = Number of quadrats in which a species occurs/ Total number of quadrats studied x100

RDs = Density(Ds) of a species/ Total density of all species x100

RFs= Frequency (Fs)of a species/ Sum of frequencies of all speciesX100

RBAFs = Total basal area of a species/ Total basal area of all speciesX 100

IVIs= RDs +RFs+ RBAFs

(where 's' denotes a particular species for which these variables are calculated)

Young plants of tree species up to 10 cm diameter are taken into consideration for assessment of regeneration status of a particular species as practiced in National Forest Inventory by FSI. Data collected from the square plots of 3mx3m for saplings (2cm to 10 cm collar diameter) and from the square plots of 1mx1m for seedlings will be generally used to assess the regeneration status of species in the management unit. Based on the phytosociological data from plot level enumeration, the regeneration status of the sampled species may be assessed in the following categories:

a. Good regeneration, if seedlings are more in numbers than the saplings and likewise saplings are more than that of adults.

b. Fair regeneration, if seedlings are more in numbers than the saplings but the saplings are equal or less than that of adults.

c. Poor regeneration, if a species survives in only sapling stage, but not as seedlings (though sapling may be less, more or equal to adults).

d. No regeneration, if a species is absent both in sapling and seedling stage, but present as adult.

e. New regeneration, if a species has no adults but only sapling and/or seedlings.

The status of regeneration has improved from deficient/fair level to fair/good level. Biodiversity assessment study result is furnished in chapter 3 of part I. This can be taken as base year assessment and compared in subsequent years.

3.6.2 Silvicultural System.

Since the prime objective is to re-stock these areas by tending operations supplemented by gap planting and protection measures(including JFM) no formal silvicultural system can be adopted as the basic aim is to restore the vegetative cover of the degraded area and promote the growth of established saplings to regain its original composition. However the silvicultural operations like SMC work, thinning operation, Gully plugging, Contour bunding, staggered trench, percolation pits and trenches will be done in Rehabilitation Working Circle areas. The species like Sal, Piasal, Sisoo, Gambhar, Kusum, Asan, Kasi, Bandhan will be treated as principal species including Bamboo. Site specific suitable species will be chosen for gap planting. Fruit bearing trees including myrobolans will be given importance while carrying out regeneration cleaning and gap planting. Protection from biotic interference will be given due weightage.

3.6.3 Rotation Period :

As timber production is not the objective here, no rotation period is prescribed and hence not even any yield regulation is required. However, removal of dead and fallen trees besides thinning in congested crop is prescribed here. Since the areas allotted to this circle are to be treated within the plan period, the rehabilitation cycle of 10 years is fixed to coincide with the plan period.

3.6.4 Harvestable diameters :

As timber production is not the objective here, no harvestable diameters is prescribed.

3.6.5 Reducing factors and reduced areas:

Reducing factors are used for quality and density for species for which yield tables are available. As no yield regulation is required; there is no need for description of reducing factors and reduced areas.

3.6.6 Rehabilitation cycle:

Since the areas allotted to this circle are to be treated within the plan period, the rehabilitation cycle of 10 years is fixed to coincide with the plan period.

3.6.7 Division into periods and allotment to periodic blocks (PB) :

This is done for the shelter wood systems and hence not prescribed.

3.6.8 Calculation of the yield:

Not applicable.

3.6.9 Table of Treatment operation:

3.6.9.1: In order to execute the rehabilitation measures, each rehabilitation series has been divided into 10(ten) annual coupes to facilitate systematic operations. Care has been taken to delineate the annual coupes in such a manner that continuity of rehabilitation measures is ensured to have sustained efforts.

3.6.9.2 : The annual coupe shall be attended to as per the sequence prescribed in the plan. **Table No 3.13** gives the annual coupes (rehabilitation series wise) with its number and the year of treatment along with the name of the range, forest block, its compartment number for each treatment series. If the rehabilitation works could not be taken up due to any reason in one year, those areas will be taken up in the subsequent years in addition to the current year's area. If more funds are available then the area

due for working in future should be taken up in the current year.

Table-3.13 REHABILITATION TREATMENT SERIES (Area In Ha.)									
KUSUMKUHURI TREATMENT SERIES									
Year	Coupe No	Range	Forest Block	Status	Compt No	Compt. Area	Total Area of DPF/VF	Area taken to Coupe	Total Coupe Area
2021-22	I	Athmallik	Kusmkuhuri	RF	2	183.13		100	100
2022-23	II		Kuber hill	DPF			412.54	100	100
2023-24	III		Kusmkuhuri	RF	3	159.03		159.03	159.03
2024-25	IV		Mahendrapur	RF	1	424.6		150	150
			Mahendrapur	RF	1	424.6		174.49	183.96
2025-26	V		Mahendrapur		2	9.47		9.47	
2026-27	VI		Kuber hill	DPF			412.54	100	100
2027-28	VII		Kuber hill	DPF			412.54	112.54	112.54
2028-29	VIII		Kusmkuhuri	RF	1	269.88		100	100
			Kusmkuhuri		1	269.88		100	180.13
2029-30	IX		Kusmkuhuri		2	183.13		80.13	
			Kusmkuhuri		1	269.88		69.88	169.88
2030-31	X		Kuber hill	DPF			412.54	100	
Total									1355.54

KUTULSINGHA TREATMENT SERIES									
Year	Coupe No	Range	Forest Block	Status	Compt. No	Compt. Area	Total Area of DPF/VF	Area taken to Coupe	Total Coupe Area
2021-22	I	Dhandatopa	Kutulsingha	RF	4	336.74		150	289.62
			Thakurgarh	DPF			139.62	139.62	
2022-23	II		Kutulsingha	RF	4	336.74		181.69	181.69
2023-24	III		Kutulsingha	RF	5	126.05		126.05	286.05
			Pitabalibahal	DPF			160	160	
2024-25	IV		Kutulsingha	RF	6	378.16		150	264.33
			Rampur	DPF			114.33	114.33	
2025-26	V		Kutulsingha	RF	6	378.16		186.16	186.16
2026-27	VI		Kutulsingha	RF	7	246.42		196.42	196.42
2027-28	VII		Dantarikhol	RF	2	276.49		156.49	247.32
			Dantarikhol	RF	3	250.83		90.83	
2028-29	VIII		Kutulsingha	RF	1	162.06		142.06	142.06
2029-30	IX		Kutulsingha	RF	2	172.02		172.02	172.02
2030-31	X		Kutulsingha	RF	3	225.19		203.19	203.19
Total									**2168.86**

NUAGAON TREATMENT SERIES									
Year	Coupe No	Range	Forest Block	Status	Compt. No	Compt. Area	Total Area of DPF/VF	Area taken to Coupe	Total Coupe Area
			Nuagan	RF	2	226.51		131.51	
			Muchapur A	DPF			54.58	54.58	
2021-22	I		Muchapur B	DPF			28.77	28.77	214.86
2022-23	II		Nuagan	RF	1	313.71		313.71	313.71
			East Baruni	RF	5	307.64		218.33	
			West Baruni	RF	3	131.24		131.24	
2023-24	III								349.57
			East Baruni	RF	6	160.46		160.46	
2024-25	IV		East Baruni	RF	7	154.29		154.29	314.75
			East Baruni	RF	3	303.84		277.3	
			West Baruni	RF	1	84.93		84.93	
		Madhapur							
2025-26	V								362.23
			East Baruni	RF	4	189.9		171.37	
2026-27	VI		East Baruni	RF	1	253.04		253.04	424.41
			East Baruni	RF	2	237.37		237.37	
			West Baruni	RF	2	184.04		184.04	
2027-28	VII								421.41
			Nuagan	RF	5	165.78		165.78	
2028-29	VIII		Purunupani	DPF			132	132	297.78
			Nuagan	RF	4	280.36		280.36	
2029-30	IX								280.36
			Nuagan	RF	3	272.57		205.57	
2030-31	X		Mangalpur	DPF			87.79	87.79	293.36
Total									3272.44

DANTARIKHOL TREATMENT SERIES									
Year	Coupe No	Range	Forest Block	Status	Compt. No	Compt. Area	Total Area of DPF/VF	Area taken to Coupe	Total Coupe Area
2021-22	I	Handapa	Gundurijharan	DPF			802.91	400	400
2022-23	II		Gundurijharan	DPF			802.91	402.91	402.91
2023-24	III		Kuturukani	DPF			1226.13	300	400
			Handapa	RF	4	324.06		100	
2024-25	IV		Kuturukani	DPF			1226.13	300	400
			Handapa	RF	4	324.06		100	
2025-26	V		Kuturukani	DPF			1226.13	300	424.06
			Handapa	RF	4	324.06		124.06	
2026-27	VI		Kuturukani	DPF			1226.13	326.13	326.13
2027-28	VII		Solanda	DPF			189.8	189.8	375.15
			Baraham	DPF			185.35	185.35	
2028-29	VIII		Dantarikhol	RF	1	201.24		110.42	421.32
			Dantarikhol	RF	4	115.49		115.49	
			Dantarikhol	RF	6	195.41		195.41	
2029-30	IX		Dantarikhol	RF	7	250.59		235.34	410.58
			Dantarikhol	RF	8	146.76		99.76	
			Bankimundi	RF	1	155.71		75.48	
2030-31	X		Bankimundi	RF	2	136.72		123.72	361.54
			Bankimundi	RF	3	100.64		70.64	
			Kholadangiani	RF		221.11		167.18	
									3921.69

GHOSAR TREATMENT SERIES									
Year	Coupe No	Range	Forest Block	Status	Compt. No	Compt. Area	Total Area of DPF/VF	Area taken to Coupe	Total Coupe Area
2021-22	I	Bamur	Bijamaliha	RF	1	216.95		135.41	398.76
			Bindhyabasini	RF	1	275.84		263.35	
2022-23	II		Kishoreban	RF		344.56		310.03	421.25
			Bhangamunda	DPF			111.22	111.22	
2023-24	III	Handapa	Susaba	DPF			141.64	141.64	604.71
			Tileswar	DPF			1022.07	322.07	
		Bamur	Digi	DPF			141	141	
2024-25	IV	Handapa	Tileswar	DPF			1022.07	500	500
2025-26	V		Tileswar	DPF			1022.07	200	614.08
			Batipurunapani	DPF			1214.08	414.08	
2026-27	VI		Batipurunapani	DPF			1214.08	400	400
2027-28	VII		Batipurunapani	DPF			1214.08	400	400
2028-29	VIII		Ghosar	RF	1	213.67		133.67	407.89
			Ghosar	RF	2	354.22		274.22	
2029-30	IX		Ghosar	RF	3	572.64		364.4506	408.4406
			Tulasipur	DPF			43.99	43.99	
2030-31	X		Guja	RF		346.18		346.18	415.3
			Bajapur	DPF			69.12	69.12	
Total									4570.431

Abstract of Treatment Series

Sl.No.	Name of the Treatment Series	Area in Ha.
1	Kusumkuhuri	1355.54
2	Kutulsingha	2168.86
3	Nuagaon	3272.44
4	Dantarikhol	3921.69
5	Ghosar	4570.4306
	Total	**15288.9606**

3.6.10 Method of executing the felling :

3.6.10.1 General marking rules is not applicable. However the following treatments are prescribed.

(i) No felling or removal of trees is permitted except for dead, uprooted trees and that too if such trees are not required for wildlife purpose.

(ii) High stumps shall be rectified to encourage young coppice shoots.

(iii) Singling out of the multiple coppice shoots shall be taken up to retain only the most promising ones.

(iv) Wherever there is congestion in the crop, cleaning operation shall be undertaken to encourage regeneration and growth of locally desirable species

3.6.10.2 Method of execution of operations :

3.6.10.2 .1 Demarcation of Annual Rehabilitation Coupe Areas

(i) The annual treatment areas will be demarcated in the winter season (October to December) in year preceding to the year of working. Coal tar ring will be painted on trees at breast height standing on the coupe line. Small stone cairn of the half-meter height will be erected at visible distance on its periphery in case of blank patches. In most of the coupes except for Dantarikhol Comp.No.1, Kutulsingha Comp. No.4, Ghosar Comp No.3, Guja Comp.No.1 and Kishoreban Comp.No.1, the whole compartment constitutes the coupe area. Hence the clearance of the compartment line needs to be taken up before working of the coupes.

(ii) The rehabilitation coupes shall be indicated by sign boards at corners or at the points of intersection with roads, inspection paths and boundary lines of reserved forests. The signboards should contain the name of the treatment series, coupe number, its area, year of working and compartment number.

3.6.10.2.2 PREPARATION OF SITE AND TREATMENT MAPS

This Working Circle consists of forest areas degraded and eroded in varying degrees. All areas may, therefore, not require uniform treatments. The areas included in this Working Circle, may possibly be classified into the following two categories. The following classifications and requirement of forest management shall be kept in view while preparing sites for prescribed rehabilitation measures.

Category I It includes the areas where the forest has moderate to good regeneration of many species like Sal, Asan, Chara and Mahula etc. and good rootstock (say 300 and more stumps/ha) is already present. The hills have gentle or moderate slope and they have considerable extent of plain areas like **Ghosar, Mahendrapur, Bindhyabasini and Bijamalhia,** etc. The objectives of management for these areas shall be to encourage establishment of regeneration, promotion of forest growth and closure of canopies. These areas will generally require some soil and moisture conservation measures, gap plantation and strict protection against illicit felling and forest fires. Livestock Grazing are not allowed. It shall, however, be preferred if fodder development operations are also taken up and local people are encouraged to cut/ collect fodder from the assigned areas rather than allowing cattle to directly graze. Climbers interfering with the growth

of sound trees, damaged/decayed stumps shall be dressed with a view to promote accelerated growth. In some areas, singling of coppice shoots may be required to select and prefer most promising ones at the cost of weak shoots/ stems. In other areas, cleaning operations may be necessary to free regeneration from undesired growth.

Category II includes those areas where forest growth exists, but the regeneration status of many species is comparatively deficient to fair. They have steep slopes and the extent of hilly area is more in comparison to plain area like in **Kusumkuhuri, Kutulsingha and Dantarikhol** etc. In many places the hills are exposed, and the vegetation is present in the lower contours. These areas often have gaps. Site degradation is more than that of in Category I. These areas shall require intensive soil and moisture conservation measures. The soil nutrient status is generally poor in these areas. Artificial regeneration by gap plantation and soil and moisture conservation measures is required.

3.6.10.2.3 TREATMENT PLAN

Each rehabilitation coupe shall be treated for four years excluding the zero th (0^{th}) year. The concerned Range officer shall prepare an annual Treatment plan in the 0^{th} year. It shall include all vital information like,

(i) Site identification i.e. Forest block/ Comptt.No / Coupe No.

(ii) .Area and Treatment Map,

(iii) Site category (*i.e. Category I, II*)

(iv) Site characteristics (terrain, slope, drainage, soil type and depth),

(v) Vegetation and extent of regeneration,

(vi) Extent of degradation of site/vegetation,

(vii) Year of operations (including maintenance, if any),

(viii) Major operations to be undertaken,

(ix) Cost norms and a calendar of operations.

3.6.10.2.3 The Plan as mentioned above shall also include provisions for monitoring of the execution of operations, e.g. operations actually performed, costs incurred, time schedule followed and the overall results of operations. The ACF/the DFO, who is responsible for the implementation of the approved Plan, shall check the annual action plan and it will be approved by the Regional Chief Conservator of Forests.

3.6.10.2.4 REHABILITATION OPERATIONS

(i) No felling or removal of trees is permitted except for dead and uprooted trees. All high stumps shall be cut.

(ii) Complete protection against fire, grazing, and illicit felling must be ensured as per requirement of specific sites.

(iii) The areas where the VSS is active should be managed as per principles of JFM, of course within the ambit of prescriptions outlined for this Working Circle.

(iv) The indigenous hardy species should be used for planting. Preference should be given to fruit bearing and minor forest produce species.

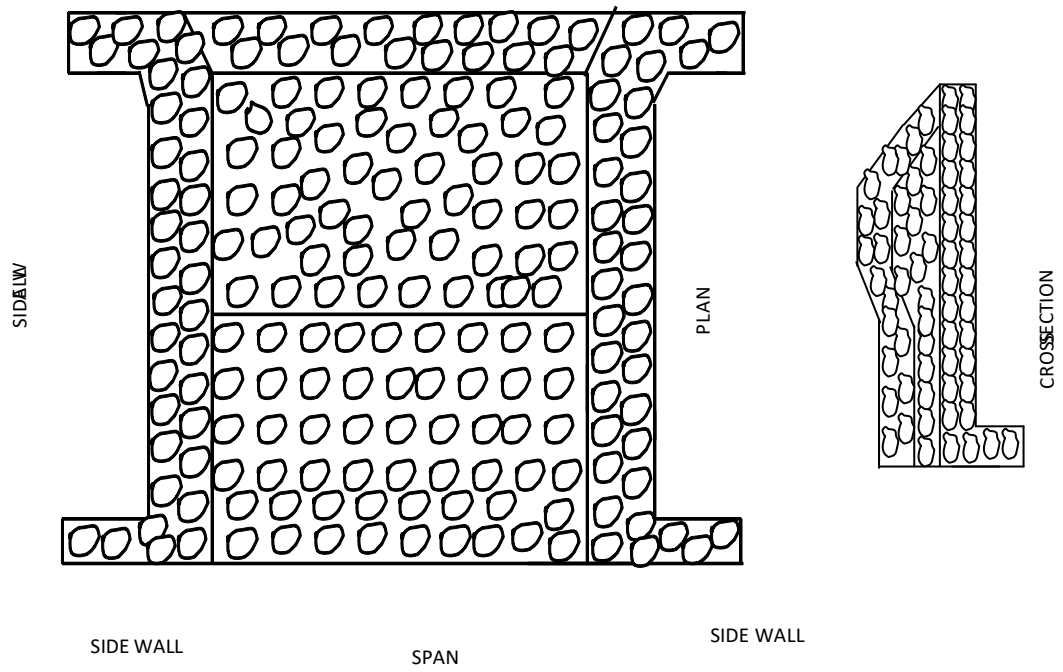
(v) Local labour should be utilized particularly from JFM areas.

(vi) Local people can be encouraged to cut/ collect fodder from the assigned areas rather than allowing cattle to directly graze.

(vii) Soil and Water Conservation Measures: It should form the main component of rehabilitation operations in Category II areas like Kusumkuhuri, Kutulsingha, Dantarikhol, East and West Baruni, etc since most of these areas have steep slopes and are affected by soil erosion. Appropriate soil and water conservation measures shall be taken up to reduce the velocity of the water flow and to retain the top soil. Measures like gully plugging, check dams, contour bunds, nallah bunding and vegetative bunds are prescribed.

(a)**Gully Plugging**: (1) Check dams are required to be erected across gullies. Loose boulder check dams are medium sized mechanical structures, provided in the middle reaches of the gullies having a width of 1.0 mt to 3.0 mt. Rough stones of size of 0.15 to 0.3 cum are required for the construction of these structures. Earthen bunds should be provided in both sides of the structure. The cost of construction of these check dams are provided in the Chapter 20. Height of the check dam should be regulated 1/3rd to ½ of the gully depth. These check dams should be constructed at regular intervals depending on the gradient, steeper the slope, more check dams are required. More number of check Dams are required in category II areas since the slopes are steep and the velocity of runoff is high.

DESIGN OF A LOOSE BOULDER CHECK DAM



(2) Gully plugging can also be done with brushwood depending on the availability of material, requirements of sites and cost norms. The gully beds should be planted with soil-binders like Sabai grass, *Vetiver* grass, and *Agave*. Generally for brushwood check dams, the height of the fall taken into consideration is 1mt., the maximum width of the gully is 3mt and depth is 0.6 mts. The cost of brushwood check dam is given in the Chapter 20

(b) **Palisading, Agave Planting and Vegetative Bunding**: With the available materials palisading has to be prepared along the contours to counteract the force of water movement.10- 20 mt apart depending on the slope, plantation of grass like Khus Khus, Napier grass, Sachrum etc. should be done. 10-20 mts from the second line Agave should be planted.

(c) **Contour Bunds**: Contour bunds are constructed along the contour to arrest the water velocity. Grass turffing is given on the side slope and the top of the bund .The soil binding species like Vetiver grass are to be planted on the upper slope of the bund with spacing of 0.23 mt. The cost of construction of Contour bunds is given in the Chapter 20.

(d) Staggered Trenches: These trenches would be constructed along the contours. The trench should be of correct size (2mt x 0.5 mt x 0.5 mt), if it is undersize for any reason, equal trenches of more number to be dugout. The soil dug from the trenches should be kept atleast one foot away from the trench in an inverted trapezium manner. This soil should be compacted and dribbled with the seeds. These trenches should not be resorted to when the slope is more than 30%. In these areas the trenches half the original size (2mt x 0.5 mt x 0.5 mt), can be taken up along the contour line. Generally the distance between the two trenches can be 3 mt along the contour and also 3 mts along the slope.

(e) Percolation Tanks: These tanks are to be constructed on the flat areas of the highest points. Generally each tank is to be dug out with dimensions of 5mt x 5mt x 0.5 mt. The width and the depth can vary depending on the availability of the flat surface. The earth dug out from the tanks should be placed in an inverted trapezium and the soil should be compacted. No inlet and outlet to be provided from the percolation tank. The bunds should be treated with seeds Dhanicha (*Sesbania aculeala*), Sun hemp or even Horse gram.

(f) Graded Earthen Guide Bund

- Graded bunds are earthen barriers erected in 0.2 to 0.5% grade (*not contour*) on lands with slopes ranging from 1 to 6%
- They control the effective length of slope and thereby reduce the gain in velocity of run-off flow to avoid gully formations and increase time of concentration.
- This can be laid on the border of forest land or it can be on the line where the hill slope ends and pediment begins.
- The alignment of the bund will be such that the flow path will be as wide as possible.
- Burrow pits should preferably located on the upstream side and discontinuous.
- This bund is not to retain water for very long as in case of reservoir bunds. Its purpose is to change the direction of flow of runoff. Stone pitching on the upstream side may be necessary to prevent scouring.
- This bund will be 1.5 meter high minimum at the ridges.
- If required, surplus escapes in the form of Loose Boulder Structures at ridge points may be provided at suitable (300metre) intervals to allow spilling of water in excess of 1 meter depth of flow.
- The longitudinal slope of this bund should be limited to 0.5%, which can be achieved by providing Loose Boulder Spurs along the flow path, if necessary.

- Where the pediment of the hill is wide enough second / third bund can be put to regulate the runoff generated within the pediment area and the spill over from the graded bund above.
- This bund would be one meter high and have longitudinal slope limited to 0.5%.
- Excess runoff, if any, may be allowed to flow out at the ends.

(g) Field Bund

- Plantations made on the hill pediments and flatter slopes (<6%) should be bunded with field bunds of 60 cm height.
- The spacing of the bund should be limited to 50cm vertical or 30meter horizontal interval whichever less is.
- During heavy showers, excess water from these plots should not flow down to the plot below. Instead it is to be guided to the side plots.

(h) Graded Stone guide bund

- Graded Stone Bunds are suitable for higher slopes of forest land and hill side.
- These bunds will be of loose boulders arranged to form a wall 60cm high and 30cm embedded in the ground.
- These bunds will be across the slope but will run on a grade of 0.2% to 0.5%.
- Spacing ranging from 10 m to 30 m can be adopted depending upon slope.

Gully Control

- Gully plugs are earthen bunds usually constructed for blocking the active and erosion prone gullies for their stabilisation and conversions to WHSs.
- Excess runoff is allowed to flow out through ridges on sides.
- Runoff entering the gully can be controlled by suitably placing a graded bund above gully approach.
- Deeper crevices may need a Sub-surface Dam for more effective control.

(i) Sub-surface Dams

- Groundwater dams are structures that intercept or obstruct the natural flow of groundwater and provide storage for water underground.
- The basic principle of the groundwater dam is that instead of storing the water in surface reservoirs, water is stored underground.
- Their use is in areas where flow of groundwater varies considerably during the course of the year,
- A sub-surface dam intercepts or obstructs the flow of an aquifer and reduces the variation of the level of the groundwater table upstream of the dam.
- It is built entirely under the ground.
- Ideally the dam should be built where rainwater from a large catchment area flows through a narrow passage.
- For all practical purposes it may be assumed that the underground flow line follows the ground contour.
- A thin wall of brick masonry/cement concrete of 15cm thickness or any impervious material shall be erected across the bed level of the drainage line.
- The wall will start from the impervious layer below up to the bed.
- This will allow normal flood discharge but prevent escape of ground water through seepage.

Loose Boulder check dams

- The headwall will have top width of 1m with upstream slope of 1:1 and downstream slope of 1:5.
- The gentle downstream slope of the structure will not only make it stable and durable but also convert the more turbulent flood flow to smooth streamline flow which will go a long way in preventing downstream bank/bed scouring.

- The headwall will have top width of 1m with upstream slope of 1:1 and downstream slope of 1:5.
- The gentle downstream slope of the structure will not only make it stable and durable but also convert the more turbulent flood flow to smooth streamline flow which will go a long way in preventing downstream bank/bed scouring.

- To improve the efficiency of these structures, the upstream side of the head wall should have backfill with compacted earth.
- The slope of the backfill should be 1:3 and covered with turf or a layer of RR stone. This will reduce percolation losses to minimum.

(k) Water Absorption Trenches

- WATs are used both on hill slopes as well as on degraded and barren waste lands for SMC and afforestation.
- The trenches break the slope and reduce the velocity of surface runoff.
- Trenches can be continuous or interrupted.
- The interrupted one can be in series or staggered.
- Intermittent trenches are adopted in high rainfall areas.
- The trenches are to be constructed strictly on contours irrespective of the category.
- Under Odisha conditions their use may be limited to high slopes (>6%) and to heavy impervious (black cotton) soils.

3.6.10.2.5 REHABILITATION IN DIFFERENT TREATMENT SERIES

3.6.10.2.5.1 Kusumkuhuri Treatment Series: In Mahendrapur RF there are nearly 200 ha of hilly area and the remaining portion in plain. The slope is moderate. In Kusumkuhuri RF the area is mostly hilly and the slopes are steep. The top soil is washed away and the rocks are exposed. The measures proposed in this series are

(a) Gap plantation with species like Bamboo, Karanja, Amla, Mahula, Khair and local indigenous species.

(b) Series of soil and moisture conservation measures including check dams at different places like Rathipur nallah etc., contour bunding , staggered trenching and other measures as detailed above in para 11.14.

(c) Silvicultural cleaning in the existing crop.

3.6.10.2.5,2 Nuagan Treatment Series: This series comprises Nuagan, East and West Baruni RFs. In Nuagan RF, the hilly portion is to the tune of 350 ha and the compartment 3, 4, 5 are close to Manjore Irrigation Project. Hence there is lot of biotic interference in these compartments. East and West Baruni RFs have pressure from the people of Boudh for timber, firewood, and poles. Hence these blocks are in a degraded condition. In East Baruni some plain portions are under encroachment. Weeds like Lantana and Eupatorium are also predominant. The rehabilitation measures proposed in this series are:

(a) Gap plantation with species like Asan, Mohula, Khair, Babool, etc.

(b) Gully plugging and other soil conservation measures

(c) Silvicultural Cleaning.

3.6.10.2.5,3 Kutulsingha Treatment Series: This series comprises Kutulsingha and part of Dantarikhol RF. In Kutulsingha, 90% of the area is hilly and in Dantarikhol RF also hills are quite steep. The scope for plantation is very limited in this series. The main emphasis needs to be given on Soil Conservation measures and cleaning operations. Jogibandha nallah originates from Kutulsingha RF and check dams needs to be constructed for this nallah.

3.6.10.2.5.4 Dantarikhol Treatment Series: This series comprises Handapa,Dantarikhol, Kholdangiani and Bankimundi RFs. They have mostly steep hills. Bamboo growth is observed in these blocks, but mostly in a degraded state. The important measures required for this series are:

(a) Gap Plantation with species like Bamboo, Teak and other species.

(b) Major emphasis on soil conservation measures

(c) Silvicultural cleaning.

3.6.10.2.5.5 Ghosar Treatment Series: This comprises Ghosar, Bindhyabasini, Kishoreban, Guja and Bijamalhia RFs. In Ghosar, plain lands are present. Here the emphasis shall be given on gap plantation with species like Babool, Khair, etc. In Bindhyabasini, the emphasis shall be given on boundary maintenance as this is the boundary block between Athamallik and Rairakhol Divisions. Cleaning and Gully plugging are recommended for this block. In Guja the slopes are quite steep and some portions are also encroached. Trenching is required to prevent the encroachments. Gap plantations with species like Asan, Arjun, Khair and other species is recommended. In Kishoreban and Bijamalhia, the area is comparatively plain or having moderate slope. In these areas gap plantations with species like Asan, Mahula, Arjun, etc. is required. Soil Conservation measures like contour bunding, staggered trenches and vegetative bunding are recommended.

3.6.11 Subsidiary silvicultural operations cleaning and thinning :

Subsidiary silvicultural operations cleaning and thinning are not applicable in this treatment series. The following silvicultural treatment and thinning are prescribed in the year of creation and preferably before the onset of monsoon.

3.6.11.1 Silvicultural Treatment

1. All high stumps will be cut closed to the ground to encourage the plant. No felling/ removal of trees are permitted except the dead & diseased tree.
2. Removal of invasive weeds.
3. Cleaning operation is carried out for removal of congestion with an intention to encourage locally restricted species.
4. Singling out of the coppice shoot to be required to allow for growth of promising one.

3.6.11.2. Thinning :

If the crop is found to be congested, thinning operations shall be carried out so as to afford better opportunity of growth to the crop so retained after thinning. However, the thinning in general would include the following conditional operations :-

- It should be restricted to the congested pole crop only that is younger age classes and limited to the species with girth at breast height less than 90 cms.
- Marking shall be done on the lines of "C" grade thinning which is restricted to removal of only 'dominated' &'suppressed' stems besides removal of some 'co-dominant' stems as well[Dominated stems have height about $3/4^{th}$ where as Suppressed stems are about half to $5/8^{th}$ of the height of the predominant stems. The Dominant stems comprise of all trees which form the upper most canopy and are divided into (i) Predominant trees comprising of the tallest trees which determine the general top level of canopy and (ii) Codominant trees which are about $5/6^{th}$ the height of the predominant.]
- No thinning shall be carried out in open areas nor any fruit bearing species such as Mahula, Mango, Tamarind, Amla, Chara, Harida, Bahada, Bela,Kusum etc shall be thinned out whatever be the extent of congestion.
- Limit on removal of stems vis-a-vis retention per hectare shall be governed by the formula D=0.5[(G/10)+1] where 'D' is the distance between two stems in meters after thinning and 'G' is the average girth at breast height of stems in cms.
- As thinning markings are to be done very sparingly with meticulous reflection of mind and extreme silvicultural restraints, this will need prior approval of DFO.

3.6.12 : Regeneration:

The following activities are proposed towards assisted natural regeneration.

(i) Assisted Natural Regeneration with gap planting.

10% of each coupe shall be covered under ANR with gap planting of 200 plants/ Ha; 10% of each coupe shall be covered under ANR with gap planting of 400 plants/Ha except the areas included under VF.

(ii) Assisted Natural Regeneration without gap planting in balance 80% of the coupe area except the areas included under VF.In case of gap planting, planting of locally desirable species shall be encouraged and taken up in prominent blank patches. The local indigenous species shall be preferred for plantation. At the same time due consideration shall be given for plantation of bamboo, NTFP species including fruit bearing species. Fruit bearing species shall be tried in the areas close to villages.

(i) During field verification, it is observed that there is virtually no planted stock in the VFs. It is proposed to restock the entire VF areas (136Ha) with block plantation of 1600 plants/Ha. The species planted should be of such species which can meet the demand of firewood & fodder species.

Depending upon the local factors, particularly soil condition, the species to be raised shall be carefully selected for gap plantation. Since the primary objective is to restock these areas and to improve the existing forest growth, preference should be given to local indigenous species that have the best potential to adapt to these sites. Generally species like Asan, Arjun, Mahula, Bamboo, Khair, Babool, Karanja, Amla, etc. are suitable for different areas proposed in this Working Circle. Nevertheless, a list of species that can be grown for treatment of different sites in this working circle is presented in **Table No: 3.14** (Source: Handbook of Afforestation technique by Sri R. C. Ghosh)

Table: 3.14 SPECIES SUITABLE FOR PROBLEMATIC SITES

Site	Measure To Be Taken	Species To Be Planted
Ravine	1. Soil and water conservation measures 2. Full protection from grazing and fire 3. Safe disposal of run off 4. Grassland development 5. Afforestation	*Dalbergia Sissoo, Albizzia lebbek, Prosopis juliflora, Accasia Catechu, Acacia niloteca, Azadirachta indica, Agave americana, Agave sisalana, Eulaliopsis binata*
Laterite Soil	1. Soil and water conservation measures 2. Full protection from grazing and fire 3. Afforestation	*Dendrocalamus strictus, Madhuca indica, Acacia auriculiformis, Bombax ceiba, Soymida febrifuga, Cleistanthus collinus, Albizzia lebbek, Agave spp, Cassia siamea, Hardwickia binata, Azadirachta indica, Acacia nilotica, Acacia leucophloea, Derris indica, Dalbergia sisoo,Tamarindus indica, Eulaliopsis binata, Ailanthus excelsa, Acacia catechu.*
Skeletal Soils	1. Contour bunding, trenching 2. Afforestation 3. Soil and water conservation measures 4. Protection from grazing and fire 5. Showing grasses 6. Seed dibbling / Afforestation	
Water logged areas	1. Preparation of mounds 2. Planting of tall plants 3. Application of anti termite chemicals 4. Early planting 5. Drainage	*Anthocephalus chinensis, Syzygium cumini, Terminalia arjuna, Bombax ceiba, Lagerstroemia speciosa, Dalbergia sisoo, Derris indica, Acacia nilotica.*

Grass plating is the best answer for treatment of exposed soils in the eroded areas. Local and indigenous grasses should be preferred. Several researches had been undertaken on afforestation and the plantation of grasses on eroded sites by the Indian Council of Agricultural Research (ICAR). The efficiency of grasses in erosion control is very well known. A list of grasses suitable for control of soil erosion is presented in **Table No: 3.15** (Source: The grass cover of India by P.N. Dabadghao and R.A. Shankar Narayan, ICAR)

Table: 3.15	IMPORTANT GRASS SPECIES	
Species	Type	Habitat Factor
Aristida setacea	Fodder	Brown soil, Sandy loam with gravel, PH 7.0
Arundinella bengalnensis	Fodder	Yellowish brown soil, Sandy loam, PH 6.2
Arundinella nepalensis	Fodder	Slopes having good drainage and permeability, Sandy loam PH 6.5
Bothriochloa intermedia	Fodder	Grows on a variety of soil in subtropical conditions in level and hilly topography
Cenchrus ciliavis	Fodder	Grows in semi arid zone and sandy soil, PH 7.5 to 7.7.
Chrysopogon aciculatus	Fodder	It is a creeping rhizome and prefers sandy loam, acidic soils on level or moist slopes, PH 5.1 to 6.1 Can withstand heavy grazing, cannot survive on dry stones and sandy soils. Promising species for stabilization of embankments
Chrysopogon fulvus	Fodder	Prefers hilly gravely, black cotton soils and red soils and low level of moisture
Chrysopogon gryllus	Fodder	Strong acidic soil on high hills, PH4.2
Cymbopogon coloratus	Non-fodder	Occurs on a variety of sites of dry areas having gravelly to sandy loam exposed rocks, acidic to neutral soil on hill and plains
Cymbopogon jwarancusa	Non-fodder	Prefers level to hilly topography, sandy and rocky soil, PH6.5 to 7.5
Cymbopogon martini	Non-fodder	Wide distribution, PH 5.2 to 7.0
Cynodon dactylon	Fodder	Wide distribution, prefers moist and level land, withstands moderate grazing and trampling
Dactyloctenium sindicum	Fodder	Dry areas, prefers slightly alkaline soil
Demostachya bipinnate	Fodder	Prefers semiarid and arid condition, can tolerate PH up to 9.5
Dichanthium annulaltum	Fodder	A species of level land prefers sandy loam to loamy soil moist areas
Dichanthium caricosum	Fodder	A species of level land prefers sandy loam to loamy soil moist areas
Dimeris fuscescens	Fodder	Prefers good drainage and permeability, PH4.2
Eleusine compressa	Fodder	A grass of arid region

Eragrostis coarctata	Fodder	A xerophytic grass
Eremopogon foveolatus	Fodder	Grows in skeletal soil, PH 6.6 to 7.5
Eulalia trispicata	Fodder	Prefers deep soil and low land
Eulaliopsis binata	Non-fodder	Can grow in slopes up to 50% hot dry localities, withstand forest fire
Heteropogon contortus	Non-fodder	Shallow eroded, black or red soil, PH 6.8 to 7.0
Imperata cylindrica	Fodder	Prefers moist swampy areas, PH 4.0 to 7.5
Ischaemum indicum	Fodder	Low lying wet area, heavy black soil, PH7.1 to 8.5
Ischaemum timorense	Fodder	Damp land
Iseilema spp	Fodder	Low lying area, black soil, PH 6.1 to 7.4
Lasiurus spp	Fodder	Brown sandy soil, PH 8.5, cannot stand grazing
Leersia hexandra	Fodder	Prefers low lying lands, semi aquatic condition
Narenga porphyrocoma	Fodder	Level land with good drainage and permeability
Neyraudia regnaudiana		Favors moist sandy loam area, PH 5.0
Paspalum conjugatum		Moist area
Pharagmites karka		Low lying land, PH 4.5
Pseudanthistria hispida		Clay soil with good drainage, PH 6.0
Saccharum spp		Mesophytic habitat
Sclerostachya fusca		Clay soil in depression of Sal forest, PH 4.75
Sehima nervosum	Fodder	Wide range of soil, deep soil, PH 6.5
Sporobolus indicus	Fodder	Withstand inhospitable soil, drought, PH 4.5
Sporobolus narginatus	Fodder	Level sandy tract of arid zone
Themeda triandra	Fodder	Gravelly soil on hills, PH acidic to neutral
Vetiveria zizaniodes	Non-fodder	Ill drained land where water table is high. Soil sandy loam to clay, PH 4.0 to 7.5

Basing on the research findings of the ICAR, the list of grasses suitable for soil conservation measures in this division are presented in **Table No: 3.16.**

GRASSES SUITABLE FOR THE DIVISION		
Habitat Factor	**Species**	**Type**
Red Soil	Chrysopogon fulvus	Fodder
Black Cotton Soil	*Chrysopogon fulvus*	Fodder
Heavy Black Soil	*Iseilema spp*	Fodder
Skeletal Soil	*Eremopogonfoveolatus*	Fodder
Deep Soil	*Sehima nervosum*	Fodder
Sandy Soil	*Sporobolus marginatus*	Fodder
Eroded Soil	*Heteropogon contortus*	Non-fodder
Wide range of Soils	*Cymbopogon martini*	Non-fodder
	Cynodon dactylon	Fodder

3.6.13 : Associated regulations and measures

3 .6.13.1 Grazing: Livestock Grazing shall be totally prohibited. Lopping is strictly prohibited.

3.6.13.2 : Regulated firewood removals :

In case of coming under **VSS** areas; firewood has to be allowed for removal as per JFM Resolution. In areas not protected by **VSS**; the fallen trees fit for firewood has to be stacked and delivered to OFDC Limited to avoid fire hazard.

3.6.13.3Fire Protection: The coupes shall be protected against fire. The Orissa Forest (Fire Protection) Rules 1979 shall be strictly followed. The coupe and plantations area should be rigidly protected from fire. Awareness regarding fire hazard and fire safety should be created in the villages adjacent to the forest area. Appointment of suitable temporary firewatchers from the village adjoining to the forest blocks should form a part of the subsidiary operations.

3.6.13.4. Forest protection from illicit felling :

The coupe shall be protected against illegal felling of trees by conducting frequent patrolling in the coupe areas and supplemented by deployment of protection squads.

3.6.13.5.Unregulated removal of NTFP and MAPs :

The coupe shall be protected against unregulated removal of NTFP and MAPs by generating awareness among the primary gatherers.

3.6.13.6. Soil and moisture conservation measures:

Soil and moisture conservation measures required shall be assessed. The cultural operations such as gully plugging, contour bunding, dry stone packing, construction of check dams etc. shall be carried out in subsequent years.

3.6.13.7. Encroachments, illegal mining, jhumming:

All possible sincere efforts need to be taken to prohibit encroachments, illegal mining and jhumming by frequent patrolling of the coupe areas.

3.6.13.8 Restriction on felling along rivers, highways, hill slopes :

: Not applicable as no felling is prescribed.

3.7 Control Form: The following control forms are suggested.

(a) Silvicultural Control Form: For the control of all silvicultural operations, such as felling, subsidiary cultural operations, cleanings, thinning, burnings etc., the silvicultural control form suggested is as follows.

SILVICULTURAL CONTROL FORM									
The format of coupe control form is as under									
Working circle periodic block		Fellings series cutting section	Localities prescribed localities suggested				Coupe control form		
			As carried out				Coupe No.		Page
							Excess (+) or deficit (-)		
Prescription in brief	W.P. para	Year due	Year	Block/ Compt.	Area	Volume	Area	Volume	Remarks and Sanction
1	2	3	4	5	6	7	8	9	10

(b) NTFP Control Form: For controlling and maintaining a record of all NTFPs harvest so as to make the removal/ harvest of NTFPs remain sustainable; the following control form is suggested.

NTFP CONTROL FORM

Format to incorporate the NTFPs:

Working circle periodic block		Felling series cutting section	Localities prescribed localities suggested					Coupe control form			
			As carried out					Coupe No.		Excess(+) or deficit (-	Page
Prescription in brief	W.P. para	Year due	Year	Block/ Compt.	Area	Name of NTFP with scientific name of spesies	Vol/ Qty	Area	Vol/ Qty		Remarks and Sanction
1	2	3	4	5	6	7	8	9	10		11
*Quantity may be given in specified unit viz. number/weight/volume according to type of NTFP. Bamboos may be quantified in notional											

CHAPTER-4

4.1 Name of Working Circle: Plantation Working Circle

This working circle includes those areas where the plantations were raised earlier. In Athamallik Division, the forests generally have a dense growth.. Earlier the forests used to be cleared in certain patches, and teak plantations were raised. Where ever such plantations are raised, separate compartment numbers like 1b, 2b, 3b, etc. were given. In these compartments along with teak, other species like Sal, Bandhan, Kendhu, Kasi, Mahuala, Amla, Chara, Dhaura, etc. also have good growth. In the outgoing plan, there was prescription of 190 Ha Block Plantation in the Plantation Working Circle but due to non-availability of site 80 Ha of Plantations have been raised inside the Selection WC where the natural growth is quite good. In the revised plan, no plantation is prescribed.

4.2 General constitution of working circle:

Total area allotted to this Working Circle is **1826.7372 Ha**. It comprises of existing plantations and 24 VF area 136.942 Ha.. The statement by Ranges, blocks and compartments included in the circle indicating gross area is furnished in **Table No.4.1** as follows.

Table No.4.1: List of areas included in plantation working circle

Sl. No.	Name of the Range	Forest Block	Compartments	Area in Ha
1	Athamallik	Mahendrapur RF	1	100.11
Total				**100.11**
2		Taleipathar RF	1	40.23
		Kutulsinga RF	1	20
			3	20
			6	40
			7	40
		Dantarikhol RF	2	120
			3	160
Total				440.23
3	Madhapur	East Baruni RF	3	10
			5	20
		Nuagaon RF	2	43
			3	67
		Naktideul PF		12.869
Total				**152.869**
4	Handapa	Dandarugudi RF	1	162.31
		Kholadangiani RF	1	53.93
		Kadalimunda RF	1	59.5
		Dantarikhol RF	1	90.82
			7	15.25
			8	47
		Bankimundi RF	1	80.23
			2	13
			3	30
		Nua Kuajhari PF		60.8749
		Papasara PF		22.9262
		Bileinali PF		9.8139
		Kuajhari PF		49.7619
Total				**695.417**

5	Bamur	Northern RF	5	30
			12	20
			13	30
		Bindhyabasini RF	1	12.49
		Kishoreban RF	1	34.53
		Ghosar RF	1	30
			2	30
			3	20
		Bijamalia RF	1	55
		Barapadar PF		39.1493
Total				**301.169**
Village Forest Area				
Athamallik		Malipadar	7	
do		Manikpathar	5	
Madhapur		Gautampur	5	
do		Singarimunda	13	
do		Ratanapada	5	
do		Baradakata	10	
do		Hatuapada	1.6188	
do		Mundapada	5	
do		Buraghta	5	
do		Kiakata	8.2639	
do		Dhuliapada	5	
Handapa		Madhupur	5	
do		Jharboinda	0.6	
Handapa		Jharboinda	5	
do		Asurabahal	10	
do		Gunurimunda	5	
do		Baninali	5	
do		do	5	
do		Thelukunali	3.76	
Bamur		Gurujanga	10	
do		Sarabhanguni	5	
do		Dakuamunda	5	
do		Bairagipali	5	
do		Naktinali	2.6993	
			Total	**136.942**
Total area of Plantation Working Circle			**G.Total**	**1826.74**

4.3 General characteristics of vegetation:

4.3.1 Growing stock:

The status of existing old teak plantations based on enumeration carried out in the previous working plan periods is furnished in **Table No.4.2** as below.

Table: 4.2 CONDITION OF THE EXISTING TEAK PLANTATION IN VARIOUS BLOCKS										
Name of Block	Comptt. No.	Total Area of Plant. in Ha	Avg. height of tree in mt.	Number of Trees per Ha						
				30 -59	60 - 89	90 - 119	120 - 149	150 - 179	>180	Total/ Ha
Mahendrapur	1	50.11	3	494	31	1				526
Talaipathar	1	40.23	4	969	379	10				1358
East Baruni	5	20	4	800						800
	2	43	3.5	850						850
Nuagan	3	67	3	1175						1175
Dandarugudi	1	162.31	5	255	50			25		330
Kholdangiani	1	53.93	3	675	350					1025
Kadalimunda	1	59.5	6	350	200	112	25	50		737
	1	90.82	5	175	88					263
	7	15.25	4	263	106	6				375
Dantarikhol	8	47	4	113	50					163
	1	80.23	4	1075	125					1200
	2	13	3	612	25					637
Bankimundi	3	30	3	950	25					975
	1	20	3	1025	50					1075
	3	20	4	825	350	50				1225
	6	40	3	1050						1050
Kutulsingha	7	40	4.5	675	250					925
	2	120	4.5	784	75	3				862
Dantarikhol	3	140	4	1000	50					1050
Bindhyabasin	1	12.49	3	50						50
Kishoreban	1	34.53	4	625	25					650
	1	30	4	650	25					675
Ghosar	2	30	3	625						625
Bijarnalhia	1	55	3.5	600	50					650
		1314.4	**1314.4**	**2628.8**	**5257.6**	**10515.2**	**21030.4**	**42060.8**	**84121.6**	**19251**

4.3.2 Special problems like menace of weeds and invasive species growth:

Weeds such as Lantana & Eupatorium are noticed in the plantation areas. However it is not a serious problem in the plantation area.

4.4 Felling series, cutting sections and JFM Areas :

Here are existing teak plantations in Mahendrapur RF, Talaipathar RF, Dandarugudi RF, Kholdangiani RF, Kadalimunda RF, Dantarikhol RF, Bankimundi RF, Kutulsingha RF, Kishorban RF, Ghosar RF and Bijamaliha RF . Basing on the digital enumeration carried out in the outgoing plan a scheme was prepared for its harvest which could not be worked out due to want of approval from the proper quarter. It is therefore prescribed for harvesting of the trees above 120 Cm. GBH of the said plantation during the revised plan period. In the current working plan period, enumeration of trees were carried out exclusively in the areas where trees of exploitable girth & pre exploitable girth exist. The status of existing old teak plantations based on enumeration carried out in the current working plan period is furnished in **Table No. 4,3** as below.

On comparison with the previous enumeration, it is observed that there is loss of trees in all most all the areas. Hence, it is proposed to constitute felling series for conversion of matured trees so as to avoid further loss in future. Considering very small areas involved, it is proposed to constitute only one Felling series. However, there will be 5 plantation series to cover the entire areas coming under plantation working circle and this felling circle will be an overlapping felling circle.

4.5 Blocks, Compartments and JFM Area :

Plantation series, Range, Block , Compartments, area in Hectare and JFM areas are furnished in **Table No.4.4** as below.

Table: 4.3 CONDITION OF THE EXISTING PLANTATION IN VARIOUS BLOCKS										
Name of Block	Compt No.	Total Area of Plant. in Ha	Avg. height of tree in mt.	Number of Trees per Ha						
				10 to <20	20 to <30	30 to <40	40 to <50	50 to <60	>60	Total/ Ha
Talaipathar	1	40.23		Only coppice shoots available						
Dandarugudi	1	162.31	6	63	87.5	37.5	30	10	0	234
Kadalimunda	1	59.5	6.5	5	6.5	21	10	1	1.5	45
Kutulsingha	1	20	12.5	68	94	58.5	40	11	1.5	279
			Only coppice shoots available with existing trees U 20 cm girth							
	3	20								
	6	40								
	7	40								
	20	382.04								

Table No.4.4 List of Range wise Blocks, Compartments, area in Ha & JFM areas					
Name of the Range.	Name of the Plantation series.	Forest Block/ Village Forest	Compartment Numbers.	Area in Hectare.	Area under JFM Committee in Hectare.
Athamallik	Mahendrapur	Mahendrapur RF	1	100.11	Nil
	Total			**100.11**	
	Kutulsingha	Talaipathar	1	40.23	Nil
Dhandatopa		Kutulsinga	1	20	Nil
			3	20	Nil
			6	40	Nil
			7	40	Nil
		Dantarikhol	2	120	Nil
			3	160	Nil
	Total			**440.23**	
Madhapur Range	Nuagaon	East. Baruni	3	10	Nil
			5	20	Nil
		Nuagaon	2	43	Nil
			3	67	Nil
		Naktideul		12.869	Nil
	Total			**152.869**	
Handapa Range	Dantarikhol	Dandarugudi	1	162.31	40
		Kholadangiani	1	53.93	Nil
		Kadalimunda	1	59.5	Nil
		Dantarikhol	1	90.82	Nil
			7	15.25	Nil
			8	47	Nil
		Bankimundi	1	80.23	Nil
			2	13	Nil
			3	30	Nil
		Nua Kuajhari		60.8749	Nil
		Papasara		22.9262	Nil
		Bileinali		9.8139	Nil
		Kuajhari		49.7619	Nil
	Total			**695.4169**	Nil
Bamur Range	Ghosar	Bindhyabasini	1	12.49	Nil
		Kishoreban	1	34.53	Nil
		Ghosar	1	30	Nil
			2	30	Nil
			3	20	Nil
		Bijamalhia	1	55	Nil
		Northern	5	30	Nil
			12	20	Nil
			13	30	Nil
		Barapadar		39.1493	Nil
	Total			**301.1693**	

4.6 Special objectives of management:

The special objective of the management of this Working Circle is within the scope of general objective of the management for the entire division. These are as follow:

a. To enhance the land productivity through soil and moisture conservation.
b. To increase the biodiversity for improvement of local ecology.
c. To carry out suitable tending operations in the existing old plantation.
d. To cut the matured teak trees having more than 120 cm girth in the plantation areas.

4.6.1 Analysis of the crop:

The exploitable girth class of teak trees are present only in few blocks. In these blocks the matured trees need to be cut immediately, otherwise there is a problem of illicit felling and it is very difficult to protect the plantations. Even in some compartments, the illicit removal is going on and most of the time and energy of the Division administration goes on protecting these teak trees. At the time of working of these plantations, site specific scheme needs to be prepared and approved by the Regional Chief Conservator of Forests. In some cases the plantations are protected by the VSS members. In other cases the main plantations were removed and the coppice shoots are coming up. Hence uniform treatment for all the plantations is not possible. In maximum plantations, the young crop of 30-60 cm and 60-90 cm girth class is more. This crop needs tending operations like pruning, thinning and climber cutting. The Range Officer shall prepare the site-specific treatment of the individual plantation sites, supervised by ACF and shall be duly approved by the DFO. Pruning should be done between 3rd and 7th year of formation. In addition, mechanical thinning shall be carried out in pure Teak and other economic plantations in 10th – 15th year. For example, the thinning regime for Teak is 7th, 13th, 20th, 30th, 40th and 55th year of formation.

4.6.2 Silvicultural System:

No silvicultural system is adopted. The silvicultural operations to be carried out shall include subsidiary silvicultural operations as well as protection, tending and soil and moisture conservation and thinning works in existing plantations.

4.6.3 Rotation Period:

Growth of teak in different plantations is widely variable due to different site conditions, biotic interference and lack of timely tending operations. Final felling of teak is prescribed on achievement of exploitable girth. Since the areas allotted to this circle are to be treated within the plan period, the rotation period of 10 years is fixed to coincide with the plan period.

4.6.4 Harvestable diameters:

Harvestable diameters of matured teak trees having more than 120 cm girth and approach class 91 to 119 cm, in the plantation areas is prescribed.

4.6.5 Reducing factors and reduced areas:

Reducing factors are used for quality and density for species for which yield tables are available. As no yield regulation is required; there is no need for description of reducing factors and reduced areas.

4.6.6 Felling cycle:

As already described, there will be ten (10) plantation tending treatment series and one felling series. The felling series will be an overlapping one. Growth of teak in different plantations is widely variable due to different site conditions, biotic interference and lack of timely tending operations. Final felling of teak is prescribed on achievement of exploitable girth. The plantation tending treatment cycle will be for 10 years to coincide with the working plan period.

4.6.7 Division into periods and allotment to periodic blocks (PB):

This is done for the shelter wood systems and hence not prescribed.

4.6.8 Calculation of the yield:

Basing on smythies'safeguarding formula, the yield of teak trees has been calculated which is furnished in **Table No. 4.5** as below.

According to the Smythies' safeguarding formula the number of Class - II trees (x) per hectare that pass into Class - I within the felling cycle is determined by following formula.

$$X = \frac{F}{T} (II - Z\ \%\ of\ II) \qquad \text{——————} \quad (1)$$

Where

II = No. of trees in pre exploitable girth class or approach class (90-120 cm for Sal and others; 60-90 cm for Bandhan.120-150 Cm for Simili)

X = Number of trees in approach class, which passes into the exploitable class.

F = Felling cycle (10 years)

T = Time period in years that takes approach class to pass into exploitable class (40 years)

Z = Percentage of Class II trees that do not pass into class I in 'T' years, due to mortality or removal in thinning etc. It is taken 45%

The percentage of the trees available for exploitation (Y) is calculated as follows

$$Y = \frac{X}{(I + X/2)} \times 100 \pm A \qquad (2)$$

Where

A = Arbitrary value to get the round figure of Y

X = Number of trees in approach class which passes into the exploitable class

I = Number of trees already existing in the exploitable class.

If the value of 'X' as in equation (1) is substituted in the equation (2) the resulting equation is as follows

$$Y = \frac{2 F II (100 - Z)}{200 I T + F II (100 - Z)} \times 100 \pm A \qquad (3)$$

Table No. 4.5 CALCULATION OF YIELD IN TEAK PLANTATION										
Sl No	Block	Compt No	**Total Area of Plant. in Ha**	Number Of Trees		**No of trees available after passing from class II to I within felling cycle (X)**		Yield %	Limit of Tree per ha.	**After Reduction by 25%**
				Teak		Teak	Teak	Teak	Teak	**Teak**
				I	II	I	II			
1	Talepathar	1	40.23	0	0	0	0	0	0	0
2	Dandaraguda	1	162.31	40	37.5	40	5.16	12	5.4	4
3	Kadalimunda	1	59.5	12.5	21	12.5	2.9	13	2	1.5 or 2
4	Dantarikhol	1	20	0	0	0	0	0	0	0
5		3	20	0	0	0	0	0	0	0
6		6	40	0	0	0	0	0	0	0
7		7	40	0	0	0	0	0	0	0

4.6.9 Table of Treatment operation:

4.6.9.1: In order to execute the treatment operations, 10(ten) annual coupes are constituted to facilitate systematic operations. Care has been taken to delineate the annual coupes in such a manner that continuity of treatment measures is ensured to have sustained efforts.

4.6.9.2: Treatment series: The annual coupe shall be attended to as per the sequence prescribed in the plan. **Table No 4.6** gives the annual coupes (treatment series wise) with its number and the year of treatment along with the name of the Range, forest block, its compartment number for each treatment series. If the subsidiary works could not be taken up due to any reason in one year, those areas will be taken up in the subsequent years in addition to the current year's area. If more funds are available then the area due for working in future should be taken up in the current year.

Status	**Area**
RF	1272.59
PF	195.395
VF	136.942
Total	**1604.93**

Table No-4.6 Plantation Treatment Series									
Year	Coupe No	Range	Forest Block	Status	Copt. No	Area (In Ha.)			
						Copt. Area	Total Area of PF	Plantation Area	Coupe Area
2021-22	I	Athmallik	Mahendrapur	RF	1	424.6		100.11	112.11
			Malipadar VF		-	-		7	
			Manikapatha VF		-	-		5	
2022-23	II	Dhandatopa	Talcipathar	RF	1	186.66		40.23	80.23
			Kutulusingha		1	162.06		20	
			Kutulusingha		3	225.19		20	
2023-24	III		Kutulusing		6	378.16		40	80
			Kutulusingha		7	246.42		40	
2024-25	IV		Dantarikhol		2	276.49		120	120
2025-26	V		Dantarikhol		3	250.83		160	160
2026-27	VI	Madhapur	East Baruni		3	303.84		10	210.752
			East Baruni		5	307.64		20	
			Nuagan		2	226.51		43	
			Nuagan		3	272.57		67	
			Naktideul	PF			12.869	12.869	
			Gautampur	VF				5	
			Singarimunda					13	
			Ratanapada					5	
			Baradakata					10	
			Hatupada					1.6188	
			Mundapada					5	
			Buraghta					5	
			Kiakata					8.2639	
			Dhuliapada					5	

2027-28	VII	Handpa		RF					144.75
			Kholdangiani		1	221.11		53.93	
			Dantarikhol		1	201.24		90.82	
2028-29	VIII	Handpa	Dantarikhol		7	250.59		15.25	224.84
			Dantarikhol		8	146.76		47	
			Bankimundi		1	155.71		80.23	
			Bankimundi		2	136.72		13	
			Bankimundi		3	100.64		30	
			Madhupur	VF				5	
			Jharboinda					0.6	
			Jharboinda					5	
			Asurabahal					10	
			Gunurimunda					5	
			Banimali					5	
			Banimali					5	
			Thelukunali					3.76	
2029-30	IX		Nua	PF			60.8749	60.8749	143.377
			kuajhari						
			Papasara				22.9262	22.9262	
			Bileinali				9.8139	9.8139	
			Kuajhari				49.7619	49.7619	
2030-31	X	Bamur	Bindhyabasini	RF	1	275.84		12.49	
			Kishoreban		1	344.56		34.53	
			Ghosar		1	213.67		30	
			Ghosar		2	354.22		30	
			Ghosar		3	572.64		20	
			Bijamalia		1	216.95		55	
			Northern		5	487.41		30	
			Northern		12	584.33		20	
			Northern		13	454.45		30	
			Barapadar	PF			39.1493	39.1493	
			Gurujanga	VF				10	328.869
			Sarabhanguni					5	
			Dakuamunda					5	
			Bairagipali					5	
			Naktimali					2.6993	
								Total	1604.93

Status	**Area**
RF	1272.59
PF	195.395
VF	136.942
Total	**1604.93**

4.6.9.3 : Felling series : For harvesting of matured teak trees, one felling series is proposed which is furnished in **Table No. 4.7** as follows.

Table No: 4.7 TEAK FELLING SERIES

Range	Year	Coupe No	Block	Comptt. No	Coupe Area
Handapa	2021-22		Dandarugudi	1	
			Kadalimunda	1	
			Total		

4.6.10 Method of executing the felling :

(i) All teak trees above the exploitable girth class shall be marked except for those which is prohibited under marking rule.

4.6.10.1 Operations in Teak Tending Series:

Since the teak plantations are varying in age from 7 years to about 40 years, these are in need of appropriate silvicultural operations to further boost the growth. In fact, they require operations like pruning, thinning and climber cutting. However, the following shall be carried out in the annual coupes.

- Prunning should be done in the plantations that are bushy and branchy.
- Loranthus attacked branches shall be lopped.
- Thinning shall be done in the congested crop.
- Soil and moisture conservation measures.
- Gap plantation of 200 plants/ Ha shall be done over 200 Ha.

4.6.11 Subsidiary silvicultural operations cleaning and thinning:

4.6.11.1 Subsidiary silvicultural operations cleaning and thinning in Teak Plantations:

Since the exact age of these teak plantations could not be ascertained, the detail thinning regime has not been prescribed here. The DFO shall verify the old records to confirm the age of all such plantations and follow the below mentioned stipulations while carrying out the thinning in teak plantations

- The first thinning shall be the mechanical thinning carried out in the 8th year of formation of the plantation and includes removal of alternate plants in each row. During this thinning operations, all the growths including the climbers interfering with teak shall be cut back.
- The second and subsequent thinning to be done will be silvicultural thinning. It should be restricted to the congested crop only. There shall be four such thinning to be carried out in 16th; 25th; 41st; and 65th year respectively.
- These silvicultural thinning to be executed shall be on the lines of 'C' grade thinning. The removal through such thinnings shall be restricted to only 'dominated' & 'suppressed' stems besides removal of some 'co-dominant' stems as well with distance of growing space after thinning to be determined by the formula R=0.75(D+4) where 'R' is the radius of the growing space in feet & 'D' is the average diameter in inches.
- All the trees coming within this circle of growing space shall be felled besides those crops which are found to be interfering with the crown of the 'predominant' & 'co-dominant' trees.
- Thinning shall not be carried out in already open areas. Further, it shall be ensured that these operations do not create a permanent gap in the canopy.
- All thinning are to be done very sparingly with meticulous application of mind and extreme silvicultural restraints. This will therefore need prior approval of the DFO.

Where ever prominent gaps of at least half an acre are existing, those shall be planted with indigenous species.

4.6.11.2 Subsidiary silvicultural operations cleaning and thinning in Misc Plantations:

Growth of the miscellaneous plantations tends to become bushy & branchy for want of pruning & thinning. This is more prevalent in case of miscellaneous plantations with species like Acacia, Chakunda, Sirisa, Gambhar, Amla etc which are in regular need of weedings, pruning and climber cutting. These operations are beneficial in the early years of the formation of the plantations followed with thinning in the later years.

The tending operations which shall be carried out in the miscellaneous plantation tending series are listed out below:-

- Weeding and regular pruning shall be done till the 8th year of plantation.
- All climbers shall be cut.
- All dead trees shall be removed departmentally. However 05 trees per hectare should be retained to meet the habitat requirements of wild animals.
- Thinning shall be done in the congested crop on the lines of 'A' grade & 'B' grade thinning only.
- Gap plantation shall be done where ever required.

4.6.12: Regeneration:

In case of gap planting, planting of locally desirable species shall be encouraged and taken up in prominent blank patches. The local indigenous species shall be preferred for plantation. At the same time due consideration shall be given for plantation of bamboo, NTFP species including fruit bearing species. Fruit bearing species shall be tried in the areas close to villages.

4.6.13: Associated regulations and measures:

4 .6.13.1 Grazing: All the annual coupes shall be closed for grazing. Lopping is strictly prohibited.

4.6.13.2: Regulated firewood removals:

In case of coming under VSS areas; firewood has to be allowed for removal as per JFM Resolution. In areas not protected by VSS; the fallen trees fit for firewood has to be stacked and delivered to OFDC Limited to avoid fire hazard.

4 .6.13.3 Fire Protection: The coupes shall be protected against fire after the completion of main felling. The Orissa Forest (Fire Protection) Rules 1979 shall be strictly followed. The coupe and plantations area should be rigidly protected from fire. Awareness regarding fire hazard and fire safety should be created in the villages adjacent to the forest area. Appointment of suitable temporary firewatchers from the village adjoining to the forest blocks should form a part of the subsidiary operations.

4.6.13.4. Forest protection from illicit felling:

The coupe shall be protected against illegal felling of trees by conducting frequent patrolling in the coupe areas and supplemented by deployment of protection squads.

4.6.13.5.Unregulated removal of NTFP and MAPs :

The coupe shall be protected against unregulated removal of NTFP and MAPs by generating awareness among the primary gatherers.

4.6.13.6. Soil and moisture conservation measures:

Soil and moisture conservation measures required shall be assessed. The cultural operations such as gully plugging, contour bunding, dry stone packing, construction of check dams etc. shall be carried out in subsequent years.

4.6.13.7. Encroachments, illegal mining, jhumming:

All possible sincere efforts need to be taken to prohibit encroachments, illegal mining and jhumming by frequent patrolling of the coupe areas.

4 .6.13.8 Restriction on felling along rivers, highways, hill slopes :

No felling should be done on either side of nullahs, streams , river banks, highways up to 20 mt distance. No felling should be done above 30^0 slope.

4.7 Control Forms: The following control forms are suggested.

(a) Silvicultural Control Form: For the control of all silvicultural operations, such as felling, subsidiary cultural operations, cleanings, thinning, burnings etc., the silvicultural control form suggested is as follows.

SILVICULTURAL CONTROL FORM									
The format of coupe control form is as under									
Working circle periodic block		Felling series cutting section	Localities prescribed suggested localities				Coupe control form		
			As carried out				Coupe No.		Page
							Excess(+) or deficit (-)		
Prescription in brief	W.P. para	Year due	Year	Block/ Compt.	Area	Volume	Area	Volume	Remarks and Sanction
1	2	3	4	5	6	7	8	9	10

(b) Felling Control Form: For controlling and maintaining the record of all trees marked for felling and trees retained; the felling control form suggested is as follows.

FELLING CONTROL FORM									
The format of felling control form is as under									
Working circle periodic block		Felling series cutting section		Localities prescribed suggested			localities (with area)	Coupe control form	
								Coupe No.	Page
Range wise	Area	Species	Diameter class	Trees marked	Unit factor	volume marked	Trees retained	% trees retained	Remarks and Sanction

c) NTFP Control Form: For controlling and maintaining a record of all NTFPs harvest so as to make the removal/ harvest of NTFPs remain sustainable; the following control form is suggested.

NTFP CONTROL FORM										
Format to incorporate the NTFPs:										
Working circle periodic block		Felling series cutting section	Localities prescribed localities suggested					Coupe control form		
			As carried out					Coupe No.		Page
								Excess(+) or deficit (-)		
Prescription in brief	W.P. para	Year due	Year	Block/ Compt.	Area	Name of NTFP with scientific name of species	Vol/ Qty	Area	Vol/ Qty	Remarks and Sanction
1	2	3	4	5	6	7	8	9	10	11
*Quantity may be given in specified unit viz. number/weight/volume according to type of NTFP. Bamboos may be quantified in notional.										

CHAPTER-5

Name of Working Circle:

5.1 Protection Working Circle

5.1.1 General constitution of working circle:

The total area covered under this working Circle is **8436.49 ha**. The area statement by Ranges, Blocks and compartments is furnished in **Table No. 5.1** as below.

Table No. 5.1 Area statement by ranges, blocks & compartments.

Name of the Range.	Name of the Forest Block.	Compartment Nos.	Area in Ha.
Athmallik	Kusumkhuri RF	2	3
		G.TOTAL	**3**
Dhandatopa	Kutulsinga RF	3	2
		4	2.5
		6	2
		7	10
		TOTAL	**16.5**
Madhapur	East Baruni RF	3	26.54
		4	8.53
		5	69.31
		TOTAL	**104.38**
Handapa	Northern RF	24	627.72
		27	374.72
		28	398.43
		29	379.99
		30	473.38
		31	271.67
		32	382.92
		33	383.21
		34	509.39
		35	417.76
		36	402.43
		37	286.6
		39	483.8
		41	288.08
		42	417.46
		TOTAL	**6097.26**
	Handapa RF	1	346.46
		2	81.3
		3	235.14
		5	314.7
		6	231.4
		7	266.15
		TOTAL	**1475.15**
	Kadalimunda RF	1	237.83
	Dantarikhol RF	5	187.83
		G.TOTAL	**7998.07**
Bamur	Ghosar RF	1	50
		2	50
		3	188
		TOTAL	**288**
	Bijamaliha RF	1	26.54
	East Barunie	2	314.54
		Total Area Of Protection Working Circle	**8436.49**

5.2. Forest Types & Density classes:

The forest type and density classes are furnished in **Table No 5.2 & 5.3** as below.

Table: 5.2 BLOCKWISE FOREST TYPES OF ATHAMALLIK DIVISION				
Sl .No.	RF Block	Type of Forest	Area in Ha	% Area
1	Kusumkuhuri	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	120.4	0.22
		(ii) 5B/DS1 Dry Deciduous Scrub	491.64	0.91
2	Kutulsingha	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	1152.64	2.13
		(ii) 5B/DS1 Dry Deciduous Scrub	494	0.91
3	Dantarikhol	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	975	1.8
		(ii) 5B/DS1 Dry Deciduous Scrub	649.64	1.2
4	East Baruni	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	1445.54	2.68
		(ii) 5B/DS1 Dry Deciduous Scrub	161	0.29
5	Northern	(I) 5B/C1c Dry Peninsular Sal Forest	15280	28.35
		(ii) 3C/C2e Moist Peninsular Sal Forest	3894.67	7.22
6	Handapa	(I) 5B/C1c Dry Peninsular Sal Forest	1620	3
		(ii) 5B/C2 Northern Dry Mixed Deciduous Forest	179.21	0.33
7	Kadalimunda	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	268	0.49
		(ii) 5B/DS1 Dry Deciduous Scrub	30.23	0.05
8	Ghosar	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	740.53	1.37
		(ii) 5B/DS1 Dry Deciduous Scrub	400	0.74
9	Bijamalhia	(i) 5B/C2 Northern Dry Mixed Deciduous Forest	108.5	0.2
		(ii) 5B/DS1 Dry Deciduous Scrub	108.45	0.2

Table: 5.3 FOREST CONDITION IN DIFFERENT RESERVED FOREST BLOCKS					
S.No.	**Range**	**Forest Block**	**Density**	**Type of Forest**	**Remarks**
1	Athamallik	Kusumkuhuri	0.3 - 0.4	Open	
2					Getting degraded due to biotic pressure from villages like Luhasinga, Kusumkuhuri, Pataka, etc.
3	Dhandatopa	Kutulsingha	0.2 - 0.3	Open Forests	Degraded due to biotic interference from villages like Kutulsingha, Kantapada, etc.
4	Madhapur	East Baruni	0.2 - 0.3	Open Forests	Degraded due to pressure from Boudh people for firewood, small timber, etc.
5	Handapa	Northern	0.5 - 0.6	Partly Dense	
6		Handapa	0.5 - 0.7	Partly Dense	
7		Kadalimunda	0.2 - 0.3	Open Forests	Degraded, now improving due to protection by Kadalimunda VSS members
8		Dantarikhol	0.2 - 0.3	Open Forests	Degraded due to interference by the villages like Bantol, Berham, Sissookata, etc.
9	Bamur	Ghosar	0.1 - 0.2	Scrub to Open	Biotic interference and Encroachment
10		Bijamalhia	0.2 - 0.4	Open Forests	Degraded due to interference by the villages like Kadalimunda, Tusar, etc.

5.3 General characteristics of vegetation:

5.3.1 Crop composition:

The important species present found in the top canopy are Shores robusta, Terminalia tomentosa, Anogeissus latifolia, Pterocarpus marsupium, Bombax ceiba, Dalbergia paniculata, Lannea coromandelica, Terminalia bellirica, Madhuca indica, Boswellia serrata, Adina cordifolia, Ficus sps., Albizia lebbeck, Schleichera oelosa, Stereospermum colais, Mitragyna parviflora, Diospyros melanoxylon, Buchanania lanzan, Sterculia urens, Dillenia petagyna, Bridelia retusa, Diospyros montana, Dalbergia sisso, Terminalia chebula,Emblica officinalis, Syzygium cumini,

Lagerstroemia parviflora, Cleistanthus collinus, Diosyros embryopteris, Bauhinia retusa, Bauhinia purpuria, Indigofera pulchella, Holarrhena antidysenterica, Cassia fistula, Helicteres isora, Woodfordia fructicosa, Choloroxylon swieterya, Ixora arborea,Gardenia latifolia, Gardenia gummifera, Phoenix acaulis, Grewia tiliaefolia, Clerodendron vixcosum, Oroxylon indicum, Litsea glutinosa etc. The important climbers are *Bauhinia vahlii, Butea superba, Acacia pinnata, Smilax macrophylla, Combretum decandrum, Solena amplexicaulis, Asparagus recemosus, Dioscorea oppositifolia, Dioscorea bulbifera, Ichnocarpus frustescens, Cissampelos pareira* etc. *Dendrocalamus strictus* (Salia Bamboo) is also found.

These areas have little vegetation except in the cooler aspect and the crop is somewhat open and covers many exposed hill tops. At places, this is due to edaphic factors rather than due to climatic conditions. Sal is the dominant species and other important associates of Sal available are Asan, Dhaura, Bija, Jamu, Moi, Amba, Anla, Bahada, Kasi, Kumbhi and Sidha etc. The crop density varies from 0.2 to 0.5. Due to rugged nature of the ground, the open areas of this region are quite susceptible to soil erosion. The areas under active encroachment are bereft of forest vegetation but have adequate regeneration. Infestation of weeds is seen at some places and the magnitude is high in some RFs.

5.3.2 Age class distribution: The crop is mostly middle aged.

5.3.3 Growing stock:

The Growing stock of Northern RF (part) & Handapa RF is furnished in **Table No.5.4** as below.

Table No- 5.4 VOLUME OF THE GROWING STOCK (Cum) OF DANTARIKHOL.							
Enumerated Area : 1623.64 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	19911	23262	29377	20939	13384	106874

VOLUME OF THE GROWING STOCK (Cum) OF NORTHERN R.F.							
Enumerated Area : 19,174.67 ha							
Volume by Species wise and Diameter Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	340774	469409	631176	484686	246596	2.2E+07

VOLUME OF THE GROWING STOCK (Cum) OF HANDAPA R.F.							
Enumerated Area : 1799.21 ha							
Volume by Species wise and Diameter Class wise							
Sl No	**Species**	**10 < 20**	**20 < 30**	**30 < 40**	**40 < 50**	**50 >**	**Total**
	Total	**28607**	**36204**	**48118**	**34046**	**16725**	**163701**

VOLUME OF THE GROWING STOCK (Cum) OF BIJAMALIA							
Enumerated Area 216.95 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	3480	5063	6920	6407	3660	25530

VOLUME OF THE GROWING STOCK (Cum) OF GHOSAR							
Enumerated Area :1140.3406 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50>	Total
	Total	4314	6375	8183	8501	4338	31711

VOLUME OF THE GROWING STOCK (Cum) OF EAST BARUNI R.F.							
Enumerated Area : 1606.54 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50>	Total
1	Total	26728	13886	8645	5310	7010	61579

VOLUME OF THE GROWING STOCK (Cum) OF KUSUMKUHURI.							
Enumerated Area : 612.04 ha							
Volume by Species wise and Dia Class wise							
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >	Total
	Total	964	1119	1319	1041	778	5221

VOLUME OF THE GROWING STOCK (Cum) OF KUTULSINGHA						
Enumerated Area 1644.09 ha						
Volume by Species wise and Dia Class wise						
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >
	Total	25873	27447	32532	24377	28481

VOLUME OF THE GROWING STOCK (Cum) OF KADALIMUNDA						
Enumerated Area :297.33 ha						
Volume by Species wise and Dia Class wise						
Sl No	Species	10 < 20	20 < 30	30 < 40	40 < 50	50 >
	Total	3753	4568	5912	4077	2214

5.3.4 Status of regeneration:

During sample point survey, status of regeneration has been assessed. Regeneration status of balance part of Northern RF, Handapa RF is furnished in Table No. 5.5 as follows.

Table No. 5.5 Status of regeneration of Northern RF

Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	206	24	9	2	4	Fair
2	212	24	12	1	1	Fair
3	207	24	14	11	4	Good
4	208	24	7	6	1	Good
5	209	24	10	3	1	Good
6	211	24	10	2	2	Fair
7	26	24	7	2	2	Fair
8	210	24	6	2	0	New
9	67	27	5	3	3	Fair
10	66	27	3	5	4	Deficient
11	65	27	4	6	2	Deficient
12	113	28	9	4	1	Good
13	114	28	21	4	0	New
14	116	28	6	2	1	Good
15	117	28	7	3	0	New
16	119	28	10	3	3	Fair
17	120	28	9	3	1	Good
18	131	29	13	7	6	Good
19	129	29	12	0	4	Fair
20	128	29	13	6	1	Good
21	60	30	4	4	4	Deficient
22	61	30	5	2	4	Fair
23	63	30	4	4	4	Deficient
24	62	30	4	2	5	Fair
25	16	30	4	2	6	Fair
26	74	31	3	5	4	Deficient
27	73	31	4	7	1	Deficient
28	98	32	4	0	7	Fair
29	95	32	3	0	6	Fair
30	96	32	4	0	4	Fair

31	97	32	3	0	6	Fair
32	122	33	7	10	0	New
33	123	33	5	0	9	Fair
34	121	33	12	9	1	Good
35	126	33	7	9	1	Deficient
36	196	34	14	1	0	New
37	197	34	7	3	1	Good
38	198	34	4	0	2	Fair
39	199	34	7	3	1	Good
40	200	34	16	3	1	Good
41	159	35	9	1	9	Fair
42	160	35	16	2	7	Fair
43	161	35	11	5	1	Good
44	258	35	20	5	0	New
45	254	36	13	1	2	Fair
46	255	36	20	4	1	Good
47	253	36	4	2	8	Moderate
48	256	36	10	12	0	New
49	252	36	8	3	3	Fair
50	221	37	5	5	4	Deficient
51	220	37	5	11	1	Moderate
52	166	39	3	1	1	Fair
53	164	39	4	2	5	Fair
54	250	41	4	2	8	Fair
55	251	41	8	8	1	Deficient
56	263	42	22	2	0	New
57	262	42	21	8	0	New
58	265	42	4	0	7	Fair
59	264	42	11	10	0	New
		TOTAL	**506**	**223**	**166**	**GOOD**

Handapa RF

Sl No.	UID No	Compt. No	No of seedlings	No of Saplings	No of Adults	Status of regeneration
1	279	1	9	7	1	Good
2	30	1	0	0	0	No
3	276	2	30	2	2	Fair
4	277	2	15	4	4	Fair
5	35	3	10	9	1	Good
6	36	3	6	7	1	Deficient
7	281	3	13	8	0	New
8	278	1	0	0	0	No
9	283	4	28	2	5	Fair
10	284	4	23	7	8	Fair
11	285	4	11	10	0	New
12	286	4	12	6	1	Good
13	292	5	13	2	4	Fair
14	293	5	11	7	0	New
15	295	5	9	7	1	Good
16	296	6	4	4	6	Deficient
17	297	6	8	6	2	Good
18	298	6	3	4	3	Deficient
19	288	7	9	6	1	Good
20	289	7	9	5	1	Good
21	290	7	13	8	1	Good
22	291	7	10	7	1	Good
		TOTAL	**246**	**118**	**43**	**GOOD**

5.3.5 Special problems like menace of weeds and invasive species growth:

Weeds such as Lantana & Eupatorium are present but it is not a serious problem.

5.4: Felling series, cutting sections and JFM areas:

Considering Protection working circle; No felling series is prescribed. However protection series are constituted by uniform distribution of area under the protection W.C. This has been done mainly for administrative convenience and better implementation of the prescriptions. Accordingly 3 Treatment series are proposed. The details of treatment series showing existing village level JFM committees is furnished in Table No. **5.6.**

TABLE NO 5.6 List of Protection series				
Name of the Treatment series.	Forest Block/ Village Forest	Area in Hectare.	Name of the JFM Committee	Area under JFM Committee in Hectare.
UDOL	Northern R.F	3292.04	Udal	30
	Kusmkuhuri	3		
	Kutulusingha	16.5		
BARUNI	Northern R.F	2805.22	Nil	Nil
	East Baruni R.F	104.38	Nil	Nil
HANDAPA	Handapa RF	1475.15	Kholaregeda	100
			Ichhapur	60
			Kanteikolia	100
	Kadalimunda RF	237.83	Kadalimunda	100
			Jamunali	100
	Dantarikhol RF	187.83	Dhundi	62.53
	Ghosar RF	288	Nil	Nil
	Bijamaliha RF	26.54	Nil	Nil

5.5 Blocks, compartments and JFM area :

Protection series, Range, Block , Compartment area in Hectare and JFM areas are furnished in **Table No 5.7** as below.

Table No 5.7. Blocks, Compartments & JFM areas					
Name of the Range.	Name of the Protection series	Forest Block/ Village Forest	Compartment Number. .	Area in Hectare.	Area under JFM Committee in Hectare.
Handapa	Udol	Northern RF	24	627.72	30
			27	374.72	Nil
			28	398.43	Nil
			29	379.99	Nil
			30	473.38	Nil
			31	271.67	Nil
			32	382.92	Nil
			33	383.21	Nil
Athmallik		Kusumkuhuri	2	3	Nil
Dhandatopa		Kutulsingha RF	3	2	Nil
			4	2.5	Nil
			6	2	Nil
			7	10	Nil
			Total	**3311.54**	
Handapa	Baruni	Northern RF	34	509.39	Nil
			35	417.46	Nil
			36	402.43	Nil
			37	286.6	Nil
			39	483.8	Nil
			40	288.08	Nil
			41	417.46	Nil
Madhapur		East Baruni RF	3	26.54	Nil
			4	8.53	Nil
			5	69.31	Nil
			Total	**2909.6**	
Handapa	Handapa	Handapa RF	1	346.46	100
			2	81.3	Nil
			3	235.14	Nil
			5	314.7	60
			6	231.4	100
			7	266.15	Nil
		Kadalimunda RF	1	237.83	200
		Dantarikhol RF	5	187.83	62.53
Bamur		Ghosar RF	1	50	Nil
			2	50	Nil
			3	188	Nil
		Bijamaliha RF	1	26.54	Nil
				Total	**2215.35**	
				Grand Total	**8436.49**	

5.6 SPECIAL OBJECTIVES OF MANAGEMENT

a. To evict the encroachment in few blocks like Ghosar, Kusumkuhuri, Kutulsingha, Baruni etc.
b. To restock the barren and the encroached areas.
c. To enhance soil productivity through soil and moisture conservation measures.
d. To enhance the communication and protection network.
e. To protect the tiger habitat exclusively.

The areas requiring very specific silvicultural treatment and administrative measures have been covered under this working circle. The working circle includes ecologically fragile areas of high hills around water sources and hilly slopes, which are susceptible to environmental degradation. This working circle covers some portion of RFs which are under encroachment for cultivation and habitation purposes. This also includes some forest blocks under shifting cultivation in the past having little vegetation and containing sufficient root stocks for regeneration.

5.6.1 Analysis of the crop :

The abstract of regeneration survey reveals the regeneration status of various species.

Northern RF: In this block, the regeneration of Sal is good. The regeneration of Asan, Kendu is good compared to the other blocks. Another interesting observation is that the Jamun, Piasal, Amla regeneration is also found in many compartments like 11,12,15,17, 19, etc. The regeneration of Dhaura is poor compared to other blocks. Generally in Sissoo, Bandhan, Gambhar, Kasi, Kurum, Mundi, Harida, Bahada, Bel, Mango, Sidha the regeneration status is poor.

Handapa: In this block the regeneration phenomenon resembles to that of Northern RF. The difference is that the regeneration of Piasal, Jamun, and Amla is generally poor.

Other Blocks: In other blocks Sal regeneration is generally observed to be fair to good. In few blocks like Kutulsingha, Kadalimunda, Kishoreban Sal regeneration is poor. The regeneration of other species like Asan, Dhaura, Kendu, Karada, Chara, Mahuala is found in all the blocks except few areas like Asan regeneration is deficient in Kusumkuhuri, Kadalimunda, Dhaura regeneration is poor in Kusumkuhuri, Kutulsingha etc. Some amount of regeneration of Kusum is observed in Dantarikhol and Kishoreban blocks.

5.6.1.1 Assessment of NTFP: During sample point exercise, the assessment of NTFPs has been carried out, which is furnished as below.

Abstract of NTFP items in Handapa RF Area surveyed: 2.20 Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	540	9	Bahada Fruit	0
2	Chara Seed	42	10	Amala Fruit	0
3	Kendu fruit	175	11	Kusuma seed	0
4	Jamun berry	164	12	Simil cotton	0
5	Mahula flower	440	13	Mango fruit	0
6	Mahua seed	127	14	Mango Kernel	0
7	Kumbhi bark	0	15	Bhalia fruit	2
8	Harida fruit	0	16	Bela Fruit	0
			17	Dantari Fruit	0

Abstract of NTFPs of Northern RF Area surveyed: 5.9 Ha					
Sl No	NTFP items	Quantity in Kg.	Sl No	NTFP items	Quantity in Kg.
1	Sal Seed	2524	11	Kusuma seed	20
2	Chara Seed	353	12	Simil cotton	0
3	Kendu fruit	565	13	Mango fruit	0
4	Jamun berry	445	14	Mango Kernel	0
5	Mahula flower	1351	15	Bhalia fruit	11
6	Mahua seed	715	16	Bela Fruit	0
7	Kumbhi bark	9	17	Dantari Fruit	0
8	Harida fruit	7	18	Lodha gum	0
9	Bahada Fruit	13	19	Jayasandha	0
10	Amala Fruit	13	20	Neem	5

5.6.2 Silvicultural system :

There will be no exploitation except for removal of dead and uprooted trees. However 05 trees shall be retained per hectare from wildlife habitat point of view. No formal silvicultural system is prescribed. The silvicultural operations that are required are protection from grazing, theft, fire, tending, cleaning and reforestation coupled with soil and moisture conservation works.

5.6.3 Rotation period:

10 year rotation period is proposed to coincide with the working plan period.

5.6.4 Harvestable diameters:

Not applicable.

5.6.5 Reducing factors and reduced areas:

Not applicable.

5.6.6 Felling cycle:

Not applicable. However the treatment is prescribed for the plan period of 10 years.

5.6.7 Division into periods and allotment to periodic blocks (PB) :

Not applicable.

5.6.8 Calculation of the yield:

Not applicable.

5.6.9 Table of felling :

Year wise sequence of treatment is furnished in **Table No.5.8** as below.

Table- 5.8 UDOL TREATMENT SERIES

Year	Coupe No	Range	Forest Block	Status	Copt. No	Area (In Ha.)		
						Copt. Area	Area included in Coupe Area	Coupe Area
2021-22	I	Handapa	Northern		24 (p)	627.72	300	300
2022-23	II				24 (b)	627.72	327.72	327.72
2023-24	III				27	374.72	374.72	374.72
2024-25	IV				28	398.43	398.43	398.43
2025-26	V				29	379.99	379.99	379.99
2026-27	VI				30	473.38	250.38	250.38
2027-28	VII				30	473.28	223	223
2028-29	VIII				31	271.67	271.67	271.67
2029-30	IX				32	382.92	382.92	382.92
2030-31	X	Athmallik	Kusmkuhuri		33	383.21	383.21	402.71
					2	3	3	
		Dhandatopa	Kutulsingha		3	235.14	2	
					4	324.06	2.5	
					6	231.4	2	
				RF	7	266.15	10	
					Total	**5452.79**	**3311.54**	**3311.54**

BARUNI TREATMENT SERIES								
Year	Coupe No	Range	Forest Block	Status	Copt No	Area (In Ha.)		
						Copt. Area	Area included in Coupe Area	Coupe Area
2021-22	I	Handapa	Northern		36	402.43	402.43	402.43
2022-23	II				37	286.6	286.6	286.6
2023-24	III				39	483.8	250	250
2024-25	IV				39	483.8	233.8	233.8
2025-26	V				41	288.08	288.08	288.08
2026-27	VI				42	417.46	417.46	417.46
2027-28	VII				34	509.39	250	250
2028-29	VIII				34	509.39	259.39	259.39
2029-30	IX	Madhapur	East Baruni		35	417.46	200	
					3	235.14	26.54	
					4	324.06	8.53	
					5	314.7	69.31	304.38
2030-31	X	Handapa	Northern	RF	35	417.46	217.46	217.46
					Total	**5089.77**	**2909.6**	**2909.6**

HANDAPA TREATMENT SERIES								
Year	Coupe No	Range	Forest Block	Status	Copt No	Area (In Ha)		
						Copt Area	Area included in Coupe Area	Coupe Area
2021-22	I	HANDAPA	HANDAPA	RF	1	346.46	225	225
2022-23	II				1	346.46	121.46	121.46
					2	81.3	81.3	81.3
2023-24	III				3	235.14	235.14	235.14
2024-25	IV				5	314.7	314.7	314.7
2025-26	V				6	231.4	231.4	231.4
2026-27	VI				7	266.15	266.15	266.15
2027-28	VII		Kadalimunda		1	346.46	237.83	237.83
2028-29	VIII		Dantarikhol		5	314.7	187.83	187.83
2029-30	IX	BAMUR	Ghosar		1	346.46	50	314.54
2030-31	X				2	81.3	50	
					3	235.14	188	
			Bijamalia		1	346.46	26.54	
			Total			**3492.13**	**2215.35**	**2215.35**

Abstract of Protection Treatment series		
SL No.	Name of the Treatment series	**Area**
1	Udol	3311.54
2	Barunei	2909.6
3	Handapa	2215.35
Total		**8436.49**

5.6.10 Method of executing the felling:
Not applicable.

5.6.11 Subsidiary silvicultural operations cleaning and thinning :

5.6.11.1 Silvicultural Operations :
* Dressing of high stumps, singling out of coppice shoots, cleaning and climber cutting shall be undertaken in annual protection areas. High stump shall be cut with sharp axe or saws so that bark is not splitted. This will help in getting better coppice shoots.

* While executing singling out operations, the more promising coppice shoot shall be retained and rest cut back. Cleaning and climber cutting operations shall be undertaken on those sites where regeneration is suppressed.

* Light thinning shall be undertaken to remove congestion and to promote growth in forest stands; such thinning shall be on the lines of either 'A' grade or with maximum intensity of 'B' grade thinning.
* No sapling or whippy growth, which is generally removed by local villagers for fencing and other purposes, shall be allowed to be removed in any case, except the aforesaid silvicultural operations.

* Check dams are required to be executed across gullies. These may be either of brushwood or of dry rubble or stones or concrete depending on the availability of material, requirements of sites and cost norms. The run-off in the gully shall be obstructed and diverted. The gully beds should be planted with soil- binders.
* For drainage line treatment along the stream, a series of check dams are required at intervals to be decided by the gradient factor. Steeper the slopes, more check dams are required and such activities shall be started from the up stream side only.
* Staggered or continuous contour trenches and contour bunds shall be prepared along contour in order to arrest water speed, to divert direction of flow and to harvest water.

* Vegetative barriers on contour based structures shall be created. A number of species, which act as soil binders shall be planted for this purpose. These may be planted on the ridges of contour bunds, contour trenches and other such structures. Seeds may also be sown on the ridges.

5.6.12 Regeneration:

In case of gap planting, planting of locally desirable species shall be encouraged and taken up in prominent blank patches. The local indigenous species shall be preferred for plantation. At the same time due consideration shall be given for plantation of bamboo, NTFP species including fruit bearing species. Fruit bearing species shall be tried in the areas close to villages.

It is proposed to take up gap planting of over 2000 Ha. with planting of 200 plants/ Ha.

Depending upon the local factors, particularly soil condition, the species to be raised shall be carefully selected for gap plantation. Since the primary objective is to restock these areas and to improve the existing forest growth, preference should be given to local indigenous species that have the best potential to adapt to these sites. Generally species like Asan, Arjun, Mahula, Bamboo, Teak, Khair, Babool, Karanja, Amla, etc are suitable for different areas proposed in this Working Circle. Nevertheless, a list of species that can be grown for treatment of different sites in this working circle is presented in **Table No: 5.9** (Source: Handbook of Afforestation technique by Sri R. C. Ghosh)

Table: 5.9 SPECIES SUITABLE FOR PROBLEMATIC SITES		
Site	**Measure To Be Taken**	**Species To Be Planted**
	1. Soil and water conservation measures	*Dalbergia Sissoo, Albizzia lebbek, Prosopis juliflora, Accasia Catechu, Acacia niloteca, Azadirachta indica, Agave americana, Agave sisalana, Eulaliopsis binata*
	2. Full protection from grazing and fire	
Ravine	3. Safe disposal of run off	
	4. Grassland development	
	5. Afforestation	
	1. Soil and water conservation measures	*Dendrocalamus strictus, Madhuca indica, Acacia auriculiformis, Bombax ceiba, Soymida febrifuga, Cleistanthus collinus, Albizzia lebbek, Agave spp, Cassia siamea, Hardwickia binata, Azadirachta indica, Acacia nilotica, Acacia leucophloea, Derris indica, Dalbergia sisoo,Tamarindus indica, Eulaliopsis binata, Ailanthus excelsa, Acacia catechu.*
Laterite Soil	2. Full protection from grazing and fire	
	3. Afforestation	
	1. Contour bunding, trenching	
	2. Afforestation	
Skeletal Soils	3. Soil and water conservation measures	
	4. Protection from grazing and fire	
	5. Showing grasses	
	6. Seed dibbling / Afforestation	
	1. Preparation of mounds	*Anthocephalus chinensis, Syzygium cumini, Terminalia arjuna, Bombax ceiba, Lagerstroemia speciosa, Dalbergia sisoo, Derris indica, Acacia nilotica.*
Water logged areas	2. Planting of tall plants	
	3. Application of anti termite chemicals	
	4. Early planting	
	5. Drainage	

Grass planting is the best answer for treatment of exposed soils in the eroded areas. Local and indigenous grasses should be preferred. Several researches had been undertaken on afforestation and the plantation of grasses on eroded sites by the Indian Council of Agricultural Research (ICAR). The efficiency of grasses in erosion control is very well known. A list of grasses suitable for control of soil erosion is presented in **Table No: 5.10** (Source: The grass cover of India by P.N. Dabadghao and R.A. Shankar Narayan, ICAR).

Table: 5.10	IMPORTANT GRASS SPECIES	
Species	Type	Habitat Factor
Aristida setacea	Fodder	Brown soil, Sandy loam with gravel, PH 7.0
Arundinella bengalnensis	Fodder	Yellowish brown soil, Sandy loam, PH 6.2
Arundinella nepalensis	Fodder	Slopes having good drainage and permeability, Sandy loam PH 6.5
Bothriochloa intermedia	Fodder	Grows on a variety of soil in subtropical conditions in level and hilly topography
Cenchrus ciliavis	Fodder	Grows in semi arid zone and sandy soil, PH 7.5 to 7.7.
Chrysopogon aciculatus	Fodder	It is a creeping rhizome and prefers sandy loam, acidic soils on level or moist slopes, PH 5.1 to 6.1 Can withstand heavy grazing, cannot survive on dry stones and sandy soils. Promising species for stabilization of embankments
Chrysopogon fulvus	Fodder	Prefers hilly gravely, black cotton soils and red soils and low level of moisture
Chrysopogon gryllus	Fodder	Strong acidic soil on high hills, PH4.2
Cymbopogon coloratus	Non-fodder	Occurs on a variety of sites of dry areas having gravelly to sandy loam exposed rocks, acidic to neutral soil on hill and plains
Cymbopogon jwarancusa	Non-fodder	Prefers level to hilly topography, sandy and rocky soil, PH6.5 to 7.5
Cymbopogon martini	Non-fodder	Wide distribution, PH 5.2 to 7.0

Basing on the research findings of the ICAR, the list of grasses suitable for soil conservation measures in this division are presented in **Table No: 5.11.**

Table: 5.11 GRASSES SUITABLE FOR THE DIVISION		
Habitat Factor	**Species**	**Type**
Red Soil	Chrysopogon fulvus	Fodder
Black Cotton Soil	*Chrysopogon fulvus*	Fodder
Heavy Black Soil	*Iseilema spp*	Fodder
Skeletal Soil	*Eremopogonfoveolatus*	Fodder
Deep Soil	*Sehima nervosum*	Fodder
Sandy Soil	*Sporobolus marginatus*	Fodder
Eroded Soil	*Heteropogon contortus*	Non-fodder
Wide range of Soils	*Cymbopogon martini*	Non-fodder
	Cynodon dactylon	Fodder

5.6.13 Associated regulations and measures:

5.6.13.1Grazing:

Though Grazing is completely prohibited, but in practice, cattle, goat etc are entering the forest in search of fodder. It is suggested to:-

1. Develop alternate grazing ground,
2. Train people on stall feeding,
3. Adopt plantations on Silvi Pasture Method.
4. Educate people on adverse impact of heavy grazing.

Alternate grazing may be created in NFL.

5.6.13.1.1 Grazing control

(a) The grazing can be controlled in the forest area in regular consultation with local people and arranged to develop fodder resource and to encourage stall feeding.

(b) To educate the forest fringe villages to dispose the un-productive cattles and procure better quality of cattle and stall feeding.

(c) Forest area should be strictly closed basing on forest protection unit wise.

(d)Villagers should be encouraged for large scale plantations of fast growing fodder species.

(e)In village forest areas/Gochers, development of silvipasture plots and plantations of fast growing fodder species may be taken up.

5.6.13.2: Regulated firewood removals:

The status of VSS will be converted to EDC. Activities followed for EDC in case of protected areas should be implemented.

5.6.13.3 Soil and moisture conservation measures:

* Check dams are required to be executed across gullies. These may be either of brushwood or of dry rubble or stones or concrete masonary depending on the availability of material, requirements of sites and cost norms. The run-off in the gully shall be obstructed and diverted. The gully beds should be planted with soil-binders.
* For drainage line treatment along the stream, a series of check dams are required at intervals to be decided by the gradient factor. Steeper the slopes, more check dams are required and such activities shall be started from the upstream side only.
* Staggered or continuous contour trenches and contour bunds shall be prepared along contour in order to arrest water speed, to divert direction of flow and to harvest water.

* Vegetative barriers on contour based structures shall be created. A number of species, which act as soil binders shall be planted for this purpose. These may be planted on the ridges of contour bunds, contour trenches and other such structures. Seeds may also be sown on the ridges.

5.6.13.4 Fire protection:

i. Fire line maintenance all along the forest boundary, Compartment Boundary Line, Road sides are to be maintained as per working plan prescriptions.

ii. To extinguish fire, modern equipments like fire blower, fire fighting dress to be used.

iii. Satellite fire data to be utilized.

iv. Villagers to be trained to handle emergency fire situation.

v. Multipurpose watch towers are to be erected.

vi. Incentives to informant, Fire extinguisher to be provided.

vii. To take the help of the fire service, District administration, disaster management etc.

5.6.13.5 Forest protection from illicit felling:

There will be protection squad at each Range head quarters and camps with adequate mobility and communication net work. They will conduct regular patrolling in the vulnerable forest areas as per their intelligence. Infrastructures like Staff barrack, emergency light, vehicle fitted with VHF are to be kept ready and village community force to be associated for better result.

5.6.13.6 Unregulated removal of NTFP and MAPs:

The coupe shall be protected against unregulated removal of NTFP and MAPs by generating awareness among the primary gatherers.

5.6.13.7 Encroachments:

"Prevention is better than cure" is the cardinal principle. Constant patrolling in forest area mostly in plain tract, near habitation is suggested to curb this problem, Annual maintenance of forest boundaries, boundary pillars must be done rigidly. Eviction or encroachers need to be taken up seriously with the help of district administration.

5.6.13.8. Illegal mining, jhumming:

All possible sincere efforts need to be taken to prohibit encroachments, illegal mining and jhumming by frequent patrolling of the coupe areas.

5 .6.13.9 Restriction on felling along rivers, highways, hill slopes :

No felling should be done on either side of nallahs, streams, river banks, highways up to 20 mt distance. No felling should be done above 30 slope.

5.6.13.10 Against Natural calamity:

No prevention mechanism can be developed against natural calamity. However it is suggested to retain woody climbers in dense forests which will act as a binding force. Staff should be equipped with Power Chain Saw; Lifting Hooks to clear all forest Roads within a short period to facilitate movement so as to assess the realities for further immediate action.

5.6.13.11 Communication System and Mobility:

1. For quick communication and detection of cases frequent training should be imparted to the staff for operation of VHF and fire fighting equipments. The permanent VHF operator should be engaged in Divisional Control Room and Range Offices.

2. The fast moving vehicles is to be provided to each protection unit.

5.6.13.12 People's Participation:

The local people and VSS members are to be motivated to protect the forest resources. Then effective steps should be taken to constitute more number of VSS/ EDC in forest fringe villages.

5.6.14: Management of Proposed Tiger Corridor:

5.6.14.1 Vision:

To conserve the rapidly depleting, fragmenting natural corridors from manmade activities to safeguard natural corridor of tigers and other big mammals(i.e. Elephants) adjoining Satkosia Tiger Reserve leading to Similipal Tiger Reserve and Kapilash landscape respectively in order to safeguard a viable tiger population ,facilitating their migration and gene permeability.

5.6.14.2 Management Goals:

- Safeguard connective forests through existing policies and intensive protection
- Reduce the biotic influences deleterious to the eco-system and the existing bio-diversity.
- Enhance the livelihood status of local people and reduce their dependency on the forest cover.
- To create the conservation awareness amongst a range of stakeholders.

5.6.14.3 General Principles of Management

1. Co-occurrence agenda (Wildlife and People).
2. A 'no-go area' for industrial development (but retrofitting safeguards required as such infrastructure already exists).
3. The wildlife status of buffer not be elevated to that of the core and managerial interventions to be restricted to allow tiger / wildlife gene permeability and low density occupancy while facilitating the meta-population dynamics of tiger in productive patches.
4. Factoring in the landscape context and reducing resource dependency of local people on forests through sectoral integration resulting in ecologically sustainable livelihood option.
5. Using the impact of natural / managerial interventions in the core areas a guide for dealing with forestry practices and wildlife management in the corridor
6. Identifying zones of influence vis-à-vis the various lands uses operating in the area.
7. Overarching focus on habitat restoration / productivity, reduction of forest resource dependency, providing ecologically sustainable livelihood options to local people, permitting ecologically sustainable land uses, avoiding intensive forms of land uses like mining or heavily used infrastructure and actively addressing human –wildlife interface. In case such land uses are present or permitted appropriate mitigation measures will be enforced so as not to compromise on the conservation objectives of the corridor,.

Convergence of ongoing district level schemes is important to provide ecologically sustainable livelihood options for local people. This would reduce their dependency on forest resources while eliciting the much needed public support. A sizeable portion of tourism gate receipts being recycled will be earmarked to eco-development committees for village specific interventions as per the participatory micro plan, with reciprocal commitments to protect wildlife and their habitat on quid-pro-quo basis.

5.6.14.4 Management Objectives:

With the vision and goals stated above, long term objectives are set forth as under:-

- Providing ecologically sustainable livelihood options to local people in collaboration with various sectors / organizations.
- Incentivizing local people for protecting forests and wildlife (PES, Ecotourism).
- Ensuring retrofitting measures in sectors of development with reciprocal commitments.
- Ensuring active management in areas where tiger/ Co- predators/ wild ungulates co-occur with people to minimize human-wildlife interface conflicts.
- Ensuring monitoring of tiger / wildlife on a periodic basis in standardized manner, amenable to scientific inference.
- Ensuring surveillance and protection of tiger and wildlife.
- Building up the capacity of field staff and local people as a part of an adaptive management to ensure effective implementation

5.6.14.5 Problems in Achieving Objectives:

- **Objective- Safeguarding Tiger and it's co-predator movement in corridors:**

Frequent movement of people and cattle in forest areas for food, fodder and NTFP collection disturbs the big cats to move safely in corridors.

- **Protection and conservation of the flora and fauna with special reference to the Tiger and it's co-predators and their corridors.**

  Problems:

  i) Human settlements are very close to the corridors and highly populated and forest dependency is very high.

  ii) Stone quarries, mining activity, industry establishments is in the neighborhood.

  iii) The corridor is divided by National highways (at least 4 times) having heavy traffic round the clock.

- **To reduce man- wildlife conflicts.**

  Problem:

  i) Crop fields are very close to the corridors and is a lure for wildlife. Paddy, Ragi, Maize are grown by the villagers which attract the wildlife such as Cheetal, Sambar, Elephants in to the crop field and damage caused by them creates man- wildlife conflicts, a root cause of revenge killing.

  ii) Lack of adequate funds for compassionate grants.

  iii) Tribal locals are poor and often hunt the herbivores to supplement their protein requirements by killing the wildlife coming to their crop field..

  iii) Tusker poaching and deer poaching along adjoining forest areas in association local people.

- **Convergence of production sectors for wildlife conservation.**

  Problems:

  i)Lack of co-ordination among the line departments and other production sectors.

  ii)Insufficient database of the developmental activities done by various production sectors.

  iii)Lack of common forum where an integrated action plan can be made by the line departments.

- **To enhance the efficiency to work of the local people by imparting education, awareness and various livelihood training.**

  Problems:

  i) Illiteracy, backwardness and poor socio-economic conditions in majority of the tribes residing in the adjoining area make them extremely dependant on the forest.

  ii) Lack of alternative options to the forest produce such as firewood, timber, NTFP in the adjoining areas.

  iii) No good road available to the villages from panchayat head quarters and block Hqrs. to make available of alternative products for the villagers.

- **To change mind set of people to accept various poverty alleviation programmes taken up by other Agencies by associating the NGOs and engagement of local youth on forest protection measures.**

  Problem:

  i) Presence of many coal mines in Talcher areas, stone/metal chip quarries in other the areas enable the local tribes to get easily engaged in stone breaking works / mining works. They find difficult to adopt to other works.

  ii) No active NGO in the area, who motivates the local tribes for forest conservation works.

- **To facilitate safe movements of tigers and its' co-predators and their prey base.**

  Problems:

  i) Large populated human settlements found close proximity to the corridors.

  ii) Immense biotic interference such as firewood collection, cattle grazing, Sal leaf collection in corridor area.

  iii) Number of metal chips quarries in the vicinity of some of the areas disturbs the wildlife.

5.6.14.6 Strengths-Weaknesses-Opportunities-Limitations (SWOT) Analyses:

Strengths

- Extensive largely intact forests rich in biodiversity and forestry resources

  and for the tigers and co-predators for their migration to other protected area.

- Length of the corridors are more and dense enough to provide shelter to the migrating wildlife.

- Both the corridors are very important areas through which surplus population of tigers and other wildlife have scope to migrate to other protected areas such as Similipal Tiger reserve and Kapilash Sanctuary.

Weakness

- Extremely backward socio-economic conditions and extreme dependence of the forest resources.

- High and increasing population of the adjoining villages are extremely dependant on forests.

- High population of unproductive cattle and livestock.

- Migratory wildlife often enters in to the villages nearby and cause damage to the crop-fields and houses.

Opportunities

- To Work out a model multi-pronged strategy for rural development based on agro-horticulture

- To Develop a sustainable model of NTFP harvesting & marketing

- To promote education and awareness amongst the villagers and nature lovers about the corridor and behavior of migrating animals.

Limitations

- Very low levels of literacy and complacent tribal population with limited aspirations.

- Busy and crowded National High Ways through both the corridors.

- Inhospitable terrain, climate and endemic malaria-prone area.
- Very poor socio-economic condition of local reside.

5.6.14.6 Management strategies:

5.6.14.6.1 Delineation of Corridors and Other Habitat Used By Tigers and Co-Predators.

The corridor areas is divided into the following zones

The corridor areas is divided into the following zones

1. Eco-development Zone
2. Forestry Zone
3. Wildlife Management Zone
4. Retrofitting Measure Zone
5. Eco-education Zone

5.6.14.6.1.1 Eco-development Zone

1) Village level micro planning for benefits to local people on a quid pro-quo basis (involving VFC/ EDC)
2) Innovative use of JFM / REDD+/ PES/ recycling of tourism gate receipts to Eco-development Committees.
3) Benefits from district level developmental works (convergence), interalia, covering
    (i) Public health and family welfare
    (ii) Food and nutrition security
    (iii) Education
    (iv) Natural resource management and water security
    (v) Sanitation
    (vi) Roads
    (vii) Energy
    (viii) Housing, and Livelihoods

There are 134 villages located within the earmarked corridor zone as per list in Table. The total forest area coming under above mentioned villages are about 63.839 sq. Km. An area of 20 sq km of the forest from the total area has been earmarked for the above villages and other adjoining villages for bona fide use of the people. An Eco-development officer will be engaged on a contractual basis to co-ordinate and plan all eco development activities.

VILLAGES COMING UNDER SEGMENT-I CORRID (FROM SATKOSIA -NORTHERN RF)					
SL NO.	Name of village	GP Name	Block name	District name	Area in Sq KM
1	Antulia	Antulia	Angul	ANGUL	0.242
2	Rodasinga	Antulia	Angul	ANGUL	2.98
3	Tabada	Antulia	Angul	ANGUL	3.099
4	Kandhakoili	Manikajodi	Angul	ANGUL	0.029
5	Sitkoili	Manikajodi	Angul	ANGUL	0.663
6	Batrakhol	Sapaghara	Athmallik	ANGUL	1.553
7	Ghanamundia	Sapaghara	Athmallik	ANGUL	0.372
8	Hemamura	Sapaghara	Athmallik	ANGUL	1.168
9	Laxmipur	Sapaghara	Athmallik	ANGUL	0.922
10	Saluni	Sapaghara	Athmallik	ANGUL	0.34
11	Gedhilimundajungle	Tapadhol	Athmallik	ANGUL	0.025
12	kandhakorada	Katada	Chhendipada	ANGUL	0.174
13	Katada	Katada	Chhendipada	ANGUL	1.638
14	Tentulei	Katada	Chhendipada	ANGUL	0.845
15	Ogi	Ogi	Chhendipada	ANGUL	4.52
16	Kholaregeda	Handapa	Kishorenagar	ANGUL	1.317
17	Nuakholaregeda	Handapa	Kishorenagar	ANGUL	2.758
18	Ashrubahal	Jamunali	Kishorenagar	ANGUL	1.001
19	Badibahal	Jamunali	Kishorenagar	ANGUL	1.588
20	Jamunali	Jamunali	Kishorenagar	ANGUL	3.621
21	Khandabara	Jamunali	Kishorenagar	ANGUL	2.351
22	Nagajharan	Jamunali	Kishorenagar	ANGUL	0.001
23	Nua ashrubahal	Jamunali	Kishorenagar	ANGUL	4.128
24	Parbatipur	Jamunali	Kishorenagar	ANGUL	1.473
25	Anlabereni	Kanteikulia	Kishorenagar	ANGUL	1.341
26	Budhapal	Kanteikulia	Kishorenagar	ANGUL	1.83
27	Charakhaman	Kanteikulia	Kishorenagar	ANGUL	0.451
28	Hinjirida	Kanteikulia	Kishorenagar	ANGUL	1.938
29	Ichhapur	Kanteikulia	Kishorenagar	ANGUL	2.759
30	Kanteikolia	Kanteikulia	Kishorenagar	ANGUL	2
31	Kundali	Kanteikulia	Kishorenagar	ANGUL	1.926
32	Uchabali	Kanteikulia	Kishorenagar	ANGUL	0.365
33	Udal	Nakchi	Kishorenagar	ANGUL	0.327
34	Kadalimunda	Nunukapasi	Kishorenagar	ANGUL	0.336
TOTAL AREA					50.081

Strategies.

- Action will be taken to develop micro-plan for each of the villages to prioritize the works to be undertaken.
- VSS in these villages will be strengthened.
- Forest Department will facilitate coordination with other line Departments for convergence of activities.
- Respective DFOs of Athgarh, Athmallik, Angul, Dhenkanal and Cuttack Divisions will be nodal officer in respect of their divisions to coordinate with District Administration. They will convene meeting on convergence under the Chairmanship of Collector once in every quarter.
- For traditional use of the villagers, this area will be permitted for regulated livestock grazing and collection of NTFPs and firewood collection for bona fide use, keeping in view the guiding principles mentioned above.
- Eco-developmental activities like construction of check dam in adjoining area for the benefit of both animal and people will be permitted.
- Resource use regulations *prima facie* will be tied to wildlife habitat needs.

5.6.14.6.1.2 Forestry zone

The need for ensuring ecologically compatible land uses in tiger reserves (buffer/peripheral areas) and corridors have been provided in sections 380(g) and 38V(3)(b) of the Wildlife (Protection) Act, 1972. Further, under section 38V(3)(c) of the said Act, a provision has also been made to ensure that 'the forestry operations of regular forest divisions and those adjoining tiger reserves are not incompatible with the needs of tiger conservation'. In general, the managerial approach of buffer is applicable to tiger corridor areas as well.

- Ecosystem management will be adopted
- Ecological availability of a tree will be ascertained before removal
- A tree shall be considered ecologically available if

(a) Its removal does not create a gap beyond 43 to 45%

(b) The regeneration of species at various formation levels within a radial distance of twice the crown radius of the tree being selected for felling should have an 'established' status.

Tree felling / Thinnings

The Reserve Forests and Bamboo Forests within the corridor area will be worked as per the guidelines mentioned below. Accordingly, a set of guidelines has been issued to all the Divisional Forest Officers managing buffer and Corridor areas by the Field Director, Satkosia Tiger Reserve for working of timber and bamboo coupes coming under the non-sanctuary buffer and corridor areas, copy is given in the Appendix – 36 .

- No clear felling and other silvicultural systems promoting concentrated regeneration
- No conversion to uniform forests
- A high forest system with diffused regeneration will be preferred
- Status of regeneration will be an overarching consideration to permit felling
- Areas having considerable disturbance will not be felled.
- After due consideration to regeneration/ status, the relationship between canopy class and wild ungulate dung presence will be used as a guide to prescribe the stem removal.
- **Buffer/ corridor areas will be managed for wild ungulates at a level which is 30% lower than the optimal levels in core areas.**
- In general, the relationship between mean ungulate density and canopy class intervals in a sal / tree dominated forests, with polynomial curve fitting shows that the 80% lower bound corresponds to a canopy cover of 43% .
- Thus, for sal forest of Central India, the timber harvest in the buffer corridor area will be permitted in a selective manner so that the canopy cover does not fall below 43% during winter months. This strategy will minimize tiger-human conflict while permitting selective extraction of timber species.
- More openings will permit more light while fostering more regeneration thereby attracting wild ungulates and tigers
- The idea behind buffer / corridor management is to sustain it for gene flow, while not elevating its status to that of core area in terms of wildlife abundance.

Collection of NTFP

- NTFP collection will not be permitted in areas with maximum disturbance and un-established regeneration status, as this would adversely affect the demography of such species.
- The regeneration status of NTFP species in the buffer / corridor area will be compared with its status in the core/ critical habitat.
- Collection will not be permitted in areas having endangered arboreal fauna.
- No lopping/ felling will be permitted during NTFP collection.
- Collection will not disturb 'canopy bridges' in an area.
- The timings for NTFP collection will be regulated while avoiding early morning or late evening.
- The patterns of NTFP collection will be studied for prescribing ecologically permissible collection.
- The quantum of NTFP collected in an area will be regulated, considering its consumption by wild animals.
- An estimation of the availability of NTFP (fruit / tuber / leaf) will be done (example: for total fruit crop estimation, considering several categories of branches and the number of fruits per branch etc.)
- Fire will not be used to promote new flush of leaves (usually done for Tendu), as this would lead to forest fire.
- Fruit removal affects frugivory, hence fruit tree will be fostered.
- The NTFP species in the buffer / corridor area will be compared with their densities in the core / critical tiger habitat. In low density areas such NTFP species will not be permitted for extraction.

- A chart depicting NTFP collected in various areas within the division over months during a year will be prepared for close monitoring.
- Different parts of a tree / plant / shrub / herb are harvested as NTFP and many of them are valuable medicinal plants. To avoid overexploitation, it is important to prescribe site specific indicators for their ecologically sustainable management, vis-à-vis the regeneration status.
- The nursery techniques of NTFP species (especially those having medicinal value) will be fostered through the community linked to incentives for growing subspecies.
- Regulation through PES (Payment for Ecosystem Services) will be explored.

Collection of NTFP – Indicators to avoid over exploitation of NTFP

NTFP part harvested	Indicators
Fuel wood	⏭ Regeneration status
	⏭ Intensity of girdling/cutting of young trees (number of stumps per unit area
	⏭ Change in the rate of extraction
	⏭ Quantum of dead/ fallen twig branches on forest floor
Leaves	⏭ Reduction in canopy cover
	⏭ Reduction in leaf litter
	⏭ Regeneration status
	⏭ Weed invasion
	⏭ Change in species composition
Fruit / flower / seed	⏭ Regeneration status
	⏭ Annual productivity per sample tree vis-à-vis the productivity in corer/ critical tiger habitat
	⏭ Method of harvesting
	Season of harvesting vis-à-vis requirements of wild animals (fruit / flower / seeds act as 'qualifiers' in a habitat, and their total harvesting would reduce such welfare factors.
Bark	⏭ Girdling
	⏭ Regeneration status
	⏭ Number of dead stems per unit area
Rhizome	⏭ Regeneration status

Fuel / fodder collection

(a) Grazing will be regulated in a rotational manner, and prophylactic immunization will be done for village livestock.

(b) Since the unrecorded removal from forest exceeds the recorded removal in many places, fuel / fodder collection will not be permitted in disturbed areas or compartments with poor regeneration status. Such areas will be prescribed a 'recovery' period before reopening them for fuel / fodder collection.

(c) A 'safe lopping index', based on site specific studies will be prescribed for fodder removal on a rotational basis.

The Reserve Forests, PRFs, and DPFs within the corridor areas will be considered as Forestry zone.

Strategies:

The plan prescribes the improvement of habitat by adopting the following measures.

- Resource use regulations *primafacie* will be tied to wildlife habitat needs as mentioned above and regulated through VSS.
- Fire will be prevented by involving the people.
- Grazing area will be earmarked.
- The boundary will be re-surveyed, demarcated and mapped and fresh proposal will be submitted to declare the forest as Reserve Forest under Orissa Forest Act, 1972.
- Plantation of native species and fruit bearing species, Wild banana, palatable grasses, Soil and moisture conservation measures will be taken up. .
- Fruit bearing trees like Harida *(Terminalia chebula)*, Bahada *(Terminalia belerica)*, Anla *(Emblica officinalis)*, *Ziziphus* species, *Ficus* species will not be felled.

5.6.14.6.1.3 Eco-education Zone

There are many locations adjoining the corridor areas which draw the attention of nature lovers, wild lifers and conservationists for its rich and diverse flora, fauna and splendid natural beauty. These areas are open to visitors round the year. Arrival of tourists to Satkosia TR and its adjoining areas reaches peak during December and January. These day visitor tourists are required to be educated by making an interpretation centre and watch tower suitable points to educate the tourists. Such areas are Samal Barrrage, Kanehijena, Rengali, in Angul Forest Division, Similar facilities can be developed at Sheremunda and Nuagarh of Athagarh Forest Division..

5.6.14.6.1.4 Wildlife Management Zone:

The corridor areas are falling within the jurisdiction of territorial Divisions, where wildlife management is not the priority and the staffs are not well trained in well management. There are a few notified elephant corridors within the corridors like Anantapur- Kaneijena. The Satkosia- Kapilash corridor is within the Mahanadi elephant Reserve. This zone will be treated as per the following guiding principle.

- Corridor areas require a 'coarse filter' approach for maintaining a variety of plant / animal species
- Day today monitoring
- Habitat amelioration (compensatory nature)
- Fostering indigenous fodder / fruit species
- Maintaining existing water points
- No drastic habitat interventions
- Cropping pattern / harvesting to factor in cover values
- Inherent / induced diversity indices will be computed for maintaining the edges (without enhancing them)
- Human-wildlife interface issues to be addressed
- Treatment for riparian zones/ unique features
- Retention of dead trees, snags
- Restoration / protection of existing corridors

5.6.14.6.1.5 Retrofitting Measure Zone:

As stated earlier, the corridor areas are criss-crossed with a number of existing infrastructures and many other new projects are likely in the foreseeable future. The major projects are the extension of existing NH-55, the existing railway line from Cuttack to Sambalpur, Proposed rail line from Duburi to Angul apart from the left and right canals from Samal Irrigation Project along with its branch canals. The corridor is also adjoining to the coal belt extending from Talcher to Jharsuguda, which opens up possibility of coal mining in this area in future. This zone plan aims to deliberate on mitigation measures to be adopted for such infrastructures.

5.6.14.6.2 Mitigation strategy for mining:

It will have two components:

(i) Improved/ green technology and minimum ancillary development causing minimum habitat loss.

(ii) Site specific mitigation measures for tiger and other wild animals, inputs for providing ecologically sustainable livelihood options to locals, besides offsite 'offsets' to achieve more tiger conservation.

- Mitigation measures for exploratory phase.
- Mitigation measures for construction / mining phases.
- Site specific mitigation measures for tiger / wild animals, while providing sustainable livelihood options (this will include onsite modification of the mined area to its original form and restoration of topsoil with indigenous ground cover or through creation of water body /wetland).
- Providing livelihood options to local people within the zone of influence.

5.6.14.6.3 Mitigation strategy for dams and hydro power sectors

- The impacts include:

- First order impacts (barrier effects, effects on water quality, water quantity, flow regime and sediment load).
- Second order impacts (impact on terrestrial environment affecting primary production-planktons, aquatic flora), morphology (channel form, substrate composition).
- Third order impacts (impact on terrestrial environment affecting invertebrates, fish, birds and mammals.

- Mitigation measures are required to address impacts due to dams construction as well as its operation.

- The mitigation plan will include onsite as well as offsite initiatives based on best global practices.

- Retention of dead trees in submergence areas as 'snags' for water birds and aquatic fauna.

- Prohibiting the reduction of river flow to 'zero' or 'critical' levels which would have a deleterious effect on local flora and fauna especially aquatic species permitting migration across dams through mitigation e.g. fish ladder etc.

- Mimicking the water release to the natural flooding regime.

- Ensuring control of aquatic weeds and disease factors.

- Safeguarding downriver flood protection.

- Safeguarding against water pollution.

- Appropriate fish management measures to benefit local communities through the tiger reserve management.

- Site specific watershed management to safeguard against sedimentation.

- Prescribing timings for use of access roads, and regulation on the maintenance infrastructure and retaining it to the minimum.

- Prohibiting new, associated developmental projects in the core / critical tiger habitat.

- Contributing resource support to the core / critical tiger habitat management as a compensatory' measure for loss of natural habitat.

- Evolving and implementing a SOP, in collaboration with the tiger reserve management for rescuing wild animals from drowning.

- Annual monitoring of the spatial use pattern of wild animals in the area, which will also include monitoring the development of related infrastructure.

- Periodic monitoring of water quality and river ecosystem recovery.

- Fostering re-vegetation of the construction site with indigenous species.

5.6.14.6.4 Mitigation strategy for linear infrastructure and other projects (roads/ highways/railway lines/ power transmission lines/ irrigation canals/ open mills/ wind mills):

- Roads / highways: creation of overpasses / underpasses, speed regulation, closure to traffic

- Railway lines: SOP for information exchange through wireless, speed regulation, barricades, underpasses

- Power transmission lines: insulation, surveillance, MOU with electricity boards, special patrolling, underground cabling, adequate height

- Irrigation canals: covering, crossing for animals movement

- Open wells: covering, closure of abandoned wells

- Wind mills: both offsite and onsite measures are required to prevent turbine collisions with avifauna.

5.6.14.7 Prioritization of linkages

The linkage prioritization is as follows, The Satkosia- Similipal corridor as well as the Satkosia- Kapilash corridors are equally important for tigers and elephants. Both the linkages are prone to the biotic interference. To facilitate the corridor linkage the forest areas of Nuagarh, Balikiary of Athagarh Forest Division and Hatidhara RF of Athmallik Forest Division are merged in the Satkosia Gorge (WL) Sanctuary in accordance with the recommendation of standing committee members of National Board for Wildlife. The tigers have been using the corridor linking Satkosia to Kapilash as ascertained from records of Athagarh Forest Division, which confirms the movement of a solitary male tiger of about 3 years old to Nandankanan Sanctuary during 2012. Simililarly, there are signs of carnivores and herbivores occupying the corridor connecting to Sukinda and Rebena. But both the corridors are important and need to be protected for movement of surplus population of big cats as well as other mammals.

5.6.14.7.1 Development of integrated Landuse Approach for the Area commensurate with tiger conservation and co-existence agenda (Formulation and Coordination).

Integrated approach to the area development programme must be taken up with all Line departments, NGOs, with forest department. Micro plan based development to be taken up to uplift the economic condition of the people living around the corridors. Multiple farmings such as poultry, piggery, honey production, Sericulture, dairy farming, cash crop raising, fishery, cottage industry, value addition to the forest products and marketing of the produce will be made in aggressive manner to sudden raise of the economic condition of the people to reduce forest dependency.

5.6.14.7.2 Wildlife management in territorial forest areas (Identification and inclusion of prescriptions in the Working Plans of respective divisions as per Working Plan Code).

The existing working plans of the adjoining Divisions are going to expire this year. The new Working Plan now under preparation will have prescriptions for the corridor areas which are commensurate with the prescriptions mentioned in the previous paragraphs. In the meanwhile, the guideline issued by Field Director, Satkosia Tiger Reserve and Regional Chief Conservator of Forests, Angul vide his office letter no. 1681 dated 27/4/2015 for working of coupes in the corridor area will be followed till the approved working plan is in place. All the compartments within the corridor areas have been identified as per the list at **Appendix - 36**. In the PWPR for the concerned Divisions, action has already been taken to incorporate these areas in appropriate working circle as mentioned above.

5.6.14.7.1 Zone Plan Management Strategies (Protection, Habitat Management and Habitat Restoration, Supplementing Declining Local Populations and Facilitating their re-colonization):

Theme Plans

The goal of the plan is to restore, maintain and enhance the biodiversity, habitat and conservation value of the corridor as to ensure perpetuation of the tiger as flagship species. This can be ensured through a multifaceted approach to the complexity of the problems noticed at the time of management. They are:

1. Control of illicit felling of trees and poaching.
2. Control of forest fire.
3. Man-wildlife conflict mitigation..
4. Control of grazing.

5.6.14.7.1.1 Control of illicit felling of trees and poaching.

The illicit felling of trees occurs throughout the year in general but during the monsoon period it is intensive. Likewise the poaching of wild animal is more during winter and summer and almost negligible during the rainy season. At present because of inadequate field staff, people are accustomed to illicitly fell selective trees of Bija *(Pterocarpus marsupium),* Sal *(Shorea robusta)*, Mundi *(Adina cordifolia)* and Kasi *(Bridelia retusa)* from the forest in adjoining area of Satkosia and other forest areas. These species are decreasing from the forests owing to large scale demand in the adjoining urban areas of Angul, Dhenkanal, Cuttack and Bhubaneswar and adjoining States of Chhatisgarh and West Bengal. Similarly poaching of wild animals though controlled prevails in the Compartments adjoining to villages.

The strategies

- Minimum 1 camps will be setup in these area at an interval of 10 K.M. in each of all listed RFs . Since the approximate length of Satkosia-Similipal and Satkosia-Kapilash corridors are 200 K.M. around 20 such anti poaching/anti smuggling camps need to be established in respective Forest Divisions.

- In each camp 6 to 8 persons need to be deployed with fire arms and walky talkies who will patrol over the area and collect information on activities of poachers and wood cutters from the field signs and if confronted they will apprehended the culprits and recover the seized produce.

- The timber smuggling routes have been identified and strict patrolling measures will be enforced along the routes.

- Through a network of spies engaged on incentives, the information on hoarding of timber, entry of poachers into the forest and possession of body parts of wild animal will be collected and immediate action will be taken.

- There is provision for reward for seizure of forest produce, which is given from the sale-proceeds of the forest produce seized. Such benefits do not accrue in case of cases under Wildlife (Protection) Act and the materials seized are not disposed of by sale. In order to encourage the staff as well as the local people special awards will be given to the staff / informants involved in detection of the case.

- Training and workshops on various changes in Forest laws, procedure to deal with the preparation of case records and detection of case will be organized.

- Training on handling of firearms including maintenance will be imparted to the staff at regular intervals.

5.6.14.7.1.2 Control of forest fire:

Out of the total area of the corridor forests, which are under dry deciduous hill forests, high level sal forests and grassland are very much prone to fire during the period from February to May. The fire is mostly intentional i.e. people set fire for collection of non-wood forest produce and organized poaching. At times it is caused by the timber smugglers, carelessness of tourists and passersby. The objectives of control of forest fire are

- To prevent fire spreading into the forests so that the ground flora and fauna are well protected.
- To ensure germination of seeds and thereby maintain the stand with trees of all girth classes.
- To protect the humus, snags and down trees which harbour a lot of organisms.
- To eradicate coarse grasses giving place to annual grasses palatable to the herbivores.
- To maintain the ambush cover for the prey animals and refuge cover for all animals for reproduction.

Strategies:

The fire season in Odisha starts from 1st February and continues up to 31st May or till receipt of first shower of pre-monsoon. It causes a lot of harm to the flora and micro-fauna. In order to make the corridors free from fire the following measures are laid down.

- **Preparation of Fire Map:**

The fire map of entire Range need to be prepared Range-wise showing therein the different type of fire sensitive zones in a topo sheet (1:50,000); so that it will be easier to draw the attention of the management. It can be divided into three zones viz:

i) Fire sensitive zones

ii) Medium fire prone areas

iii) Less fire prone areas

The map may not be up to scale; but should be approximate and to be prepared after field inspection. Different zones will be coloured with vermilion red, pink and yellow respectively. The parameter to determine the proneness to fire is:

i) Nearness to habitation.
ii) Type of forest (microclimatic)
iii) Passages through the forest
iv) Distance from the water bodies

- **Prevention of fire:**

Always it should be the motto to work with the principle of "Prevention is better than cure". To achieve the objective the following steps are to be taken:

i. **Creation of awareness:** The evils of forest fire and the duties of the villagers residing on the fringes and enjoying the usufructs as per section 84 and 86 of Orissa Forest Act, 1972 and the penal provision u/s 27 will be disseminated among the people through beating of drums, posters, handouts and slides.

Provision of incentives: In adjoining area villages have been identified which are to be involved in the protection of forests, especially from fire. These villages are allotted to different Ranges to motivate the villagers against fire. The motto will be to prevent forest fire by weaning then heart of the people through incentives. The advantage of prevalent mechanism of Joint Forest Management through VSS/EDC will be taken in order to achieve the goal. The incentives to each village will be determined depending upon the size of the village, the size of the forest and the length of boundary of such forest.

ii. **Clearance of fire lines** : All the forest boundaries, roads and foot paths passing through or touching the forest will be taken as fire lines and they will be cleared of the leaves and other inflammable material. In case of forest roads at least 3 mtr on either side will be maintained clean and in case of live foot path a 6 mt strip will be cleaned. The cleanliness to be maintained thereafter weekly. If the patch of forest in sensitive zones as per map is too big, then the area is to be suitably divided into sub-areas with artificial fire lines of 3 mtr. wide.

iii. **Deployment of fire watchers**: Sufficient number of firewatchers are to be deployed on the fire lines who will patrol over the area to give information on incidence of fire. Cares will be taken to select non-controversial person as firewatchers.

- **Fire fighting:**

In order to combat the fire, fire-fighting squads at the rate of one per Range are to be pressed into operation. The personnel to be recruited in the squad and as firewatcher are to be properly trained by field demonstration. Their work will be to:

i) Prevent forest fire in collaboration with the villagers to whom incentives have been given.

ii) Extinguish the fire on receipt of information on out-break of fire.

iii) Patrol over the area in medium fire prone areas and less fire prone areas when they are not in duty in (i).

iv) Monitor and evaluate the control of forest fire during and after the fire season is over respectively.

One vehicle with VHF connection will be provided to them. They will be provided with bill-hook/axe, torch-light, blowers and water bottles. The vehicle and the squad will work round the clock from 1st February to 31st March. They will promote awareness in the fringe villages, prevent fire with assistance of the VSS/EDC concerned, extinguish the fire if set in and evaluate the effectiveness of the incentives for consideration of award at the Range/ Division/Circle level. The squad will consist of daily wagers along with the Forester and Forest Guard of the concerned Section/Beat.

The amount earmarked for firefighting includes the cost of creating awareness, clearance of fire lines, deployment of fire watchers and spies, beating of the fire, recruitment of fire fighting squad on daily wages, equipments, rewards, hiring of vehicles and cost of POL

Post-fire operations:

In spite of all the precautions, if fire breaks out, immediate steps to be taken to extinguish it and the gutted area to be measured and mapped out, the loss to be assessed and the reasons for fire along with responsibility need to be fixed.

- **Accountability:**

The staff will be accountable for fire in their area and necessary disciplinary action will be taken against them.

S.L. No	Post	Accountability
1	Field Director cum R.C.C.F.,Angul	Overall fire management of the Entire Circle and daily monitoring with D.F.O.s
	D.F.Os and Deputy Directors.	They will be accountable for overall area of the divisions/ area under their jurisdiction to manage fire problems with daily monitoring with ACFs and Range officers and preparation/ implementation of fire management plan.
	A.C.F. and Assistant Directors	They will be accountable to look after fire control parties, vehicle movement, and communication of each fire incidence in the division, movement of additional division level party with all equipments, fire fighting equipments and fire mapping and implementation of prevention measures.
	Range officers	Range officers have to plan fire prevention measures before fire seasons, Implementation of Fire management plan, Monitoring fire incidences and controlling the situation immediately in their jurisdiction and inspecting each and every sections of his Range areas.
	Section Officers	Section officers (Foresters) have to take action according to the Fire management plan, Monitoring fire incidences and controlling the situations immediately in their jurisdiction and inspecting each and every part of their section areas. They have to monitor the fire prevention units to work in time, motivation to villagers not to ignite to fallen leaves. They have to look after every party whether well equipped with fire fighting measures, sufficient drinking water, motor vehicles or bicycles, communicating equipments and first aids. They have to report twice daily to the Range officers about the fire management in their sections.

	Beat Officers	Beat Officers(F.G.s) have to look after fire management activities in his jurisdiction as well as to assist the adjoining beat officers in fire prevention. They have to monitor the fire prevention units to work in time, motivation to villagers not to ignite to fallen leaves. They have to look after every party whether well equipped with fire fighting measures, sufficient drinking water, motor vehicles or bicycles, communicating equipments and first aids. They have to report twice daily to the section/Range officers about the fire management in their beats, seek more assistance immediately if fire incidence go beyond the control. They will be accountable for negligence in any
	Fire Watchers	They have to work in a team to prevent fire in forests. They are accountable for any fire incidence occurs due to their negligence and failure to report to Beat F.G.s/ Foresters in time.

5.6.14.7.1.3 Control of grazing.

Grazing is the worst form of biotic interference to the forests contrary to others, which is not felt by the people. It acts as a carrier of diseases to the wildlife, compact the soils and makes the forests more xerophytic. In order to strike out a solution to the problem of grazing, the following strategies are aimed at:

Strategies

- The people of the adjoining area will be educated to confine grazing of their cattle to the village forests only.
- In case, where the village forest is not sufficient enough to accommodate the cattle, the grazing may be allowed in TUZ on rotational basis. In this case the boundary limit for each village will be earmarked in consideration of the size of the cattle population in the village.
- In no case grazing will be allowed inside the corridor area.
- Through awareness the people would be sensitized to resort to stall feeding by collecting the fodder and keeping them in silo pits.
- The land earmarked for grazing "gochars" in the villages is to be restored and renovated.

- During elephant migrating seasons, alternative crop to paddy such as hot Chillies-Bhut Jolokia, Deogarh Chilli, Capsicum, Ground nuts, Radish, cotton, lemon crops to be raised by giving subsidy to the farmers.
- Chilli fencing, solar fencing and trenches to be raised around the villages to prevent elephant/wild pest entering in to the villages and crop fields.

5.6.14.8 Habitat improvement

With the backdrop of the vastness of the area of the corridors, the diversities of the habitat types and the diffused nature of the wild animal populations, it is necessary to adopt following strategies to improve the habitat congenial for the growth of wild animal population.

Strategies:

- **Improvement of meadows**

The meadows are now invaded by sal saplings. These need to be uprooted and obnoxious and unpalatable grass and shrub species eradicated by ploughing the meadows. More palatable and indigenous grass species like *Cynodon dactylon* is to be sown in patches by fencing the area with the help of solar power fencing.

- **Eradication of weeds**

All weeds like *Lantana* and *Eupatorium* will be uprooted and destroyed during rainy season.

- **Development of saltlicks**

Natural licks are to be maintained. No new artificial saltlicks will be established as it will change the population dynamics of herbivores and widen conflicts.

All the saltlicks beyond the eye of the field staff are to be kept under strict vigil by patrolling staff.

Staff will visit the saltlicks on patrolling duty every day morning and evening.

Miscellaneous

- For dust baths during dry months and wallowing during the rains and winter as many spots as possible will be developed. These spots will be maintained by treating the same with potassium permanganate and tick repellants.
- Patch planting with the qualifier indigenous species should be taken up to provide shelter, food and fodder to the wild animals. Bamboos *(Dendrocalamus strictus)* ,wild banana, fruit bearing species such as Jamun, berries, are to be planted extensively.
- Molecules of refuges and shelters will be provided for the tiger and its prey animals in dispersed pockets all over the Reserve wherever possible.
- In large open valleys, viable patches of scrub and woodland will be created to provide the disperse edge of shelter for fuller use of the available fodder.
- Entrance holes will be made at the base of hollow trees – where there is no such entrance – to make those available as shelters for the wild animals like mouse deer.
- *Bauhinia vahlii* will not be cut as it serves as an important food plant for elephants during scarcity.
- Forest ponds, water harvesting structures, waterholes to be raised in adequate numbers in the corridors to meet water scarcity in the area.
- Sign boards showing elephant corridor, speed breakers, wildlife corridors, will be raised to educate the passers-by vehicles and people moving around.

5.6.14.9 Improvement of wild animal health:

The health of wild animals adjoining Satkosia is noticed to be good except elephants. They are seen to be suffering from formation of abscess, gastroenteritis and some congenital diseases. The principal prey animals like sambar and wild boar available in good numbers are seen to be very healthy. Monkeys, cheetal, gaur and other animals are observed to be free from any diseases. However, regular vaccination of the cattle in the adjoining villages needs to be made. The carcass of the cattle will be disposed of by burning. Similarly death of any wild animal due to poisoning and suffering from any infectious disease will also be burnt.

People participation

Forest and Forestry cannot be isolated from the people. It is necessary to march forward in forest managed with the people living within and around the Managed Area.

Strategy:

- Health camp – It is a confidence building measure and as there is no medical facility available in remote villages of the PA, it is our sacred duty to act as a facilitator for providing medical aid to the people at the time of need. This will not only act a confidence building step to restore the lost confidence which the people reposed on Forest Department earlier when they were allowed to enjoy the forest resource without any hindrance. For the purpose health camps will be organized in each cluster of village at least twice in a year i.e. during the rainy season and spring, which are very much prone to diseases due to climatic changes. Volunteer health workers will be selected from the villagers and trained on basic health care practices by the Doctors of allopathy and homeopathy and they will be provided with health kids for emergency treatment of the people inside the PA.

- Creation of awareness- The harms inflicted of the PA by the local people are due to lack of education and provocation of superstitions, religious stigma. The poaching, cutting of trees / adoption of new methods of eco-technology, Joint Forest Management and carelessness towards own health are the result of such factors. This can be eradicated from their mind by way of educating them and creating awareness among them through facilitators like NGOs.

5.6.14.10 Eco development & creation of livelihoods:

5.6.14.10.1 Constitution of Adjoining Corridor Area Management Committee (with representation of different Forest Divisions, Line agencies and other Stakeholders) and Linkages with Tiger Conservation Authority.

The Adjoining corridor area management committee will be formed under the chairmanship of Regional Chief Conservator of Forests cum Field Director and this committee will also act as Monitoring Committee of the activities taken up in the adjoining area. The committee meeting will be convened every six months interval to make convergence of the action plans for collective effort of development of the adjoining areas.

The Regional Chief Consevator of Forests-cum -Field Director, STR,Angul	Chairperson
District Magistrates cum Collector, Angul Dhenkanal, Jajpur,Cuttack	Member
Divisional Forest Officer,Angul, Dhenkanal,Atham allik,Athagarh and Cuttack	Member
Divisional Forest Officer, Satkosia WL Division	Member
Divisional Forest Officer Mahanadi WL Division,	Member
Block Develop ment Officer, Angul, Athamallik, Kaniha,Talcher, Parjang, Kamakhynagar, Sukinda, Hindol, Narasingpur, Dhenkanal	Member
Executive engineer, Rural develop ment, Angul, Dhenkanal,Jajpur, Cuttack	Member
District Soil Conservation Officer Angul, Dhenkanal,Jajpur, Cuttack	Member
District Agriculture Officer, Angul, Dhenkanal,Jajpur, Cuttack	Member
District Horticulture Officer, Angul, Dhenkanal,Jajpur, Cuttack	Member
District Veterinary Officer, Angul, Dhenkanal,Jajpur, Cuttack	Member
District Fishery Officer, Angul, Dhenkanal,Jajpur, Cuttack	Member
District Sericulture Officer, Angul, Dhenkanal,Jajpur, Cuttack	Member
P.A ITDA, Angul, Dhenkanal,Jajpur, Cuttack	Member
Project Director. D.R.D.A, Angul, Dhenkanal,Jajpur, Cuttack	Member
Chief District Medical Officer, Angul, Dhenkanal,Jajpur, Cuttack	Member
Superintendent of Police, Angul, Dhenkanal,Jajpur, Cuttack	Member

5.6.14.10.2 Formation of Eco-development Committees (EDCs) and supporting institutional framework (Confederation of EDCs, Self Help Groups and Nature Clubs)

The policy of Govt. of Orissa on Joint Forestry Management framed during 1998 and the resolution of Odisha Joint Forest Management, 2011 duly amended in 2015 is being followed for formation of EDCs in protected areas and VSS in the corridor areas. Hence immediate formation of the EDCs /VSS in above 230 villages in the 1st corridor areas and 76 No.s in second corridor will be taken up.

5.6.14.10.3 Livelihood Support Initiatives through Village Micro-plans supported by Tiger Conservation Foundation and Other Line Agencies:

Micro plans for each EDC / VSS will be prepared and Forest development work synchronized with livelihood support to the villagers will be taken up over the area. Micro plans are developed after conducting effective PRA exercises with the targeted villagers. Help and support of local NGOs will be taken for this purpose

5.6.14.10.4 Monitoring and Evaluation

In order to monitor the programme, control rooms in the Division and Range Officers with the help of Forest range Officers and Foresters respectively will function round the clock. In the Circle Office, it will remain open 24 x 7. After the fire season is over, the entire area is to be inspected by the concerned Divisional Forest Officer and suggest the names of Forest Guards who have prevented the fire and similarly of the villages. On receipt of the report, a team at the Circle level will evaluate the work and the officers/villages showing outstanding work will be rewarded on the World Environment Day. Efficacy of fire protection work in all the Divisions will be evaluated through a team to be framed by the concerned Divisional Forest Officer with the Asst. Conservator of Forests of the Division as its head who will be go round the forest and evaluate the damages done to the forest and the negligence of staff in duty to the Divisional Forest Officer, who in term will report the matter with the Field Director-cum-Regional Chief Conservator of Forests, Angul after taking necessary action at his end.

5.6.14.11 Tiger Population & Habitat Assessment:

5,6,14.11.1 Day to Day Monitoring Protocol :

Daily Monitoring Protocol

For designing, implementing, and evaluating the success of any conservation program for endangered species, it is imperative to monitor the status, distribution and trends in the populations of the target species. The monitoring program will be transparent in its approach, and holistic, addressing an array of parameters related to the survival of the species by using the blend of best available science and technology Jhala *et al* (2008).

Daily monitoring task will be planned and sincerely executed by the ground staff like the forest guards and the anti poaching staff which involve simple observations on a regular basis and keeping track of the said observations discreetly and meticulously. The daily walk of a forest staff is a tool that could be effectively used for monitoring of different animal populations across different seasons and habitats. The observations should include:

1. Number and species of animals seen during any patrolling through the forest. For every walk the total kilometers walked will be noted down with time and intervals of rest. Effort should be given that every walk is taken during more or less at a fixed time during the day all though the year.

2. Number of different signs of carnivores like pugmark, scrape, rake, scat encounter and kill should be noted down on every walk. Effort should be given towards identifying the species for which signs are being registered along with some special notes if any.

3. Care should be taken in maintaining as much silence as possible during the walks and noting down the associated information for habitat and weather.

   The records of these walks if maintained properly and compared over time can provide reliable information towards understanding and deriving an overall idea about the forest health.

   Reporting and database maintenance are the two most important part of the entire program. Data collected during these daily walks should be collected and compiled by the office if possible at the beat range level and should be able to produce when and where needed.

5,6,14.11.1 Tiger Population Estimation Frame Work: Corridor Zone

Sampling For Tiger, Leopard and Other Carnivores Encounter Rate

Obtain data on the presence, absence and intensity of use of a beat by tigers and other carnivores, we shall quantify the abundance of tiger, leopard and carnivores sign in an area. The following procedure needs to be followed for data collection:

- A beat will be considered as a sampling unit.
- Areas within the beat that have the maximum potential for tiger occupancy will be intensively searched.
- Since tiger and leopard have the tendency of using dirt roads, trails, foot pats, river beds and nallahas, these landscape feature within the beats need to be searched intensively
- One to three persons who know the terrain and habitat features of the beats will conduct the search for tiger sign.
- There will be 3-5 separate searches (in different compartment within the beat and /or at different times 1-5 days apart) each search covering about 4-6km distance in areas having the best potential for tiger presence .It is important to record the distance covered and the time spent during each search separately and accurately. If time is spent resting or in other activities while conducting search, this duration should be reported separately. If possible the GPS coordinates of the beginning point of each search path should be recorded.
- The total minimum distance covered while searching for tiger and other carnivore sign should be 15km per beat.
- Tiger and leopard signs should be classified into following categories 1) Pugmark trails, 2) Scat(Old: dry with hair and bones visible; Fresh: dry but intact with shiny surface; Very Fresh: soft, moist, and smelly, 3) Scrapes,4) Scent marks(spray, rolling), 5) Rake marks on trunks, 6) Actual sighting , 7) Roaring (vocalization) 8)Kills (Predation on wild prey).

- A brief description of the topography and forest type is to be recorded for each sign.
- In the case of pugmark trails, each trail set is considered as one sign (not each pugmark as one sign). In case a tiger (or other carnivore) continues to walk along a dirt road for a long distance (say 1 km), then this should be considered as one sign , and a comment recorded in the remarks section of the data regarding distance covered by a pugmark trails of a single tiger.
- Tiger and leopard signs if encountered outside the sampling route should also be recorded with GPS coordinates (if available) and with appropriate comments.
- Special emphasis should be given to sign of tigress and leopards with cubs and any authentic evidence of cubs (sighting of cubs, lactating tigress, tracks, etc.) obtained within the past twelve months should be mentioned in the data sheets.
- While sampling for tiger and leopard signs of any other carnivores that are encountered.
- The number of livestock killed by predators within the past three months needs to be recorded in the questionnaire following the data sheet.
- It is important to report data sincerely. It is likely that there may be reliable information that tiger /leopard is present in the beat being sampled , but no tiger /leopard signs are recorded during the intensive search survey. In such cases, mention should be made in the remarks column of the data sheets. However, failure in obtaining tiger sign from a beat is equally important as recording tiger/ leopard sign and for appropriate analysis of this data the actual should be reported.

Sampling For Ungulates Encounter Rate

This protocol outlines a simple method for quantifying ungulates abundance in an area based on visual encounters while walking along fixed line transects. The following procedure needs to be followed for data collection:

- A beat would be considered as the unit for sampling.
- After considering shape, size, vegetation and terrain type of the beat, a transect line of a minimum of 2 km and not exceeding 4km will be marked for sampling.

- The transect line will traverse similar habitat (broad vegetation types) as far as possible. If the beat is composed of 2 or 3 distinct vegetation types eg. Mixed Teak Forest comprising 40% of the beat and the remaining 60% comprised of Miscellaneous forest with bamboo, then 2 separate line transects should be marked for sampling .
- The line transect within a beat will be broken up into 2 or more segment so that each segment has a minimum length of 2km and traverse similar habitat.
- Care will be taken that a line transect is not located near a busy road nor should it run parallel to a river or other features of the landscape which may bias sighting of ungulates.
- For each transect the point of beginning and end point coordinates (Latitude and Latitude) should be recorded by a global positioning system.
- The broad forest type and terrain type that the transect traverses needs to be recorded.
- Each transect will be walked by 1-2 persons during the early morning hours (6:30AM to 8:30AM). Preferably one of the persons walking should be a good field person who is able to spot wildlife.
- A record will be kept of all mammals and peafowl seen during the walk. For each sighting the following need to be recorded: 1) serial no of sighting, 2) time of the sighting , 3) species (eg. Sambar, Chital, Elephant, Wild Pig, Peafowl, Langur, etc.), 4) group size – number of animals of the same species in the group as accurately as possible. Animals are considered to belong to two different groups if the closest animals from groups are separated by a distance of over 30m.
- If possible number of young (fawn / calves less than 1 year of age) seen in the group should also be recorded.
- A broad habitat category (vegetation and terrain type) needs to be recorded for each sighting eg. S.No.5. 12 chital (10 adult and 2 young) were seen at 6:40am, in mixed teak forest, gently undulating terrain.
- Each line transects needs to be walked at least on three different mornings for estimating ungulate encounter rates.

Sampling for Vegetation, Human Disturbance and Ungulate Pellets

To quantify the habitat parameters and determine relative abundance of ungulates sampling will be done along the same line transect on which ungulate encounter rates were estimated. For economy of time and effort it would be possible to first sample the line transect during early morning hours for ungulates encounter rate and then while returning along the same line, sample for vegetation and ungulate pellets. Sampling for vegetation, ungulates dung and human disturbance will be done only once on a transect.

- Again the beat will be sampling unit, and sampling will be done along the established line transect.
- For beginning and end point coordinates of the line transects need to be recorded using a GPS unit.
- The principle of line transects as explained in the section on ungulate encounter rates is applicable here.
- Vegetation would need to be quantified visually at the following categories for each plot:

15m radius circular plot

1) Broad vegetation type and associated terrain type eg. mixed teak forest on hilly terrain, sal forest on flat land etc.
2) Within the distance of approximately 15m of the observer the five most dominant trees (over-story, all vegetation >6ft. in height, including bamboo) need to be listed in the order of dominance (abundance).
3) The observer needs to list the 5 most dominant shrub species (middle –story, vegetation >20cm & <6ft.) in order of dominance (abundance) within 15m of the location. He needs to categorize shrub density (under – story vegetation) as absent, very low, low, medium, and dense. Shrubs will be assessed on five point scale (0 to 4 i.e. absent to most abundant) for density estimation.
4) If weeds are present their abundance needs to scored on 0 to 4 scale (0 being absent and 4 for high abundance) and the three most common weeds seen in 15 m need to be listed in order of abundance.

1) Within the same 15m distance the observer needs to record number of signs of looping, wood cutting, and presence /absence of human foot trail. Mention needs to be made if people and or livestock are seen from the plot.

2) The observer needs to visually quantify the canopy cover at the location. The observer should subjectively classify the proportion of the sky above him that is covered by canopy foliage and categorize it into <0.1, 0.1- 0.2 ,0.2-0.4,0.4-0.6,0.4-0.6,0.6-0.8,>0.8 canopy cover.

3) A mention need to be made in the data sheet regarding the number of permanent human settlement, human population and livestock population present in the beat.

4) A mention needs to be made based on the observers' knowledge if any non timber product is collected from the beat. If yes which NTFP and to score the magnitude of collection on a 5 point scale (0- no collection, 4- high rate of collection)

5) If the beat was burnt, the proportion burnt in the past 3 years needs to be mentioned in the data sheet.

1m radius circular plot

The plot should be laid 5m away from the centre of the 15m circular plot. The observer needs to use a 2m long stick to define an imaginary circle around him with the stick as the diameter. Within this circular plot (2m diameter) the observer needs to a) quantify the percent ground cover, i.e. the proportion of ground covered by herbs, grasses, litter and bare ground b) List the 3 most dominant grass species, and herb species in order of abundance.

Sampling for Ungulates Pellets

Ungulates abundance will also be indexed by enumerating their faecal pellets. This exercise will be done on the same line transect that has been sampled for ungulate

- At every 400m along the transect (line of walk) the observer needs to sample an area of 2m by 20m, perpendicular to the transect for quantifying ungulates pellets. This is done by using the 2m long stick held at the centre horizontally in his hand and by slowly, 20m right and left of the transect alternately at every 400m.

- All ungulates pellets encountered need to be recognized to ungulates species and recorded in the appropriate columns.

- The number of individual fecal pellet need to be counted. In the case the pellets occur in the large heaps, then they should be categorized into the following categories A(50-100), B (100-200 and C (>200) .

- In areas where small livestock like sheep and goat are known to be grazed, it is possible that fecal pellets of these can be confused with wild ungulates especially those puff chital. In such areas, a mention needs to be made that goat or sheep graze the area.

- In the last row of the data sheet the observer needs to report if ungulates/ animal listed in the data sheet occurs in the sampled beat to the best of his knowledge irrespective of whether its pellets/ dung were recorded in the plots.

Phase II

The data from phase I one will be plotted in geographical information system (GIS) to develop a presence/absence map for tigers, at the beat or range level across the park. The presence/absence map is then to be used to develop a resource selection probability function using attribute data on transportation network (i.e., linear features such as roads and train tracks), forest cover, normalized difference vegetation index (NDVI), vegetation cover, terrain model, hydrology, and night light satellite (to represent human disturbance). The output of this phase will be a map with relative rankings of high, medium, and low probability of tiger occurrence throughout the park.

This data could be assembled and processed by any institution that has GIS facility and are eager to provide them. Outsourcing of this work would be helpful keeping in mind the feasibility and the amount of technicality that is supposed to be involved. This data once generated can serve as the inventory for the park and could be subsequently used by the park on future occasions.

Phase III

Estimation of tiger and ungulate abundance will be done by using intensive sampling. The habitat rank map for tiger developed in phase II will be used to draw a sample of location for intensive density estimation of tiger and ungulates density. Tiger population will be estimated using photographic mark- recapture sampling techniques in medium and high density (probability) areas. The following frameworks are tiger densities estimation by Capture recapture frame work and ungulate densities by Distance sampling.

Estimation of tiger populations using capture recaptures frame work

With the first animal triggered photograph being taken in 1877 (from Cutler and Swann, 1999), remote photography has been used to study avian nest predation, feeding ecology, nesting behavior, determining activity patterns, presence – absence monitoring and estimating population parameters. The increasing popularity of remote photography in wildlife research has led to the development of a large variety of equipment and methods (Kucera and Barrett 1993).

With the help of remote photography the elusive lives of cryptic animals have been better understood (eg. Pierce *et al.* 1998). Since previously all other information regarding cryptic animals, carnivores in particular, were derived either from direct observations or indirect signs, remote photography studies have proved more successful (Kucera and Barrett 1993). From the times of Champion (1928) photographing cryptic animals such as the tiger (*Panthera tigris*) in the Indian sub-continent using remote photographic techniques has sought popularity.

With developments in capture – recapture theory (Otis *et al.,* 1978, Pollock *et al.,* 1990) and the use of cameras to capture individually marked or identifiable animals and photographically recapture them, resulted in the use of cameras for estimating population parameters. Since individual tigers are readily identifiable using the stripes on the body (Schaller 1967, McDougal 1977, Karanth 1995, Franklin *et al.,* 1999), the sight-resight (White 1996) or capture-recapture approach can be used to estimate population parameters. The capture – recapture theory requires that all individually identifiable animals will have to be identified with surety. By estimating the capture probability *p – hat* an estimate of the population size (*N*) is arrived at (Nichols 1992). Owing to the large number of estimators available for estimating the population size (*N*) various computer programs have been formulated to aid analysis (eg. White 1996).

Karanth (1995) developed and implemented a method of photographic capture-recapture analysis to aid estimate and monitor tiger populations. Years of using this method of analysis has proved that photographic capture recapture sampling is a reliable technique for estimating abundances of tiger and other cryptic animals (Karanth and Nichols 1998, 2000, 2002, O'Brien *et al.,* 2003, Trolle and Kery 2003, Karanth *et al.,* 2004b).

However most published studies report population sizes accompanied by low levels of precision (eg. Karanth and Nichols 1998, 2000, Silver *et al.,* 2004) and low sample sizes (Kawanishi and Sunquist 2004). It is only recently that issues regarding sampling design related to photographic capture-recapture analysis are being discussed (Wegge *et al.,* 2004). This brings to notice that though this method of population estimation has proven successful, issues regarding sampling require rigorous field validation so as to improve the quality of the results thus obtained.

Estimating tiger population using photographic capture-recaptures

In order to estimate the population density of tigers in the study area photographic capture recapture analysis was chosen as an appropriate method (Karanth 1995, Karanth and Nichols 1998). The sampling design was modified to

The cameras are placed within wooden housings so as to protect the units from weather and animal damage. As to photograph the two flanks of individual tigers to aid individual identification.

These trapping sites are selected based on presence of tracks, scats and other evidence indicative of frequent tiger activity so as to maximise the capture probabilities of tigers (Karanth 1995). An important consideration is to ensure coverage of the entire area, without leaving holes or gaps that were sufficiently large within which any tiger have a zero capture probability. Therefore trap placement was planned with a minimum of 1.65 km inter trap spacing. Owing to the good network of roads all trapping sites in each of this should be checked on a daily basis.

All rolls of film used during the trapping have to given a unique identity (e.g. Block1/Trap1/Roll1) enable us to correctly note the date, time and location of the photographs resulting from each photograph. Every tiger capture will be given a unique identification number (e.g. t_1) after examining the stripe pattern on the flanks, limbs and fore-quarters (Schaller 1967, McDougal 1977, Karanth 1995, Franklin *et al.,* 1999).

Following the identification of tigers from the photographic captures using stripe patterns capture histories will be developed. The capture history for an animal t_x consists of a row vector of 15 entries, denoting the number of sampling occasions. Each entry, denoted as X_{ij} for an individual i on occasion j, assumes a value of either "0" if the animal is not photographed on that particular occasion, or "1" if the animal is photographed on that occasion. Referred to as an X matrix (Otis *et al.,* 1978) this data matrix will be used to estimate tiger population size N.

The capture history data will be analyzed using program CAPTURE (Otis *et al.,* 1978, White *et al.,* 1982, Rexstad and Burnham 1991), software developed to implement closed-population capture-recapture models. Program CAPTURE computes the estimate of N under seven different models which differ in their assumed sources of variation in capture probability (*p - hat*).

Since it is aimed to estimate the density (*D*) of tigers in the study area, the population size (*N*) is divided by the effective sampled area (*A(W)*). In trapping studies, *A(W)* is calculated by assuming that the perimeter traps represent the minimum sampling area *A*. The mean maximum distance *d* between recaptures of individual animals is calculated and the boundary strip width *W* is calculated as $W = d/2$ (Dice 1938, Wilson and Anderson 1985). The boundary *W* is then added to the minimum sampling area *A* on a GIS domain and *A (W)* thus calculated. The estimates of density and population size are evaluated using two principle measures: bias and precision.

Estimating ungulate density by distance sampling

Densities of the prey species is estimated using the line transect method (Anderson *et al.,* 1979, Burnham *et al.,* 1980, Buckland *et al.,* 1993). Line transects have been found to be very effective and reliable in estimating densities of ungulates in the Indian Subcontinent (Karanth *et al.,* 2004a). With the hypothesis that detection probability is related to the distance between animals and the point of observation, the obtained estimates of density are in effect adjusted for no detection bias.

Line transect data will be collected between 06:15 hrs and 09:30 hrs by two observers. On every walk the followings were noted –

i. Species and group size: On every detection the name of the species will be noted along with the sex.

ii. Position: Observation of animal clusters or individuals has to be noted as distance from the start.

iii. Sighting angle: Using a hand held compass (SUNNTO), the bearing of the animal clusters or individuals are taken. Since the bearing of walk is determined the angle of sighting will be calculated.

iv. Sighting distance: Using a laser range finder the distance to the animal cluster or individual is measured from the point of observation.

The line transect data will be analysed using program DISTANCE 4.1 (Buckland *et al.,* 1993, Laake *et al.,* 1993). For reliable estimates of prey species density a minimum number observations are required in order to be able to reliably model the detection function. As a rule of thumb, it is often difficult to get a robust result with less than 60 – 80 observations, although the number depends on the characteristics of the species (Burnham *et al.,* 1980).

This is a more appropriate method of calculating the prey density (*D*) and the associated Coefficient of Variance (CV %) since it takes into account the temporal variation in species detection (Jathanna 2001). In a more straight forward approach to the calculation of the prey densities from a line transect, each temporal replicated is treated as a separate effort and thus the variance is underestimated.

5,6,14.11.3 Habitat Assessment Framework

Prey base improvement:

a. Assessment of fodder availability:

Objective: to estimate quantitatively the extent of fodder availability for animals in different areas of buffer zone.

Methodology:

- Based on the logistics few permanent/semi permanent vegetation plots of 1 sq m are to be established in different locations of the buffer zone. In which equal number of plots are kept as control and grazed ones.
- In each of these plots regular extraction of biomass to be carried out and the collected biomass is to be divided as grass, non grass and other dry materials.
- Fresh and dry weight of the biomass is to be measured so as to know the exact amount of biomass.
- Collected biomass samples are to be subjected to nutrient analysis.

Expected outcome:

- Such type of quantitative exercise in biomass availability will indicate the grazing pressure on biomass in different locations of the buffer zone.

- It also indicates the seasonal dependency of animals on the biomass.
- The result is very important in assessing the extent of nutrient availability.
- The obtained data can be correlated with soil moisture, rainfall, and other weather parameters so as to know the influencing factor for balanced production and supply of biomass in the buffer zone.

5,6,14.11.4 Spatial Database Development

Development of spatial data base regarding the data collected during the phase-II will be out sourced to scientific organization equipped for the job and technical support of experts in the said field will be sought.

5,6,14.11.5 Analysis and reporting Framework

Analysis of the data collected by the forest department will be done by some Research Officer at the Office of the Field Director. The recommendations of the Research Bodies will be considered during any decision making for the park.

A half yearly report from each Range must be collected by the office of the Field Director regarding the proceedings and forth coming programs of the Range and a half yearly report should be mandatory for each Range that will describe the activities of he Range in detail during the year.

5.6.14.12 Organization, Administration & Budget :

5.6.14.12.1 Coordination Committee for effective implementation and management and Linkages with Tiger Steering Committee and Tiger Conservation Foundation.

An adjoining area co-ordination committee will be formed with the following members:

1. Regional chief Conservator of Forests & Field Director, Satkosia Tiger Reserve, Chairperson
2. Deputy Directors, Satkosia Tiger Reserve, Convener
3. Divisional Forest Officers, Angul, Dhenkanal, Athamallik, Athagarh, Cuttack Members

The respective DFOs will regularly liaise with the various line agencies/departments and the EDCs. The summary of these meetings shall be reduced to writing and shall be furnished to the Field Director during the monthly Core-Buffer co-ordination meeting.

5.6.14.12.2 EDC Coordination.

EDCs /VSS will be made in all corridor villages come within the adjoining areas. These EDCs/VSS will be activated by regular meeting by the forester and range officer concerned every month. The people will be made aware of the importance of the corridor

5.6.14.12.3 Staff deployment, Protection Strategy and Linkages with Tiger Cell and Buffer Zone Striking Force.

Deployment of staff will be as per the details mentioned in previous paras.

5.6.14.12.4 Schedule of Operations.

Schedule of operation is merged with and would be done as per the core plan.

5.5 Control Form: The following control forms are suggested.

SILVICULTURAL CONTROL FORM									
The format of coupe control form is as under									
Working circle periodic block		Felling series cutting section	Localities prescribed localities suggested				Coupe control form		
			As carried out				Coupe No.		Page
							Excess(+) or deficit (-)		
Prescription in brief	W.P. para	Year due	Year	Block/ Compt.	Area	Volume	Area	Volume	Remarks and Sanction
1	2	3	4	5	6	7	8	9	10

(a) NTFP Control Form: For controlling and maintaining a record of all NTFPs harvest so as to make the removal/ harvest of NTFPs remain sustainable; the following control form is suggested.

NTFP CONTROL FORM										
Format to incorporate the NTFPs:										
Working circle periodic block		Felling series cutting section	Localities prescribed localities suggested					Coupe control form		
			As carried out					Coupe No.		Page
								Excess(+) or deficit (-)		
Prescription in brief	W.P. para	Year due	Year	Block/ Compt.	Area	Name of NTFP with scientific name of	Vol/ Qty	Area	Vol/ Qty	Remarks and Sanction
1	2	3	4	5	6	7	8	9	10	11
*Quantity may be given in specified unit viz. number/weight/volume according to type of NTFP. Bamboos may be quantified in notional										

CHAPTER 6

6.1 Name of the Working circle: Bamboo (Overlapping) working circle

6.2 General constitution of working circle:

This Working Circle includes one block i.e Talaipathar, Bamboo is present in many forest blocks of the division like Kutulsingha, Dantarikhol, Bankimundi, Kadalimunda etc. but mostly the crop is in a degraded condition due to fire hazards and over felling over the years. The total area included in this working circle is **7012.54 Ha**. i.e. whole of Talaipathar block. The area statement by ranges, blocks and compartments included in the circle is furnished in **Table No 6.1** as below.

Table No 6.1: Area statement by Ranges, Blocks & compartments.

Name of the Range	Forest Block	Compartment No	Area in Hectare
Athmallik	Taleipathar RF	16	327.39
		17	193.09
		18	280.87
		19	462.85
		20	314.22
		21	227.62
		TOTAL	**1806.04**
	Taleipathar RF	1	403.75
Dhandatopa		2	219.43
		3	231.48
		4	307.12
		15	145.11
		22	315.98
		23	231.13
		24	200.99
		TOTAL	**2054.99**
Madhapur	Taleipathar RF	5	322.97
		6	355.43
		7	374.49
		8	428.11
		9	167.93
		10	190.75
		11	233.47
		12	187.24
		13	425.4
		14	465.72
		TOTAL	**3151.51**
		GRAND TOTAL	**7012.54**

6.2.2 Forest Type:

The Forest type of Taleipathar RF is furnished in Table No 6.2 as below.

Table: 6.2 BLOCKWISE FOREST TYPES OF BAMBOO (OVERLAPPING) WORKING CIRCLE OF ATHAMALLIK DIVISION

Sl .No.	RF Block	Type of Forest	Area in Ha	% Area
1	Talaipathar	(i) 3C/C2e Moist Peninsular Sal Forest	4210	7.81
		(ii) 5B/C2 Northern Dry Mixed Deciduous Forest	2802.54	5.2

6.2.3 Density classes :

The Forest Block of Taleipathar RF is having moderately dense forest growth with density of 0.3-0.5.

6.3 General characteristics of vegetation:

Two species of bamboo are found in the forests of this Division. The most commonly found species is Salia bamboo (Dendrocalamus strictus). Mainly Bamboo occur in the division as a part of second storey in Northern Dry Mixed Deciduous Forest and in moist Peninsular Sal Forest, but Bamboo constitutes main crop with a few scattered trees on some of the very dry hill slopes and hill top as under storey or at some places as bamboo brakes. Mostly the bamboo present is of Quality III, except in few compartments where Quality II bamboo is present. Salia bamboo meets the demands of local people. To ascertain the growing stock and status of regeneration; Sample point enumeration of Bamboos has been carried out in the designated plot of 0.1 ha(31.62m x 31.62m). It is observed that there is absolutely no clump in Taleipathar RF .The detail of enumeration of Bamboos carried out (grid wise) is furnished in **Table No.6.3** as follows.

Table No-6.3 ENUMERATION OF BAMBOO IN HATIDHARA & TALEIPATHARARF																		
Sl. No	Cmpt. No.	Grid no.	Species name	Local name	Collar dia in cm.	Green sound culms									Green damaged/ twisted	Dry culms		Total no of culms
						Current years			One to two years			Over two years				Sound	Damaged /twisted	
						a	b	c	a	b	c	a	b	c				
					TALEIPATHARARF													
1	5	13	D. Strictus	Silia	54	0	0	0	4	0	0	0	0	0	0	1	3	8

6.4 Felling series, cutting sections and JFM areas :

In the outgoing working plan; entire Talaipathar and Hatidhara blocks have been included in the Bamboo (Overlapping) Working Circle. Hatidhara block was categorised under Treatment type "A" and Talaipathar block under Treatment type "B". These two blocks spread over three ranges. In the outgoing plan only ones i.e. in 2007-08; 710.120 MT of salia bamboos was obtained throughout the plan period. The coupe has not been worked during the plan period due to non-availability of sufficient bamboo clumps which are commercially viable. The details of bamboo coupe worked with production of industrial bamboo & commercial bamboo is furnished in **Table No. 6.4** as below.

Table No. 6.4: Working of Bamboo Coupes & Production.

Year of working	Name of the coupe	Production (industrial Bamboo) (in MT)			Production (Commercial Bamboo) (in No.)	Royalty paid by OFDC, Ltd.	Reason for Non working
		Salia	Daba	Total			
1	2	3	4	5	6	7	8
2006-07	Hatidhara (S & N) BCB	No. Working	-	-	-	-	Offered to OFDC, Ltd but surrenderd due to un-productive and un-economical.
2007-08	Hatidhara (S & N) BCC	710.120 MT	-	710.120 MT	1961 nos	-	
2008-09	Hatidhara (S & N) BCD	-	-	-	10933 nos	-	
2009-10	Hatidhara (S & N) BCA	No Working				-	During 2009-10 offered to OFDC, Ltd, Angul for taking delivery but the OFDC, Ltd have not taken delivery of the coupes.
2010-11	Hatidhara (S & N) BCB	-	-	-	3862 nos	-	
2011-12	Hatidhara (S & N) BCC	-	-	-	8473 nos	-	
2012-13	Hatidhara (S & N) BCD	No working	-	-	-	-	During 2012-13 offered to OFDC, Ltd, Angul to work out but the OFDC, Ltd have not taken delivery of the coupes.
2013-14	Hatidhara (S & N) BCA	No working	-	-	-	-	Delivered during 2013-14 but surrendered due to non-economic vide his Memo No. 835 dt. 20.12.2013
2014-15	Hatidhara (S & N) BCB	No Working	-	-	-	-	Delivered during 2014-15 but the OFDC, Ltd surrenderd on the ground that there is no potentiality for commercial exploitation of Bamboo from these coupes.

It is observed that the bamboo coupe working is affected due to want of potentiality for commercial exploitation. In the present plan period, the enumeration data reveals that there is absolutely no crop in Taleipathar and confined to few compartments in Hatidhara RF. Subsequently the Hatidhara RF has been merged in Satkosia WL Gorge Sanctuary. Hence, it is proposed that there will be no coupe working. However, the area will be treated as Bamboo improvement working circle with special emphasis on Bamboo regeneration & Silvicultural operation of Bamboos.

6.5 Blocks, compartments and JFM area :

In view of proposed improvement in Bamboo coupe, one treatment series is suggested i.e. Taleipathar coming under Athmallik, Dhandatopa & Madhapur Range.

Table No. 6.5 Blocks, compartments and JFM area :

Name of the Range.	Name of the Treatment series.	Forest Block/ Village Forest	Compartment Number.	Area in Hectare.	Area under JFM Committee in Hectare.
Athmallik	Taleipathar	Taleipathar RF	16	327.39	
			17	193.09	
			18	280.87	
			19	462.85	
			20	314.22	
			21	227.62	
			TOTAL	**1806.04**	
Dhandatopa			1	403.75	
			2	219.43	
			3	231.48	
			4	307.12	
			15	145.11	
			22	315.98	
			23	231.13	
			24	200.99	
			TOTAL	**2054.99**	
Madhapur			5	322.97	
			6	355.43	
			7	374.49	
			8	428.11	
			9	167.93	
			10	190.75	
			11	233.47	
			12	187.24	
			13	425.4	
			14	465.72	
			TOTAL	**3151.51**	

6.6 SPECIAL OBJECTIVES OF MANAGEMENT:

The special objectives of the management of the Bamboo improvement (Overlapping) Working Circle are within the scope of general objective of management of the entire division. These are as follow:

a. Systematic management of the bamboo forests to obtain sustained yield.
b. To ensure regular silvicultural operations to prevent deterioration of the growing stock.
c. Meeting the demand of the local people, artisans and bamboo based industry.
d. Employment to forest dwellers and local people.
e. To rehabilitate the exhausted bamboo bearing areas through appropriate measures like tending, soil working, plantation etc.

6.6.1 Analysis of the crop:

The entire Talaipathar block has been included in the Bamboo improvement (Overlapping) Working Circle. All bamboo plantations taken up under OBDA of State Bamboo Mission and National bamboo mission has been included in this working circle along with area covered in the last plan. In most of the block / coupe, the bamboo are confined to middle and up hills while the foothills and valley portion contain very little or no bamboo growth. The bamboo has been exploited unscientifically in the past. While easily accessible forest areas were over exploited, the difficult hilly terrains and inaccessible areas were either under exploited or left without working. This has adversely affected the growth of bamboo clumps. Degeneration and degradation of bamboos in lower slopes and plains and congestion in upper slopes is the result of haphazard bamboo working in the past. Most of the clumps on an average do not contain minimum number of culms required for healthy growth of rhizomes. All the area will be treated as per working plan prescription irrespective of availability of harvestable bamboo. After sufficient interventions in the form of silvicultural operation and complete protection this area can be commercially exploited for Bamboo harvesting..

6.6.2 Silvicultural system :

-

The Silvicultural System prescribed is 'Clump improvement' combined with bamboo plantations for Salia bamboos and 'Clump improvement' for Daba Bamboos.

6.6.3 Rotation Period:

Not applicable.

6.6.4 Harvestable diameters:

Not applicable.

6.6.5 Reducing factors and reduced areas:

Not applicable.

6.6.6 Felling cycle:

Not applicable.

6.6.7 Division into periods and allotment to periodic blocks:

Not applicable.

6.6.8 Calculation of the yield :

Not required in view of conversion from coupe working to improvement working of Bamboo overlapping areas.

6.6.9 Table of Treatment:

The table of treatment of areas in respect of Taleipathar series is furnished in **Table No. 6.6** as follows.

Table : 6.6 SEQUENCE OF IMPROVEMENT IN TALEIPATHAR TREATMENT SERIES

Name of the Range		Athmallik, Dhandatopa. Madhapur			
Coupe No	Forest Block		Comptt. No	Comptt. (Area ha)	Coupe area (ha)
I	2021-22	Taleipathar	16	327.39	801.35
			17	193.09	
			18	280.87	
II	2022-23		19	462.85	1004.69
			20	314.22	
			21	227.62	
TOTAL OF ATHMALLIK RANGE					1806.04
III	2023-24	Taleipathar	1	403.75	623.18
			2	219.43	
IV	2024-25		3	231.48	683.71
			4	307.12	
			15	145.11	
V	2025-26		22	315.98	748.1
			23	231.13	
			24	200.99	
TOTAL OF DHANDATOPA RANGE					2054.99
VI	2026-27		5	322.97	678.4
			6	355.43	
VII	2027-28		7	374.49	802.6
			8	428.11	
VIII	2028-29		9	167.93	
			10	190.75	592.15
			11	233.47	
IX	2029-30		12	187.24	612.64
			13	425.4	
X	2030-31	Taleipathar	14	465.72	465.72
TOTAL OF MADHAPUR RANGE					**3151.51**

6.6.10 Method of executing the felling ;

Not applicable. However in case of sporadic flowering and gregarious flowering, the following method of execution is proposed.

(i) If sporadic flowering of bamboo culms is observed, such clumps will be clear felled once the seeds from such culms have fallen.

(ii) In case of gregarious flowering of bamboos, on the shedding of ripen seeds, the clumps will be clear felled and extracted early, so that bamboos may not dry or deteriorate or become prone to fire hazard. Disposal of such bamboos should be expeditiously arranged to prevent deterioration in quality and the prescribed treatment as mentioned below shall be adopted in the gregariously flowering areas.

(iii) Lopping of bamboo either for feeding livestock or otherwise is strictly prohibited.

(iv)Bamboo forests should be rigidly protected from fire.

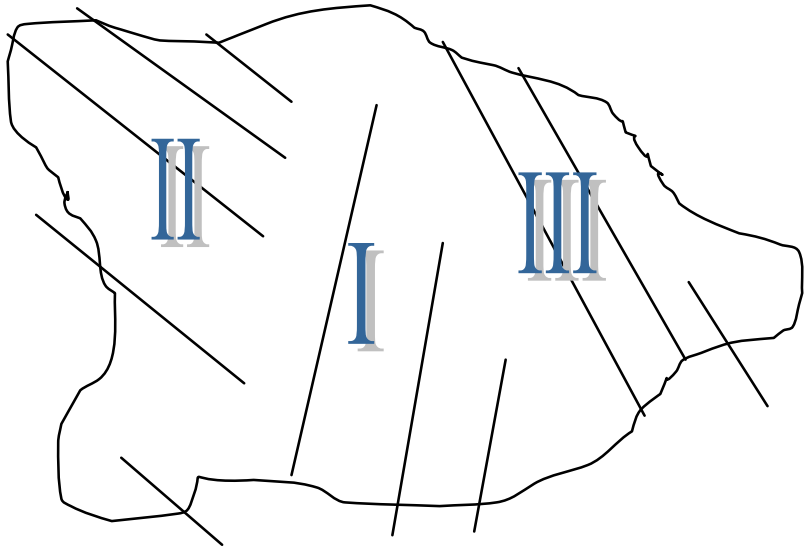
(v)No grazing shall be permitted.

(vi)There will be no commercial felling in any clump.

(vii)Only cultural operations will be carried out which will include:

- Felling of all dead, dried, over matured, burnt, broken and grossly damaged bamboos.
- Broken or cut bamboos or high stumps in green condition having length of 2.5 meters or more may be retained, if necessary, to maintain size of the clumps.
- The minimum number of culms to be retained per clump as prescribed in foregoing paras for various quality classes may not be strictly followed if necessity so arises.
- The congested bamboo clumps should be clear felled by forming segments. The maximum number of segment under which a congested clump should be worked out, will be three and at each working not more than one segment will be worked out.

Diagram showing divisions of the clump in these segments is given below: -



The bamboo potentiality will be augmented by raising bamboo plantation. The minimum area to be planted annually will be 40 hectares or one third of the area under this type. Tending and cultural operations in the areas planted with bamboo will be done as per the standard practice.

6.6.11 Subsidiary silvicultural operations cleaning and thinning:

Since productivity of Bamboo Forest depends on proper and timely silvicultural operations, it should be ensured to carry out such operations. Even, the early stage of established natural regeneration shall also be taken care of at the time of silvicultural operations so as to add to the future crop of the bamboo forests.

S.S.O operation taken up in Bamboo Coupes during last working plan period is furnished in **Table No.6.7** as follows.

Table No.6.7: S.S.O operation taken up in Bamboo Coupes during last working plan period					
Year of working	Name of the coupe	Forest block & Compt. No.	Area worked (In Ha.)	Clumps worked (No.)	Scheme
1	**2**	**3**	**4**	**5**	**6**
2006-07	B.C (B)	Hatidhara (S) Compt. No.40,41,42,43 & 44	1660.45 Ha.	No work t	-
		Hatidhara (N) Compt. No.8,9,10,11,12, 13 & 14	2375.45 Ha.	No work t	-
2007-08	B.C (C)	Hatidhara (S) Compt. No.34,35,36,37,3 8 & 39	1822.51 Ha.	No work t	-
		Hatidhara (N) Compt. No.15,16,17,18 & 19	1699.85 Ha.	No work t	-
2008-09	B.C (D)	Hatidhara (S) Compt. No.28,29,30,31,3 2 & 33	1540 Ha.	38500	S.S.O Bamboo Gen
		Hatidhara (N) Compt. No.20,21 & 22	1209.37 Ha.	No work t	-
2009-10	B.C (A)	Hatidhara (S) Compt. No.45,46,47,48,4 9 & 50	828 Ha.	20700	S.S.O Bamboo Gen
		Hatidhara (N) Compt. No.1,2,3,4,5,6 & 7	212.5 Ha.	5990	S.S.O Bamboo CAMPA A.P.O
2010-11	B.C (B)	Hatidhara (S) Compt. No.40,41,42,43 & 44	480 Ha.	12000	S.S.O Bamboo General
		Hatidhara (N) Compt. No.8,9,10,11,12, 13 & 14	950.1 Ha.	23752	S.S.O Bamboo CAMPA A.P.O

2011-12	B.C (C)	Hatidhara (S) Compt. No.34,35,36,37,38 & 39	800 Ha.	20000	S.S.O Bamboo General
		Hatidhara (N) Compt. No.15,16,17,18 & 19	1039 Ha.	25975	S.S.O Bamboo CAMPA A.P.O
2012-13	B.C (D)	Hatidhara (S) Compt. No.28,29,30,31,32 & 33	1350 Ha.	33750	S.S.O Bamboo General
		Hatidhara (N) Compt. No.20,21 & 22	2500 Ha.	62500	S.S.O Bamboo CAMPA A.P.O
2013-14	B.C (A)	Hatidhara (S) Compt. No.45,46,47,48,49 & 50	150 Ha.	3750	S.S.O Bamboo General
		Hatidhara (N) Compt. No.1,2,3,4,5,6 & 7	1500 Ha.	37500	S.S.O Bamboo CAMPA A.P.O

It is observed that most of the clumps are not worked out. Under silvicultural operation of bamboos, efforts have to be made for treatment of all clumps. The exposed rhizomes shall be covered with soil scrapped from the uphill side of a hilly or undulating terrain. Where ever, necessary stone wall shall also be erected on the downhill side to support the soil till its stabilization; this shall be concentrated mainly in steep slope areas. However, in the process, care should be taken to ensure that no damage is caused to the rhizomes and rootstock,

- As moisture conservation measure, half-moon trenching shall also be dug on the uphill side of the clump in concave shape. No damage should be caused to the rhizomes and rootstock,
- Besides, pulverization and sufficient soil working around the clumps shall be done to improve the overall quality and productivity of the bamboo forests.

6.6.11.1 TREATMENT OF GREGARIOUSLY FLOWERED AREAS:

(i) Bamboo seedlings at a spacement of about 4m x 4m are to be adopted and regained and the rest are to be thinned out.

(ii) Clearing, soil working and weeding are to be done around the adopted bamboo seedlings up to a radius of 50 cm.

(iii) To maintain the continuity, planting up of bamboo rhizomes is also to be resorted to especially in big gaps.

(iv) All the flowered clumps are to be worked out as per the prescriptions of the Working Plan.

(v) The area should be closed for grazing.

(vi) Elaborate fire protection measures are also to be taken.

6.6.12 Regeneration :

6.6.12.1 Natural Regeneration ;

The early stage established natural regeneration shall be taken care of at the time of silvicultural operations so as to add to the future crop of the bamboo forests. In all such natural young clumps, sufficient soil working may be carried out. Regeneration of degraded bamboos should be taken up on an average of 20 culms/Ha in Taleipathar RF.

Under the above operation, all the live clumps shall be treated with individual clump treatment which shall include cutting back of high stumps, cutting and removal of side branches and removal of cleaning materials from the treatment area so as to reduce fire hazard. Earth mounting to the base of the clump should be done preferably with soil scooped out from uphill side. Stacking of boulder's wherever they are available on the downhill side close to the clump will help stabilize the soil and protect it from erosion.

6.6.12.2 Plantation of Bamboo:

It should be taken up in deficient areas especially where the density of bamboos is less than 20 clumps per hectare. 200 Ha should be covered under OBDP(State Plan) in each improvement series and 200 Ha should be covered under NBM in each improvement series.

6.6.13 Associated regulations and measures :

The Bamboo improvement (overlapping) working circle overlaps the Protection working circle and selection working circle. Hence the associated regulations and measures will remain the same as proposed under the respective working circles.

6.6.13.1Grazing :

Grazing within forest area should be totally stopped. As an alternative, the following activities are proposed.

1. Develop alternate grazing ground,
2. Train people on stall feeding,
3. Adopt plantations on Silvi Pasture Method.
4. Educate people on adverse impact of heavy grazing.
5. Alternate grazing may be created in NFL.

6.6.13.1.1 Grazing control

(a) The grazing can be controlled in the forest area in regular consultation with local people and to develop fodder resource and to encourage stall feeding.

(b) To educate the forest fringe villages to dispose the un-productive cattles and procure better quality of cattle and stall feeding.

(c)Villagers should be encouraged for large scale plantations of fast growing fodder species.

All possible sincere efforts need to be taken to prohibit encroachments, illegal mining and jhumming by frequent patrolling of the coupe areas.

CHAPTER-7

7.1 Name of the Working Circle: NTFP (OVERLAPPING) WORKING CIRCLE

7.2 General constitution of working circle:

All the Forest Blocks, included in the plan other than that under the protection working circle, have been allotted to this Overlapping Working Circle. The total area included in this working circle is 37085.4178 hectares.

7.2.1 Area statement:

Since this Working Circle overlaps the entire plan area(excluding 8436.49hectares of the Protection Working Circle where in only the area treatment is prescribed with no NTFP extraction), the details of area allotment to this circle has not been furnished.

7.3 General characteristics of vegetation:

7.3.1: Aspects of vegetation pertinent to management objectives:

Since this is an overlapping working circle; aspects of vegetation such as crop composition, age class distribution, density, growing stock, status of regeneration and special problems like menace of weeds and invasive species growth etc has already been described under respective working circles.

7.3.2 General Status of NTFPs:

The forests of Athamallik Division are rich in biodiversity. Species yielding non-timber forest produce (NTFP) like fruits, seeds, flowers, tubers, barks, leaves, roots and gums are abundant. The livelihood security of the people in and around the forests largely depends on these products. NTFP collection has been largely unorganized in this division. The present practice of collection of various NTFP items is not scientific and it is not sustainable. Though NTFPs are within the broad spectrum of forestry development and tribal welfare, the investment in NTFP sector is not a priority. This Working Circle is constituted with an aim to address the problems with regard to scientific management of NTFPs and the problems involving means of livelihood of the rural poor and tirbals of the locality and increasing investments. This working Circle overlaps the entire Working Plan area of the Division except area included under protection working circle.

The gatherers of NTFPs, majority of whom are women, have limited access to the market, and their primary concern is to dispose off the NTFPs on getting a fair price for the materials gathered by them. The prevailing system does not adequately provide these facilities to the primary gatherers. Keeping in view of these considerations, the Government of Orissa formulated the Policy of procurement and trade of Non timber Forest Produces during March, 2000.

Under the present scenario, special efforts are required to strike a balance between the protection of the interests of the primary gatherers, thereby enhancing their subsistence and side by side the protection / conservation of the natural resources, thereby increasing the productivity and marketing on a sustainable basis. This working circle attempts to address the above difficulties.

7.4 Felling series, cutting sections and JFM areas :

Felling series and cutting sections are not applicable to this working circle. The JFM areas has been reflected in respective Working Circles.

7.5 Blocks, compartments and JFM area :

Blocks, compartments and JFM areas has already been reflected in respective Working Circles.

7.6 SPECIAL OBJECTIVES OF MANAGEMENT:

The special objectives of management are as follows:

1. To regulate the collection and extraction of various NTFPs with a view.
    a. To sustain desired species compositions.
    b. To encourage regeneration of the forests.
    c. To promote sustainable management of forest
    d. To protect the interests of the primary gatherers.
    e. To promote the scientific extraction of the various NTFP items
    f. To optimize collection and extraction of various NTFPs consistent with the first objective.

2. To enhance the value of forest by way of
    a. Developing new NTFPs.
    b. Creating opportunities for value-addition in existing NTFPs and
    c. Strengthening marketing and other local institutions.

3. To enhance the stakes of local people in NTFPs and to extend skills to local people for sustainable collection, extraction and utilization of various NTFPs.
4. To encourage greater financial and managerial inputs in forests to promote regeneration of most valuable and desirable NTFP and to enhance productivity of forests.
5. Organization of Primary Collectors through village level institutions like VSS, Self Help Groups, Cooperative societies etc. To project the interests of the people from exploitation of the middlemen.

7.6.1 Analysis of the crop:

No systematic study was undertaken in the Division to assess the Volume potentiality, flow and varied uses of NTFPs by the forest communities. There is need to ascertain the impact of collection / extraction / utilization practices on sustainability of these forests *vis-à-vis* the role of NTFPs in the village economy. The need for such studies has been felt since long. During the sample point enumeration in the current working plan period; assessment of NTFP was conducted. Many collection practices very adversely affect forests and are often unsustainable. For example, if all seeds are collected from forest floor and no seed is left for regeneration, forests may not regenerate. This is evident in many Sal forests, where Sal seed is very intensively collected. Similarly, no young Mohua trees are observed in many areas because there is no scope for regeneration due to massive seed and flower collection.

Forest floors are often burnt before many oil seeds and grasses, particularly fodder The term Non-Timber Forest Produce (NTFP) includes all forest produce except timber, small timbers and fuel wood. NTFP have great potential to support the people's economic development consistent with the principles of sustainable forest management. Athmallik Forest Division having extensive jurisdiction and vast vegetative cover has good potential of NTFP. The tribals, who constitute major part of population along with other rural people, are dependent on such forest produce for their Subsistence. Some of the NTFP items supplement their food and other consumable requirements while the collection, transportation and marketing of other NTFP items provides regenerative work to them especially during lean period.

grasses, are collected or used. This practice is very harmful to forests. It kills micro-flora and fauna. In many forests, floors are swept for leaf litter and humus. This practice effects nutrient re-cycling which plays an important role in maintaining transpiration process. Moreover, the NTFPs are over-exploited in many cases. Likewise, some medicinal species have been over-exploited. They have either become extinct or are facing extinction. Similarly, plants whose tubers and roots are collected or used are under greater threat. The NTFP items are being worked through Gram Panchayats and details of extraction of different items is not available in Range or Division Office.

The National Forest Policy 1988 has spelt out one of its strategies of rural development by associating the tribals and other rural people living in and around forest areas for protection, regeneration and development of forests by ensuring optimum collection of NTFP through them. Institutional arrangement for marketing the same will also be done to safeguard their customary rights and interests and to provide them employment. About 40% of livelihood of rural people including tribals is covered through collection and sale of various NTFP items. These items also contribute some amount of revenue to the state exchequer. Many NTFP items have commercial importance. NTFP were neglected in the past and their collection was largely disorganized. Moreover, the present practice of collection of NTFP is not scientific and sustainable. In the light of above facts and with a view to provide avenues of economic development to rural and tribal people by generating employment the constitution of this working circle has been felt essential.

The collection of NTFP items is not only confined to RF blocks but also spread to DPFs , Khesra Forest, Village Forest, Govt. Waste land and private lands. Sal is the dominant species in majority of forests of this division and forms pure crop in many forest blocks. Sal seeds, Sal leaves and Sal resin (Jhuna) are important NTFP items procured from Sal forests of this Division and these items are available in substantial quantities. The primary and secondary associates of Sal along with under wood and under growth provide other important NTFP items like char seeds, kusum seeds, myrobalans, mahua flowers and seeds, karanja seeds, babul seeds, siali leaves and fibers, dhatuki flowers, bhuineem, ban haldi, bankulthi, kanta badhuni, phul badhuni, bantulshi, gums and resins etc. Some of these items are exploited for commercial purposes.

Kendu leaf is another important NTFP item exploited at commercial level in this division. Kendu leaf bushes and shrubs are mostly available in Govt. waste land and private holdings and contribute about 80% of Kendu leaf production. The mohua trees which yield mohua flowers and seeds are largely available in the village forests and private holdings and contribute more than 60 percent of Mohua flowers and seeds collection. Mohua trees are also available in many RF and DPFs.

7.6.1.1 List of major NTFP used:

Kendu leaf:

(*Diospyrus melanoxylon)* It widely occurs in the division, particularly in dry areas. Leaves are collected during February-June. The collection activities provide considerable employment to rural poor. The leaves are valued for their use as wrappers for bidi. The species propagates by root suckers. If root suckers are induced, coppice shoots cultured and water conservation measures carried out, the productivity of leaves can be sustained. However, not much has been done to improve crop and crop conditions through appropriate silvicultural practices. There is an urgent need to undertake crop improvement measures, at least on some experimental sites, by the concerned KL Division. There is a pertinent problem of forest fire, mainly caused deliberately to improve the Kendu Leaves production. This should be avoided at all cost. Again more than 5 crores go to people as a wages and and this has tremendous impact on the livelihood needs of the people where there were no employment scope in the lean period of summer.

Sal Seed:

Sal seed became commercially viable about 20 years ago. It found many alternative uses in soap making, manufacture of vanaspati, sweets and chocolates. Sal seeds are raked from forest floors along with leaf litter and humus. During the process of raking, all previous years' seedlings are either killed or their root systems are damaged. The removal of litter and humus exposes the soil and dries up soil moisture, which in turn kills the micro-flora. Sal growth, which is dependent on mycorrhiza, is adversely affected. Therefore, the prevailing practice of collection of Sal seeds needs to be done away with by all means. Collection by picking the seeds from the forest floor shall only be allowed. Raving or burning of forest floor is strictly prohibited. Alternatively, the staff of the Division as well as those of the approved leaseholders shall work in close co-operation with the people who should be repeatedly explained as to why these restrictions are necessary in the interest of forests and in their own interests. Sal seed collection starts in mid May and continues till the end of June or the arrival of the monsoon whichever is earlier. Mainly women and children collect the seeds. The Sal seed is very important component of livelihood needs of the people, especially when there are no other works available. The efforts are made to work out the impact of Sal seed on the livelihood needs of the people. The forest fringe villages and the tribals get more than 10 lakh rupees as wages for Sal seed collection. No collection shall be allowed beyond 15th June. To check this aspect, even all the purchase may be permitted till this date only so as to ensure proper implementation of the above mentioned restriction.

Another point that needs consideration is the proper drying of the seeds after collection. If moisture content is not regulated, it becomes susceptible to fungul infection. Though it can be checked through application of fungicides, care should be taken to ensure timely purchase of seeds by the trader so that primary collectors do not suffer loss due to such damage. Moreover,less time of storage,otherwise also ensures a quality and would fetch a better price.

Siali Leaves and Fiber:

Siali leaves and fiber (leaves and fiber of *Bauhinia vahlii)* are largely used in making leaf plates, donas and food wrappers in hotels, parties, functions and ceremonies. Siali leaves have a high market potential throughout India. Siali leaf is a major source of income for the forest dwellers. It is available in the month of February and March of the year. The leaves are dried in sun for about 2 to 3 days and then 5-6 leaves are stitched into a plate with the help of thin bamboo splints and then sold in bundles. Each bundle contains 80 leaf plates. There is a lot of scope for Siali Leaves collection in Athamallik Division, especially in the Northern RF area, Nuagarh, Kameswarpalli, Mahendrapur, Hingmandal areas of Talaipathar. But surprisingly, though there is potential, the collection is almost negligible in the Division

In this regard the intervention of Forest Department and NGOs is required to encourage people to collect the leaves and sell in the market. Siali fibres are collected in the Division in about 7 villages namely Kamalpur, Kuadapur, Rangapur, Telnoi, Bankual, Badabandha and Kuteswar in Athamallik range. Nearly 4000 man days are generated in this collection. The fresh leaves appear in March after defoliation. The tree coppices well particularly near the ground level, the advantage of which is taken by the leaf pluckers. Better quality leaves are available to them at a convenient height from those coppice shoots. However, collection of tender leaves from such coppice shoots has harmful effects on the growth of plants. Hence, collection should not be allowed during March to May and even in the rainy season. The ideal time for collection is between September to January. Further, total sweeping of the plants for collection of leaves should be discouraged. The limit should be fixed for extraction of leaves and in any case it shall not be more than two quintal per hectare of forest area. It is better if collection is done through VSS; and the Forest department jointly with organizations like TDCC & TRIFED may organize training camps to impart knowledge of sustainable collection practices to the primary collectors, The fibres are used for Kendu leaves binding.For extraction of the fibre, the climbers shall have at least two feet girth. This is the girth when the climbers moves towards its maturity and requires to be cut for silvicultural needs. Even the quality of leaves also gets reduced. The climber has to be cut flush to the ground and carefully pulled out from the host plant. Usually, it takes four to five years for the climber to attain the exploitation size. Hence, cutting cycle of five years may be adopted to work out this climber.The process of separating the fibre from the wood plant tissue is technically known as 'Retting'. This process consists of submerging the stem to the action of water and allowing fermention to take place resulting in removal of gummy material by water and subsequent beating & scrapping of the softened tissue to get the fibre.

Myrobalans:

The fruits of *Terminalia chebula*, *Terminalia bellirica* and *Emblica officinalis* (collectively known as myrobalans) are used for tanning and also for medicinal purposes. These items are now under the control of the Panchayats. The best time for collection is January. Myrobalan tan is usually blended with other quickly penetrating tans to produce good leather colour. The time of maturity of fruits should be notified. In the absence of standards for sustainable harvesting regime, at least one third of the fruits should be left on the trees for natural regeneration to take place.Generally,the primary collectors dry the fruits using simple sun drying techniques, which blackens the produce thus fetching lower price. However, drying and packaging the produce in small bags can do value addition. The DFO with organization like TDCC & TRIFED shall take steps to provide preliminary training to primary gatherers to adopt collection and processing methods, which are not injurious to fruit-producing trees as well as to the produce. These steps will not only sustain forests but will provide opportunities for local value-addition. These opportunities to primary gatherers, for adding value at local level, shall help them to get better remuneration and will also diversify and develop local economy. Steps should be taken to raise the seedlings (seed origin/grafted) for distribution among the local people for planting in their backyard or any other land under their possession, so that they can sell away the produce to generate some income. Collection of Myrobalan by cutting the branches of the trees should be strictly prohibited.

Genduli Gum and Other Gums:

Genduli gum or Gum karaya is the most important of all gums. It is extracted from *Sterculia urens*.Genduli gum is edible and used in manufacturing of sweets,chocolate,chewing gum and in the spinning mills. Care should be taken to ensure that hammering of the bark is not done;it will lead to closing of pores and thus, preventing the exudation of gum.Exudation takes place round the year but it is maximum during the hot summer from April to June though the collection time starts from September itself. However,gum harvesting during rainy season is poor in quality and hence, no tapping should be done during this season.A tapping cycle of 4-5 years may be adopted. Panchayats may be encouraged to provide preliminary training to primary gatherers to adopt collection and processing methods, which are not injurious to fruit-producing trees as well as to the produce.

Mahua Flowers and Seeds:

Mahua flower is very popular among tribal for its liquor. The villagers eat the dry corolla by frying and making into cakes. They also use it as cattle feed. Mahua flower is available during April and May. Men, women and children are engaged in collection of Mahua flower and seeds. Flowers fall down at night. People go early in the morning and collect them in Bamboo baskets (locally called Kundi). Each basketful of Mahua flowers weighs about 12 to 15 Kg. Usual practice of collection is to set the ground surrounding the tree on fire for easy collection. These fires, often spread making it uncontrollable and damaging valuable forest. Such practice should be avoided. Since sugar content is maximum when flowers are natural and ready to fall,the primary collectors should wait for the flowers to fall. However, ground below should be cleared before hand so as to get unadulterated flowers.The ideal time for collection is the early morning when maximum flower dropping occurs. The value addition identified for mohua have been grading of flowers as well as drying. Proper drying should be ensured to increase its shelf life. Otherwise, degradation in quality causes lowering of its price. The dried flowers, reddish in colour has more market value than the blackish flower. The Mahua flower collection is an important livelihood activity in the division. The efforts are made to workout the impact of Mahua flower collection on the lives of rural and tribal people. The collection is spread over the entire division. More than 1.5 lakh man days are generated for Mahua collection.

Tamarind:

Tamarindus indica is a big tree and occurs as in natural forests. It is also cultivated on private lands. Tamarind fruits generally become available for collection during March-April. Tamarind is used mainly as preservative and an important ingredient in pickles, juices and tamarind concentrates. It is also used in powdered form, which is becoming increasingly popular. It is believed that tamarind water keeps body cool in summer days. Its seed is also used as cattle feed and poultry feed. Tamarind, thus, has many uses and is in great demand in different markets. It needs very simple processing. After collection, thin hard cover is decorticated manually. It needs very simple processing. After collection, thin hard cover is decorticated manually which is sold at much higher price than the seeded one. Even the seeds are sold at good prices. Moreover, the deseeded tamarind is less prone to insect attack & thus, can be stored at longer periods. Hence, the simple process of deseeding at the primary collector's level shall be encouraged. The seeded tamarind is sold at Rs.25.00 to Rs.40.00 per kilogram. There is lot of potential in the forest for the collection of tamarind especially in Raida, Kenchanalli, Susab, Gurjang, Lakshmipriyapur, Bamur areas. At present whatever is collected, it is consumed locally. In order to make the species more popular among the local people, steps should be taken to make endeavor for supply of grafted seedlings of tamarind to them.

Sal Leaves:

Sal leaves are mostly used for making cups and plates. In some localities they are also used for making bidi like country cigarettes. The leaves are also used as wrapper in betel shops and by junk food sellers. Fresh leaves appear in March after defoliation. It will be easy for the pluckers to collect fresh leaves from coppice shoots which will be at the convenient height. But these leaves are not good as they cannot withstand the pressure of processing and also collection of the leaves at the tender age has harmful effects on the plant. The harvesting of leaves should not be allowed in spring (January to March) and rainy seasons (June to September). Though the potential is more, the exploitation should be very limited. Further,the total sweeping of the plants for collection of leaves should be discouraged. The limit should be fixed for extraction of leaves and in any case it shall not be more than two quintal per hac of forest area.It is better if the collection is done through VSS and the Forest Department should impart knowledge of sustainable collection practices to the VSS members to meet the twin objectives of livelihood needs of villagers and scientific forest management.

Bamboo:

The bamboo artisans are distributed in about twelve villages in Athamallik, Madhapur and Bamur ranges. The people who are engaged in the basket, mat making get the livelihood out of this craft for more than six months in a year.

Hill Brooms:

This is another important item collected in Athamallik range in about 19 villages like Athamallik, Mahendrapur, Kamalpur, Kairighati, etc. The broom grass is mainly collected between January to March. Mainly women collect the brooms. Generally the grass is collected in the green stage and then sun dried for three days. Then the value addition is done and the brooms are made by binding and tying. Earlier siali fibres are used for tying, but these are replaced with plastic strings now.With proper training,the primary collectors can be made good broom makers and taught attractive patterns of tying on the broom thus facilitating further value addition. Hence, there is considerable scope for value addition at local level and to raise the income level of poor collectors.

Amla:

This is another important item collected in the division. The best time for collection of Amla is the month of Chaitra (march-April) when it is ripe and mature. The fruits should be carefully plucked using long poles with a hook or by shaking the plant. Collection should be done in the morning hours because increasing heat may turn the fruits black, thus damaging the quality. After collection they should be stored under shade till the processing works begins. The main problem observed in Athamallik Division is that the collection techniques are quite harmful to the forest, the people in a hurry to collect more quantity easily, they tend to break the bigger branches or even fell the whole tree. Sometimes they collect the immature fruits. These practices should be avoided at any cost. The processing of Amla begins within two days of its collection, the immature and blackened fruits should be separated and the selected ones are to be boiled for 8-10 minutes. The boiled fruits are deseeded in a neat and clean place, after which they are sun dried on bamboo mats. The sun drying makes Amla little reddish, and this fetches a better price in the market. The processed amla should be stored in gunny bags in dry places with a normal room temperature.

Char seed:

Although various parts of this tree are differently used, it is identified by its delicious fruit which is often regarded as poor man's grapes. However, char seeds/ kernel has variety of uses. It is either eaten directly or used in flavoring sweet meet, confectionary, betel nut powder etc.Even its oil has variety of uses.The tree flowers during January-February and the fruit ripens in summer. Though ripen fruits fall on the ground, the primary collectors often themselves pluck the fruits including the immature ones for further processing. The un-decorticated seeds give better price if they are washed properly before selling. The kernel is even valunerable to insect attack, more particularly when left un-protected from moisture. Hence, in addition to to drying them under the sun, care should also be taken for their proper storage/bagging.

Medicinal Plants: In general, the forests are the rich treasure of medicinal plants. Athamallik Forest Division in particular has got tremendous potential of medicinal plants. The medicinal plants are site specific and adaptive to particular micro-climatic zone. Secondly, the medicinal properties of these plants and their uses in curing various ailments are known to the local traditional healers. Therefore, when we talk of preservation, conservation and propagation of medicinal plants, it is not possible to segregate the local traditional healers who have the complete knowledge about occurrence, method of non-destructive collection, curing and uses of medicinal plant species in curing various ailments. Popularization of medicinal plant species is gradually picking up in the state on the auspices of the State Medicinal Plants Board (SMPB). In the present scenario rigid protection measures to the medicinal plants should be provided against biotic interference, fire etc. Documentation of the knowledge of traditional healers must form an integral aspect of preservation and conservation of medicinal plants, so that importance of these plant species shall be realized in the traditional health care process. It is not known, by now some of the medicinal plant species might have vanished from forests. The practical answer to this problem is domestication of medicinal plant species in herbal garden and production of their seedlings in nurseries so as to preserve this rich heritage for the posterity. Necessary step should be taken accordingly.

7.6.1.2 CALENDAR OF OPERATIONS OF MAJOR NTFPs :

The calendar of collection of few NTFPs are provided in the **Table No: 7.1**

Table: 7.1 CALENDAR FOR COLLECTION OF MAJOR NTFP					
Sl. No	**NTFP**	**Collection Time**	**Sl. No**	**NTFP**	**Collection Time**
1	Kendu Leaves	February – June	23	Semal Cotton	March-May
2	Sal Seed	May-June	24	Honey	January
3	Siali leaf	October-May	25	Khajuri leaves	October-May
4	Siali fiber	October-May	26	Sabai grass	October-April
5	Harida	November-January	27	Sunari	September-April
6	Bahada	January-April	28	Tentuli	March-April
7	Cashew nut	April-May	29	Neem seed	June-July
8	Amla	May-June	30	Genduli gum	October-May
9	Char seed	April-May	31	Kurei fruit	December-February
10	Mango	May-June	32	Hill broom	March-June
11	Bel	May-June	33	Khair	October-May
12	Marking nut	December-March	34	Sal resin	January-April
13	Lac (Maghsiri)	January-February	35	Broom grass	October-May
	Lac (Jestha)	June-July	36	Siali fibre	October-May
14	Gum	October to March	37	Lemon grass	March-April
15	Mahua flower	April to May	37	Kamal gundi	February-March
16	Mahua seed	May to June	39	Bana tulsi seeds	November-March
17	Kusum seed	May to June	40	Lodha bark	October-May
18	Karanja seed	December-January	41	Dantari bark	October-May
19	Kochila seed	December-January	42	Phenphena bark	October-May
20	Kendu fruits	April to May	43	Mango kernel	June-July
21	Dhakti flower	January to April	44	Thatch grass	January
22	Arrow root	December-January	45	Honey-wax	January

7.7 Measures to be taken for sustainable harvest or management of NTFPs

1. Collection of fixed NTFP item are going on in this division on a substantial scale. 69 NTFP items are dealt with Panchayat in Odisha. However no collection figure are available with the forest department. There is a view that the villagers have not been benefited to the desired extent due to transfer of above NTFP to the Panchyat. For sustainable harvest of NTFP's, prescription for closure areas for collection/extraction of particular forest produce for a specific period (closed area), banning collection for a curtained period (close season) and limits on quantity to ensure sustainable harvests for future.
2. Training for sustainable collection and value addition.
3. Capacity building for VSS members.
4. Formation of S.H.G to work in marketing of NTFPs after value addition.
5. Protection of NTFP trees and promote their regeneration.

7.8 APPROACH FOR DEVELOPMENT

The objectives for development of this working circle are as follows:

(1) To improve existing marketing institutions like NTFP co-operatives and forest marketing co-operative societies for payment of fair prices to primary collectors and save them from exploitation by middle men.

(2) To create alternate employment / income generation by developing village and cottage industries and using locally available NTFP items as input/ raw material.

(3) To carry out extensive as well as intensive research for utilisation of various NTFP items and to explore their commercial viability.

(4) To develop NTFP based industries.

(5) To study the potentiality of NTFP items including medicinal plants.

(6) Value addition.

7.9 Methods of Execution :

The primary collectors should be properly guided to collect the NTFPs in non-destructive way. Latest techniques of collection, drying and storage should be imparted to them. Value addition to collected NTFPs will increase their earning. For value addition, it is essential to have the drying yard and storage godown before processing for value addition. Accordingly, it is proposed to construct 5 drying yard of size 40 feetx50feet each and a storage godown in each of the panchayat headquarters(45 nos). For value addition, a marketing federation unit should be constituted at the block headquarters i.e. Athmallik & Kishorenagar. The federation unit should be constituted by involving the Sarpanches or their authorized representatives. The unit should be equipped with the following machines for processing of NTFPs.

Sal leaf plate making.
Honey processing.
Oil extraction.
Char decotinator.
Grinder.
Adequate packing materials.

The concerned BDOs and Range Officers should monitor the progress made in this respect.

7.10 Regeneration :

The regeneration status of NTFPs based on sample point enumeration is furnished in the **Table No.7.2** as below. Efforts should be made to plant indigenous NTFP species in aided natural regeneration with gap planting operation.

7.10.1 NTFP plot:

Permanent plots of suitable sizes may also be laid for development of safe harvesting protocol and the optimum limit of the harvest should be standardized for assured regeneration of the species. The following harvesting regimes may be experimented to work out safe harvesting limit:

100% harvest of the marketable parts(by removing the whole number)

75% harvest of the marketable parts(by leaving 25% of the whole number)

50% harvest of the marketable parts(by leaving 50% of the whole number)

25% harvest of the marketable parts(by leaving 75% of the whole number)

The plots should be laid in triplicate. The plots so treated shall be visited after a gap of one year to enumerate the number of new recruits and the effect of above removal shall be calculated using standard mathematical formulae. It is proposed to lay NTFP plots in Taleipathar RF of Athmallik Range, Hatidhara RF of Dhandatopa Range & Northern RF of Handapa Range.

7.11 Miscellenous regulations :

Many NTFPs have been neglected or overlooked because they are often outside the established marketing channels. In fact, marketing has been found to be the major weak point of the primary collectors. And, where ever, such channels are existing, they are too long that the primary collectors find it difficult to fetch good returns for the NTFPs collected by him. Even, at times, the middleman exploits the illiterate NTFP gatherer in the name of inferior quality. Hence, all these marketing aspects of various NTFPs need to be attended to on priority. The DFO shall contact state Cooperatives like TDCC,TRIFED and other organizations for marketing of NTFPs available in the Division. The VSS and Gram Panchayats should be given information about the marketing prospects of various NTFPs.

The DFO shall organize regular trainings on collection, exploitation and utilization of NTFP in accordance with the relevant Government policies in force from time to time. The main objectives of such trainings should be broadly two fold. **First**- Collection, exploitation and utilization of desired NTFP shall be regulated in such a manner that composition, regeneration and sustenance of forests are not adversely affected. **Second**- the DFO and his staff must work in tandem with local people and direct their efforts to ensure that local people benefit most from NTFP through even simple value addition where ever possible/desirable.

The Divisional staff must have a clear perception of threats from various faulty/ injurious local practices that adversely affect the sustenance of forests. Keeping in view the perceived threats to forests, they shall take appropriate steps to minimize the impact of injurious practices on forests. Vulnerable forests may be temporarily closed for NTFP collection for specified periods so that regeneration of desired species is not adversely affected. Collection period may be reduced in some cases to ensure that sufficient seeds are left on the forest floor to induce regeneration. Seed collection may be terminated at least fifteen days before expected closing period. The Divisional staff may work in close co-operation with the local people who may be motivated not to collect entire seeds from the forest floor and to allow some seed to remain on ground for regeneration purposes. Similarly, local people may also be encouraged to adopt more forest friendly techniques to collect barks, branches, leaves and roots so that forests are not adversely affected. They may also be encouraged not to resort to forest fires. The collection of leaves, barks from standing trees and collection of roots must be scrupulously supervised so as to cause minimum damage to the trees.

Most of the NTFPs are not collected because of lack of marketing facilities. The marketing aspects of various NTFPs need to be researched. The Divisional Forest Officer shall hire the services of few reputed organizations or NGOs to study the market potentiality of various NTFP items and if possible contact the industries to help the people to get proper market facilities. The V.S.S. and Gram Panchayats should be given information about the marketing prospects of various NTFPs. The divisional staff should play a role of facilitator rather than regulator in the marketing of NTFPs by acting as the link between the consumers and the primary suppliers.

The method of collection of several NTFPs being adopted is not scientific and sustainable. Awareness among public should be created in regard to scientific collection of NTFPs by demonstration. The V.S.S. should be involved in dissemination of this information. The audio and video CDs should be made on scientific collection of NTFP items and the shows should be organized in the villages, where the maximum collections are done. The scientific techniques should be inculcated in the minds of the people. This is a slow process, but can achieve the desired goal.

The Divisional staff should prevent the purchase of the NTFPs at lower price by middleman and ensure collection/disposal in accordance with the Rules'2002. The minimum procurement prices should be given wide publicity through VSS and other media. Audio & video methods may also be utilized to create awareness among the public. More emphasis should be given on the medicinal plants, their derivatives and uses.

The DFO shall maintain a proper account of different NTFP items, their quantities collected, areas/forests from which collected and period during which collected. An annual assessment of potential availability of various NTFP shall also be made in the beginning of each calendar year. Steps taken in accordance with above regulations to ensure sustainable management of forests and fair deal to local people shall also be recorded and reviewed periodically by the DFO and higher authorities. Even the impact of transfer of NTFPs(MFPs)to the Gram Panchayats on the Forests & the primary collectors shall also be studied and annual reports submitted suggesting any changes if required.

Since there is hardly any authenticated information and documentation on medicinal plant species, the immediate steps required to be taken shall be rigid protection measures. Inventorization and characterization of all known medicinal plant species should be done including the help firm the indigenous knowledge(I.K) system of the locals.

The Bio-Diversity Act,2002 and the corresponding Rules 2004 have already come into force. These provisions duly take care of all the issues related to even the medicinal plants, their derivatives, uses and harvesting techniques. Hence, the people's biodiversity register should be made on priority and updated regularly. It is a participatory documentation duly incorporating the I.K system besides inventorization and characterization of known biological resources of the area.

The strategy should be to not only maintain the existing plant resources at the sustainable level but also increase the productivity through improved methodologies. The augmentation of raw material resource should be done by documentation of wild plants and exotics having medicinal value, and their large scale cultivation.

Efforts should be taken for development of 'Identification keys' for diverse medicinal plant resources. It will not only improve the management skills but also check the illegal removal of medicinal plants and their parts because of ignorance. Moreover, herbal gardens, one each at range level should be developed for propagation and awareness of the medicinal resources of the area.

The best option will be to form the Bio-Diversity Management Committees at the local level under the provisions of the Bio-Diversity Act and Rules and prepare Bio-Diversity Conservation action plan for promoting conservation and sustainable use of the biodiversity in general and medicinal plants in particular. The conservation measures should be both 'In-situ and 'Ex-situ' and the traditional healers and users of these resources shall be an intrinsic part of any such effort for long term gains both for the forests and all stakeholders.

As regards to the instruction of the Panchayat Raj Dept letter No. 18193 dated 16.11.2015; the concerned Block Development Officer should fix the minimum procurement price for his block in the month of September in a joint meeting of representative of the Forest Department, TDCC & OFDC every year. On failure to do so, the concerned collector of the District should convene a special meeting of the panchayat samiti in the month of October and decide the minimum price for that year. Further, each trader should submit an annual return regarding the collection in the concerned gram panchayat with a copy to the concerned Range Officer as well as to the concerned Block Development Officer. The DFO must ensure that the above instruction is followed scrupulously.

All forests should be strictly protected against forest fires, un-authorized grazing and illicit-felling. Effective measures shall also be taken to contain encroachments in forests.Compartment history files and Control forms besides other records shall be maintained in accordance with the Management Plan Procedure,1991 and other instructions in vogue.

7.11.1 Development of special NTFPs:

Apart from the NTFPs naturally available in the division, it is also felt that development of certain special items should also be considered on priority. It is prescribed that large scale plantations of Jatropha & Agave along the boundary of the forest blocks should be undertaken. This will not only create the additional NTFPs but also help in forest consolidation. These species being non-browsable, their protection measures are not so essential.

Agave(sisal) is a xerophytic plant and thus has a greater ability to withstand drought. The fibre extracted from its leaves is used for rope making. The plant even acts as a good soil binder. The plantation should be done in staggered pattern in two rows at a spacing of 1mtx1mt. Jatropha oil is used as biofuel and in soap making.

CHAPTER-8

8.1 Name of working circle: WILDLIFE (OVERLAPPING) WORKING CIRCLE

8.2 General constitution of working circle:

Entire Working plan area of the Division, i.e., **45521.9078 hectares** have been allotted to this Overlapping Working Circle.

8.3 Importance of constitution of this working circle:

The forests of Athmallik have got rich heritage of wild life. Being on two sides of a coin, forest land and wild life management go hand in hand. At the time of Athamallik Raja administration, wild life was found in abundance all over the Division due to rigid preservation and protection policy adopted by the then rulers. At that time Hatidhara was reserved for Elephants and the shooting of animal in the reserved forests was prohibited except with the prior permission of the ruler. With the merger of states and opening up of roads to forests, the wild animal population of the Division has started diminishing. Wild life management has got the attention of the planners only in the last two decades, but still then the financial allocation for the wild life management are very much limited. The National Forest Policy 1988 has emphasized the need to conserve wildlife and their habitat. To provide protection to existing wildlife, to improve their habitat and to conserve bio-diversity, the Wildlife (Overlapping) Working Circle that covers entire working plan area of the Division has been constituted with optimistic idea that limitations experienced during the last plan period will not prevail during new plan period.

8.4 Felling series, cutting sections and JFM areas:

Not applicable.

8.5 Blocks, compartments and JFM areas(marked on GIS based maps) :

Not applicable.

8.6 Special objectives of management :

The special objectives of the management of the Wildlife (Overlapping) Working Circle are within the scope of general objective of management of the entire division. These are as follow:

a. Conservation, protection and improvement of existing wildlife habitat.
b. Protection of wildlife in general and endangered species in particular.
c. Eco- tourism and People's participation to create awareness.
d. Increase in biodiversity and wildlife population.
e. Prevention of wildlife related crimes.

8.6.1 Analysis of the crop :

Since this is an overlapping working circle; no analysis of the crop has been described here as the same has already been described in respective working circles.

8.7 Method of treatment :

In order to achieve the special objectives of management set for this over lapping working circle, special objectives of management set for the working circles to which it overlaps must be kept in view. The method of treatment will vary depending on the habitat of wild life, status of the fauna in the Division, protection provided to them and their breeding capability for proliferation of population.

The number of wild animals has deteriorated during the plan period. The carnivores have reduced in number and sighting is very less. The man-elephant conflict is increasing day by day because elephants are coming out to village areas due to non-availability of food, water and cover inside forest. Like wild flora, wild fauna also has genetic pool, which can be utilized for the future welfare of humanity. Wild animals and their products have great commercial value and due to excessive and illegal exploitation of this resource in the past, depletion of wild life has taken place.

8.7.1 Development of Habitat :

Habitat need to be developed with the cooperation of local people using sound silvicultural techniques. The aim should be to provide more food, water and shelter to the wild life so as to even reduce the man-animal conflict.

8.7.1.1 Improving the cover:

Providing adequate forest cover to different wild animals within their habitat is necessary for shelter and protection of wild animals from weather, predators and enemies. Keeping in view this aspect; the following prescriptions are made i.e. For Protection Working Circle and Forest of the Working Circle.

8.7.1.1.1For Selection Working Circle/ Rehabilitation Working Circle/ Plantation Working Circle:

* Retention of 10 snags of large size with twice the number of potential snag recruits per hectare in a randomly distributed pattern.
* Retention of 5 large hollow logs randomly distributed on the forest floor per hectare area.
* If there is combination of fallen trees and hollow logs or fallen trees alone, the same number and pattern should be followed.
* Trees fallen partially in the stream should be treated as a separate category and they should be retained in their position as far as possible.
* Big size tall old trees or trees with large spreading crown will be only occasionally met with unless they exist as a population in an ancient or old growth stand. The occasionally distributed big trees ought to be retained.
* Trees species which tend to have flaking & splitting bark or trees irrespective of the species level exhibiting such condition should be retained at the rate of 5 randomly trees per hectare. These are also likely to contribute aggregation of sloughed bark on the forest floor.

*If large climbers exist, then at least 5 large climbers per hectare should be retained. They are of significant value to wildlife, as they facilitate the movement of arboreal animals.

- Objective survey for documenting a list of fodder leaf, flower, fruit, seed bearing tree species including or in addition tree species whose bark and roots are of significant value to wildlife.
- Caves/dens, overhangs in rocks usually occur along drainages, where a water channel cuts a course, exposing rocks & boulders. Caves/dens are small to large deep recesses, or occur as space between large boulders. Overhangs are created by the natural process of weathering and transport of soft rock material underlying a hard rock bed which has far greater resistance to weathering than the former. Depending upon the size of a cave/den and the dimension of its opening, location & surrounds, different species, mainly carnivores use it as shelter, breeding site & secure place for raising the young. Such sites need to be protected.
- Not all dens are formed by natural processes. Some species burrow in earth & soft rock to create dens e.g. the porcupine. The ideal site is the exposed earth surface along slopes and stream banks. Such dens can be appropriated by other species such as the wild dog and need to be protected.
- Cliffs have flat shelves along the top used by vultures and eagles for roosting or nesting; the roof of overhangs can have hives of honey bees, nests and nesting colonies of swallows swifts, crag martins; cliffs have small to large crevices which might hold several species of bats. At the base of the cliff there might be caves and overhangs and the cliff associated talus or aggregates of fallen rocks are used by smaller mammals and reptiles. Such sites need to be protected.
- Caves/dens, overhangs along the drainage areas and at the base of cliffs are exposed to the disturbance of people. Camping labour on forestry operations prefer drainage sites; and proximity of water for locating camping sites. Bouldery material from talus can be carted off as construction material. Honey gatherers are active along cliff faces and their activities can have serious consequences for many cliff dwelling species. Such activities threaten wildlife values need to be prohibited. Camp site needs to be located at a proper distance from such unique habitats.
- Riparian zones are among the most diverse, productive and vulnerable habitats and perform several critical ecological functions. There are plants and most animal species heavily dependent on conditions & attributes of riparian zones, and several species occur as obligates of this system. A ' no felling zone ' in riparian systems must extent to all streams to a width of at least three times the top height of trees on either banks beginning at the outer edge of the characteristic riparian zone vegetation.

- To the extent possible; road alignment along the riparian zone should be avoided. Where it cannot be avoided, the road length be kept to within 30% of the running length of the stream, outside the 'no felling' zone.

- Mesic sites represent higher levels of soil moisture, sometimes free water on virtue of the presence of a spring and have characteristic vegetation and animal community association. The mesic sites have a 'point' or 'site' existence. Such sites are having non-woody plants, especially pteridophytes and bryophytes and among animals, amphibians & reptiles. Because of the small size, the individual sites are highly vulnerable. Mesic sites characterized by groves of massive old trees of Mangifera indica & Syzygium cumini are the habitats of the large owls, eagle. Such sites need to be protected.

- Swamps are materially different than the surrounding habitats in their biological values and ecological functions. These need to be protected from use of fishing and by agriculturists.

- Biological hot spots are small areas markedly rich in plant and animal diversity and often unique with respect to the plant and animal species association. Rare pteridophytes and a diversity of bryophytes are encountered here and need to be protected.

- Key areas have key functions to perform. Even small open blanks within the grassland serve as roosting and nesting sites of the birds. Females drop and raise their fawns in such patches. Such sites need to be preserved.

- Old growth stands are adjudged as among the most productive systems, high in nutrient status, rich in diversity with high order of moisture

8.7.1.1.2 For Protection Working Circle:

Considering the Tiger landscape in satkosia gorge sanctuary, all the micro habitat elements of biological origin (special habitats) and micro habitat elements of geomorphic origin (unique habitats) as well as macro habitat elements need to be fully protected. Tiger, by virtue of its position at the top of the biological pyramid is considered as a flagship species. Hence the conservation of tiger implies conservation of natural forests over large areas representing full diversity of habitats.

8.7.1.2 Improving availability of Food:

8.7.1.2.1 For Selection-cum-Improvement Working Circle /Rehabilitation Working Circle/ Plantation Working Circle:

The adequacy of food in a particular wild life habitat depends upon the quality and quantity of food produced and the animal population living therein. Keeping in view this aspect of wildlife management, the exploitable diameter of various species has been kept on higher side and the percentage of removal of exploitable size trees have been properly regulated and safe guarded. Similarly under various subsidiary silvicultural operations like opening of canopy, thinning of congested patches, improving the general availability of food shall always be taken into consideration. For these reasons and also for their utility, fruit bearing trees have been prohibited from felling. Sustainable harvesting of NTFPs have been proposed under NTFP (overlapping) working circle. Livestock Grazing within Forest area is proposed to be stopped. The status of existing VSS coming under protection working circle will be converted to EDC. Further, the species as discussed in the following paragraphs will be part of any plantation taken in forest areas.

- Food availability in a habitat changes with the season. Herbivores depend on plant materials like leaves, barks, twigs, flowers, fruits and seeds of species like Mallotus philippinensis, Dendrocalamus strictus, Adina cordifolia, Albizzia lebbek, Aegle marmelos, Cassia fistula, Ficus bengalensis, Ougeinia ougenesis,Shorea robusta, Syzygium cumini, Terminalia alata, Terminalia belerica, Zizyphus mauritiana, Bombax ceiba etc.
- Deer, Monkey, Langur, Rats and Hare feed on wild fruits of plants like Ficus species, Terminalia belerica, Buchanania lanzan, Aegle marmelos, Syzygium cumini, Zizyphus mauritiana, Diospyros melanoxylon,Grewia hirsute etc. These animals help in dispersal of fruits and seeds in the forests.
- Among the plant materials, grasses constitute major portion of the herbivores'food. Grasses, which are highly preferred and consumed by herbivores, are Axonopus compresses, Eragrostis pilosa; Saccharum bengalensis etc. These grasses should be raised in the wild life concentrated areas to meet the food requirement of herbivores.

8.7.1.2.2 For Protection Working Circle:

All sort of felling operations shall be stopped in the interest of wild life. The collection of NTFPs shall be stopped. Bamboo coupe working will be stopped. Silvicultural operations as well as plantations of bamboos and fruit bearing species need to be done to meet the food requirements of wild animals.

8.7.1.3 Water availability:

Generally, there is no derth of water from July to December. However, scarcity is felt from January to June, when most of the nallahs and streams dry up. Hence, it is necessary to create waterholes and check dams on the higher slopes across nallahs to improve water availability during summer. Accordingly, it is proposed to construct check dams on the following nallahs.

Talaipathar:

(a) Kaliadarha Nallah (between Comptt. 17 & 18)

(b)Kuakhola Nallah (Comptt. No. 24 & 1)

Grass lands can be developed in few pockets like Valley portion in Comp. No. 14, the area in between Comp. No. 9 & 10, Comp. No. 2 & 3.These are only some of the areas, if the DFO finds any other area suitable spots for construction of waterholes and development of grass lands, he can carry out the works in the interest of the wildlife.

Nuagan RF: In this block there are plain pockets in comp. No. 3, 4, 5, on which grass lands can be developed.

Northern RF: The waterholes/check dams can be constructed on different nallahs like,

(a) Udol Nallah (Comptt No. 24, near Udol village)

(b) Takoba Nallah (Comptt No. 21 & 22)

(c) Susab Nallah (Near Susab village)

(d) Sureswari Nallah (Comptt No. 4 & 5)

Salt Licks: Natural salt licks need to be maintained and improved upon. In West Baruni Comptt. No. 3 (near village Naikpada), East Baruni Comptt. No. 4 & 5 (near village Muchhapur, Subarnapur, Baruni) salt licks can be established as the concentration of elephants is always high in this region.

8.7.1.4 Corridor :

The corridor, tenous as it is, is vital in ensuring gene flow. Ensuring gene flow and population viability are two of the major functions of a corridor. It needs to be revitalized and maintained to avert threats to population viability of elephants**.** In Athamallik Division the elephants mainly move along two corridors, one route is from Baghmunda and Majhipara RF of Satkosia Wild Life Division to Hatidhara RF, Talaipathar, Nuagan, East and West Baruni, Muchhapur to Rairakhol Division. Another corridor is Northern, Handapa RF and forests of Rairakhol Division. Elephants are mainly concentrated in areas like Bipradihi, Taranda, Dhandatopa, Ketaki Jharan, Manjore, Naikpoda, Udol, etc. The wildlife management in these areas as well as in the corridors needs several steps like construction of waterholes, development of grass lands etc. These steps are required to content the animals within their habitat as well as in the corridors to ensure gene flow and population viability.The status of two corridors are described as below.

8.7.1.4.1 Handapa—Northern—Rail—Hatidhara corridor (Forested corridor)

This corridor is located in the northern side of the Division. Handapa RF and Northern RF of Athmallik Forest Division is connected with Rail RF & Hatidhara RF of Rairakhol Forest Division. Further Rail RF is contiguous to Landimal RF of the Rairakhol Forest Division. The vegetation of entire corridor area is fairly mixed dense jungle and the principal crop is sal. Jogidhara Nala, Jharihari Nala, Dahari Jhora, Sureshwari Jhora,Barha Nala, Mochikhol Nala of Athmallik Forest Division & Barabank Nala,Khalbala Nala, Kantiali Nala, Champali Nala under Rairakhol Forest Division are tha famous natural water points within the corridor. Aunli jhora, is the interdivision border and remains perennial. In the vast forested belt, there are only three enclaved villages i.e. Kaing of Rairakhol Division and Pathargarh, udol of Athmallik Division. It connect all other habitat types from the highest to the lowest elevation and thus act as a functional net in supporting landscape diversity. Several plant and animal species are obligates to this system. If a population of a species or sub-species falls below a particular level (No of individuals) at a given location it is fraught with the threats of inbreeding and genetic depression which can wipe out such population in a relatively short period of time. Secondly a particular small number is extremely vulnerable to the effects of random natural events encountered in the wild and they are most likely to extirpate a population long before inbreeding can begin to exhibit its effects. The minimum number required in a population to avert such threats is known as the Minimum Viable Population or MVP. As the rule of the thumb, a population is required to have atleast 50 adult breeding individuals (at even sex ratio) for its short term survival. If long term survival is aimed at, the number has to be at least 500. Large habitat areas are therefore necessary. It is not solely the question of space but that of habitat quality as well. Considering the same, it is proposed to assess the habitat quality, extent and analysis of uses to formulation of model management strategies in order to ensure minimum viable population in the short term and viable population in the long term.

8.7.1.4.2 Baghamunda—Majhipara—Hatidhara—Talaipathar—Nuagaon—East & West Baruni—Raun—Durdura—Tal corridor:

This corridor connects Nuagaon RF with Baruni RF (East & West) thereby maintains connectivity of elephant population between satkosia WLS and Khalasuni WLS through Raun RF and Tal RF . Construction of Manjore Medium Irrigation Project near Manarbeda village has caused fragmentation and deterioration of corridor forest, and affected elephant movement between the habitats.

Corridor details:

Connectivity : Nuagaon and Baruni (East & West) RF

Length and Width : Length 4- 5.8 km and 0.57—3.5 km

Legal status of the corridor: Reserve Forest, KhesraForest, Agriculture field,Human settlements, Manjore medium irrigation project.

Major habitation/Settlements in Corridor : Manarbeda,Patrapada.

Forest Type : Tropical dry deciduous Forest

Frequency of use : Regular

Developmental activities: Manjore MIP, Madhapur- Bamur RD road,Irrigation canal

Habitat quality: Total 23 plant species were recorded in the sampled area of 0.16 Ha. of these 8 species were palatable food species to elephants. Maximum frequency was found in Shorea robusta (42) followed by Anogeissus latifolia(26),Terminalia tomentosa(12)and Cleistanthus collinus(8). Maximum average GBH was found in Madhuca indica(108)cm followed be Boswellia serrata(90.33) cm,Diospyros melanoxylon(79.75) cm,Cochlospermum religiosum (79)cm. Maximum average height was found in Boswellia serrata(15.85 mtr), followed by Cochlospermum religiosum(14.43mtr),Dalbergia paniculata(14.02mtr) and Madhuca indica(12.8mtr). Of total 129 plants found in the sampled area,34 plants were found felled,showing extensive wood cutting in the corridor forest.The proportion of ground cover are barren ground (39.06%), Shrub(30.94%) , grass(17.81%) and herb(12.19%).

Elephant population in and around corridor:

Athmallik Forest Division 28

Satkosia Wildlife Division 229

Rairakhol Forest Division 06

Other ecological importance

(1) Parts of Garhjat Hills,

(2) Elephant Range : East—Central India

(3) Nearest Protected area : Satkosia Wildlife Sanctuary

Threats :

1. Human settlements: Manarbeda and Patrapada are two villages situated in the corridor that has expanded due to settlements of inundated families in Manjore Medium Irrigation Project and families shifting outside the villages which results in reducing the width of the corridor.

2 Land Use change: Excavation of soil during construction of Manjore Minor Irrigation Project from the nearby forest has cleared the corridor forest and now some are either under cultivation and/or allocated to inundate families.

3 Buildings of Manjore Irrigation Project:

Guest house and staff quarters are situated within the corridor between dam site and a forest patch which obstructs elephant movement in the corridor.

4 Road and Irrigation Canal :

Bamur-Madhapur road and two canals running from irrigation project traverse through the corridor and fragment the once continuous forest patch.

5 Tourist movement :

Manjore Irrigation project becomes a major attraction of tourists round the year and tourist influx increases many fold during winter for picnic in the corridor area during peak elephant movement period.

6 Anthropogenic pressure:

People from 10-15 km periphery of the corridor extracts forest products from Nuagaon and Baruni (East and West) RF extensively for their subsistence as well as commercial purpose thereby affecting corridor forest.

7 Stone crusher:

One stone crusher is functional next to the corridor forest near Manarbeda village affecting the corridor.

8 Traffic intensity:

Vehicle movement found restricted between early morning to late evening and no movement during 21:00 and 4:00 night. More than 90% vehicles are two and four wheelers.

Socio-economic details:

A total of 19 villages are present in and around the corridor depending upon the corridor forest of these two villages, Manarbeda and Patrapada village are located in the corridor. 41 families of these two villages were surveyed. Survey result shows that agriculture is the primary livelihood and more than 80% of the total lands occupied by the respondents are under cultivation. Almost all the sampled families collect fuel wood from the corridor forest. Villagers depend upon the corridor forest for fuel wood, house making, agriculture purpose and leaves of Shorea robusta and Diospyros melanoxylon. All respondents reported increased intensity of human-elephant conflict and perceived this increased intensity to increase in elephant population. However others attributed to loss of forest area, increase in human settlements, change in elephant behavior.

Corridor dependent villages:

Manarbeda,Patrapada,Naktideol,Gudgudu,Routpada,Muchhapur,Digipadar,Nuagaon Saragiseni,Madanpur,Sorisapanka,Chandrapur,Bharatpur,Purunapani,Kumurisingha, Singharimunda,Bhanghanpur,Barapadar,Tulsipur.

Human-Elephant conflict :

Increased elephant number and movement in the corridor results in increased crop damage in villages surrounding the corridor. During the period from 2006-07 to 2015-16, 13 nos of elephant have died and 20 people lost their lives.

Plan for conservation:

1 The corridor should be notified by the State Forest Department and legally protected under appropriate law to prevent encroachment,diversion of forest land for non- forestry activities and developmental activities in the corridor critical to animal movement.

2 In consultation with the villagers, the identified lands near Manarbeda and Patrapada village should be secured.

3 Seek alternatives for 15 families Manarbeda (Tulasimunda hamlet)

4, Construction should be avoided in the areas in downstream of the Manjore Dam, especially in the forest fringe.

5 The canal bank should not be cemented. At frequent intervals, elephant passage should be created. The project officials should be instructed accordingly.

6. Notification of the Khesara forest in the corridor area as Reserved Forest.

7 Ensure that illegal felling of tree and collection of stone is stopped.

8. Establishment of new stone crushers should not be allowed at least 500 metres from the corridor.

9 Tourist movement need to be regulated and picnic should not be entertained in the corridor areas (near the dam)

10 Awareness programme targeting the surrounding villages in the buffer of the corridor to be carried out to sensitize the importance of corridor.

11 Engagement of elephant squad and trackker year round exclusively for the corridor.

12. Trench and solar fencing along the forest border to secure the corridor, protection and improvement of elephant habitat, restrict crop damage, creation of water holes and plantation of fruit bearing species and bamboos.

8.7.1.5 Wildlife Census:

The distribution of wildlife in different forest blocks shall be studied and their occurrence in different habitats in different seasons shall be estimated. Census of Wild animals shall be done every alternate year in consultation with the Chief Wildlife Warden to even assess the prey-predator base; this will help in further improving the management prescriptions.

8.7.1.6 Miscellaneous Regulation:

i. Capacity building training to be organized in a regular manner for the field staffs and the engaged squads to learn about the behavior of wild lives and to address the wildlife problem instantly.

ii Awareness may be created through celebration of wildlife weeks, competitions and debates at every school collages and also at every forest fringe villages.

iii. The legal provisions under the Wildlife (Protection) Act, 1972 shall also be brought to the notice of all including the scope and extent of the compassionate payment amount.

iv. Signage to be displayed in the elephant movement areas and corridor and Leaflets, posters to be distributed in forest fringe villages and the benefits of wildlife conservation should be explained through electronic media.

v. Exposure visit to be provided to the staff to different Wild Life areas inside and outside state.

8.7.1.7 Infrastructure Development:-

To conserve and protect the wild lives infrastructure development is highly essential for the field functionaries such as

i. Construction of Staff Quarter and Anti-Poaching Barracks.

ii. Development of communication facilities like roads and maintenances of old road, cause ways etc.

iii. Movement of four wheeler vehicles at each Wildlife abundant forest areas for protection purposes with sufficient allocation of funds for fuel round the year.

iv. Engagement of different squad like anti- poaching squad, anti depredation squad, protection squads in critically endangered area and elephant trackers.

v. Purchase of tranquilization Guns, cartridges, binoculars, cameras and light.

vi. Sufficient funds to be provided for purchase of crackers, search lights, spot light, torches and Vero light projectors, drums, mega phones etc.

vii. Fire fighting equipments, Wildlife rescue equipments like cage, search light, camera and First-aid box to be provided to squads.

8.7.1.8 Information network and record keeping

i. VHF Network connecting to all the Range, Section and Beats and in vulnerable pockets of forest must be strengthened .
ii. One technical person must be engaged for maintenance of the VHF sets and handsets and the sets must be synchronized with the prescribed frequency of the nearest Railway stations.
iii. A control room should function at each Range and it should be alert round the clock and the records of instant Wildlife cases, rescues problems must be maintained.
iv. Supply of mobile phones to all the field staffs to develop strong information network of the informers from the locality.
v. All the information regarding the wild animals, census, wildlife crime, death of wild animals, human kill should be maintained up-to-date.
vi. The wildlife case records should be maintained properly and forwarded to the court.

8.7.1.9 Wildlife Depredation

In general, the history, periodicity, intensity of movements, the movement routes and the corridors should be mapped to prepare action plan for anti depredation. This exercise is required to be taken up every year. Elephant Movement Register should be maintained in Range level in day- to-day basis.

1. The depredation problem will be effectively tackled with the participation of the people, rappot building, identifying the Village level leaders and keeping the communication channels open with villagers.

2. Sufficient number of Elephant Squads and trackers are to be engaged round the year and must be trained on controlling the mob, to drive out the elephants and to educate them for communication skill.

3. To address the monkey menaced a special protection squad to be formed at division level equipped with tranquilizing gun and accessories.

8.7.1.10 Control of grazing

Grazing should be prohibited to avoid the destruction of the habitat and contamination of diseases from the domestic cattles.

8.7.1.1.11 Fire protection measures

To prevent fire, engagement of fire watchers, supply of fire fighting equipments, training to staffs in forest fire by specialized persons, regular maintenance of fire lines in the forest blocks are some of the special activities to be practiced in the Division. The fire lines should be cleared and material removed should be dumped in such a way that it facilitates rodents, insects, jungle fowl and other birds to build their nests for safe breeding. As most of the forest fire is man-made the VSS and eco-clubs are to be motivated to protect the forest from fire. The forest fringe Villages, where there is high fire vulnerability, incentives has to be given to the member of VSS involved in extinguishing fire. Special awareness campaign should be organized to aware people for controlled burning at the time of NTFP collection. Regular training be imparted to forest staffs, VSS members and fire watchers. All sections should be provided with Vehicles, VHF sets and fire fighting equipments to fight the Forest Fire.

8.7.1.12 Man-Elephant Conflict:-

At present man elephant conflict is very acute in Athmallik Forest Division. In order to address this issue, short term, middle term and long term strategies need to be drawn up with the elephant experts of national & international fare for management of elephant populations. Innovative methods used in various states need to be implemented in elephant landscape as no method will give permanent solution. Maintenance of elephant proof trench, community solar fencing use of chili powder tobacco and engine oil paste on ropes, giving chili smoke, use of bio-acoustics, using alarm bell and installation of apiculture units adjoining to crop field to prohibit wild elephants etc entering crop fields are prescribed.

8.7.1.13 Incentive and rewards:-

i. Incentive and rewards should be given to the efficient workers, staffs, the informers and VSS members whose efforts lead to detection of wildlife crime and arrest of the offender.

ii. To win confidence of the local people compassionate payment for the crop damage and injury or death of human life will be disbursed in time.

iii. There shall be inventory of all the licensed guns within 10km radius of blocks rich in wildlife. The efforts should be made to recover all the unlicensed guns of the forest fringe villages and a record of licence gun holders.

8.7.1.14 Monitoring:

For monitoring tiger, its copredaters and prey population, half yearly sign survey will be taken up following NTCA Guidelines in areas coming within Satkosia Tiger Landscape and Tiger Corridor.

8.7.1.15 Eco-tourism

Eco-tourism shall be taken up with the help of local people which will improve the living condition of people and provide them regular employment. Eco-tourism is responsible travel to natural areas that conserves environment and sustains the well being of local people. Tourism involves travelling to undisturbed areas with the specified object of studying, admiring and enjoying the scenery and wild plants and animals as well as existing cultural heritage (both of past and present) found in the area. Eco-tourism promises benefits for conservation and development. It can provide economic benefit to local people and incentives for action to conserve the resources on which it is dependent. It is also a tool to gain public support for conservation and encourage private sector conservation efforts at a time when traditional conservation through enforced protection of natural areas is difficult.

Strategies such as eco-tourism offer considerable potential for integrating conservation with development. Interpretation and nature education is a big tool for eliciting public support for conservation. It is also an educational activity, which aims to reveal meaning and relationship through use of original objects by experience and illustrative media rather than by communicating factual information.

8.7.1.16 Innoculation of village cattle:

Cattles should be innoculated every year especially in the fringe villages to avoid contamination of disease to wild animals.

8.8 Comprehensive proposal for rationalization of the boundary in Satkosia Gorge (WL) Sanctuary:

Satkosia Wildlife Sanctuary has been notified u/s 18(1) of Wildlife Protection Act 1972 by the Govt of Odisha vide Notification No. 12727/FFAH dated 19.05.1976 over an area of 795.52sqkm. The Tiger project area consists of the geographical area of two wildlife sanctuaries, namely Satkosia Wildlife Sanctuary and Baisipalli Wildlife Sanctuary. Out of 795.52 sq.km area of the Tiger Reserve, 186.96 sq.km. area will be excluded which comprises of 107 village areas. During preparation of this Plan the Hatidhara RF have been merged in the Satkosia WL Sanctuary.

CHAPTER-9

9.1 Name of working circle: Joint Forest Management (Overlapping) Working Circle.

9.2 General Constitution of working circle:

The working circle includes working plan area that are under the protection of Vana Samrakshana Samities. The total area allotted to this Working Circle is **3059.91 ha.** This is an Overlapping working Circle, overlapping with selection, Rehabilitation, protection and Plantation Working Circles.The Forest blocks included in this working circleare Kusumkhuri,Nuagaon,Bankimundi,Northern,Ghosar,kishoreban,Bindhyabasini, Dandarugudi,Handapa,Kadalimunda,Kholadangiani and Dantarikhol.

. In Athamallik Division, there are 116 VSS assigned with 9762.51 Ha of Khesera Forest and 54 VSS assigned with 3358.68 Ha of Reserve Forest including 6 VSS assigned with 298.77 Ha.in Hatidhara RF i e Sadanadapur(11ha.), Basudevpur (29.64 Ha), Amasama(127.13 ha),Taranda (60 Ha), Bipradihi (41 Ha) and korab (30 ha). Since the Working Plan is written for Reserved Forests and DPFs, the JFM area excluding of Hatidhara RF under these forests is taken under the purview of this working circle of 48 VSS having an area 3059.91 Ha. However the prescription given can also be extended to the VSS areas in the Khesra forests. The prescriptions can also be extended to the other VSS areas formed in the course of the working plan period.The details of VSS area, Ranges, Forest Blocks and Compartments included in the working circle. are furnished in **Table No. 9.1** as follows.

TABLE NO. 9.1 VSS AREA ASSIGNED IN RF OF ATHMALLIK FOREST DIVISION.						
Sl. No.	Range	Section	Name of the VSS	Forest area assigned (Ha.) R.F	Name of the Forest Block.	Compartment No.
1	2	3	4	6	7	8
1	Athmallik	Pataka	Limbadihi	159	Kusumkhuri RF	3
	Total VSS area of Athmallik Range			**159**		
2	Handapa	Handapa	Jamunali	100	Kadalimunda	
3			Kadalimunda	100	Kadalimunda	
4			Ichhapur	60	Handapa RF	5
5			Kanteikolia	100	Handapa RF	6
6		Urkula	Madhupur	40	Kholadangiani R.F.	
7			Pagabandhha	40	Dandarugudi	
8			Kholadangiani	60	Kholadangiani R.F.	
9			Makadahua	40	Dandarugudi R.F	
10			Jamujhari	60	Bankimundi R.F.	1
11			Dambbahali	60.1	Bankimundi R.F.	2
12			Udal	30	Northern R.F	24
13			Ranibhuin	60	Dandarugudi R.F	
14		Charkharnan	Laxmipriyapur	80	Northern R.F	44
15			Kholaregeda	100	Handapa R.F	1
16			Gundurijharan	100	Northern R.F	44
17			Uchhabali	40	Northern R.F.	43
18		Pedipathar	Kuruntap	10	Bankimundi R.F	3
19			Garud	70	Bankimundi R.F	3
20			Bad-Govindapur	30	Bankimundi R.F	3
21			Parbatipur	99.6	Dantarikhol RF	6
22			Dhundi	62.53	Dantarikhol RF	5
	Total VSS area of Handapa Range			**1342.23**		

23	Bamur	Kishorenagar	Kardingibahal	20	Ghosar R.F	3
24			Khariakani	40	Ghosar R.F	3
25			Uskarpali	20	Bindhyabasin R.F	
26			Chintamanipur	50	Ghosar R.F	3
27		Bamur	Kutasinga	50	Northern R.F.	1
28			Pathargarh	19	Northern R.F	8
29			Bamur Tentulisahi	40	Kishoreban R.F	
30			Bairagipali	60	Kishoreban R.F	
31		Kadalimunda	Tentalapani	50	East Baruni R.F	1
32		Sargipali	Khairamunda	30	Northern R.F.	14
33			Himitira	80	Ghosar R.F	2
34			Ghosar	30	-do-	2
35			Sandhapal	60	-do-	1
36			Gatikrushnapur	20	Northern R.F.	14
37			Dhadrapal	170	Ghosar R.F	3
	Total VSS area of Bamur Range			**739**		
38	Madhapur	Madhapur	Nuagoan	47	Nuagaon R.F.	2
39			Sargiseni	50	Nuagaon R.F.	2
40			Sorishpanka	40	Nuagaon R.F.	2
41		Kiakata	MangalpurKadapada	160	East Baruni R.F.	6
42			Khajurijharan	46	-do-	7
43			Maa Narayani	32.68	West Baruni R.F.	1
44			Subarnapur	160	East Baruni R.F.	3
45			Nuapada	50	West Baruni R.F.	2
46			Shri Jagannath	30	-do-	3
47			Maa Dashabhuja	32	-do-	3
			Titrikata	172	Nuagaon RF	4
48		Dekrud				
	Total VSS area of Madhapur Range			**819.68**		
Grand Total:				**3059.91**		

The detailed list of VSS and EDCs (proposed) formed in the RF and Khesra Forest is furnished in Annexure-XII.

9.3 General characteristics of vegetation:

Different types of forests ranging from Peninsular Sal Forest, Northern Dry Mixed Deciduous Forests and Dry Deciduous Scrub forests are present in this working circle. Many degraded patches of the forest are under the protection of VSS. In these areas the young shoots including Bamboo have started coming up in Kadalimunda, Dandarugudia blocks.

The improtant species present are Shorea robusta. Anogeissus latifolia, Terminalia tomentosa, Ougeinia dalbergioides, Albizia, Emblica officinalis, Adina cordifolia, Syzygium cumini, Mytragyna parvifolia, Aegle marmelos, Albizia procera, Schleichera oleosa, Holorrhena antidysentrica, Nyctanthus arbortristis, Ixora arborea, Indigofera, Combretum decandrum, Casearia tomentosa etc. Teak and Bamboo are also present.

9.4 Felling series, cutting sections and JFM areas:

The felling series, cutting sections and JFM areas has been reflected under respective working circles.

9.5 Blocks, compartments and JFM area:

The same has already been described under respective working circles.

9.6 SPECIAL OBJECTIVE OF MANAGEMENT

1. To involve communities in forest and natural resource management.
2. To make the people and Forest Department equal partners in management.
3. To restock the barren and blank areas through artificial regeneration.
4. To increase the productivity of soil through suitable soil and moisture conservation activities.
5. To encourage people to rational utilization of their own community resources for the betterment of the community.
6. To train the people on sustainable harvesting of NTFP collection and trade.
7. To create income generating activities in the villages protecting the forests.
8. To study the scope of enhancing the network of VSS protection areas.

9.6.1 Analysis of the crop:

The Division has constituted 170 numbers of V.S.S. After giving protection to forests by VSS members the young crops are coming up well. Density of forest has increased in many forest blocks and good results are noticed with JFM. The provision made in the JFM resolution need to be implemented scrupulously as the communities have actively taken part in forest protection and regeneration. Micro plans have been prepared in 100 Nos of VSS. A list of VSS having micro plans is furnished in **Table No 9.2** as below.

Table No 9.2 STATUS OF MICRO PLAN OF VSS OF ATHMALLIK FOREST DIVISION							
Sl no.	Name of the Range	Name of the Section	Name of the VSS	Area in Ha.	GPS		Status of Micro plan
					Lat.	Long	
1	2	3	4	5	6	7	8
1	Athmallik	Athmallik	Nagaon	28.1	20*-42'-39.0"	84*-34'-39.1"	Yes
2			Hariharpur	28	20*-43'-34.4"	84*-35'-05.4"	Yes
3			Pachanpokhori	49.25	20*-44'-05.3"	84*-33'-51.6"	Yes
4			Puleswar	25	20*-42'-44.9"	84*-31'-05.6"	-
5			Jadupur	60	20*-45'-39.6"	84*-33'-59.3"	Yes
6			Duchiamali	74	20*-44'-50.1"	84*-32'-53.0"	Yes
7			Sidhapur	106	20*-44'-58.0"	84*-34'-34.0"	Yes
8			Rangapur	41.54	20*-43'-01.9"	84*-36'-15.5"	Yes
9			Kundapur	62.3	20*-42'-35.0"	84*-36'-44.0"	Yes
10		Manitri	Daulabeda	40	20*-45'-38.4"	84*-30'-08.3"	Yes
11			Gopalpur	68	20*-44'-54.7"	84*-30'-57.1"	Yes
12			Kusupur	105	20*-44'-55.9"	84*-31'-09.8"	Yes
13			Mahendrapur	56.6	20*-45'-52.4"	84*-31'-16.4"	Yes
14			Nuagarh	49.43	20*-41'-94.6"	84*-38'-28.8"	Yes
15			Rajing	96.59	20*-46'-58.9"	84*-29'-54.6"	Yes
16			Hingamandal	65.44	20*-47'-33.6"	84*-29'-52.9"	Yes
17		Pataka	Pataka Dahimal	77	20*-39'-9.8"	84*-38'-49.5"	Yes
18			Limbadhi	181	20*-38'-9.2"	84*-41'-6.8"	Yes
19			Rathipur	27	20*-39'-9.6"	84*-40'-38.3"	Yes
20			Kusumkuhuri	127	20*-38'-39.9"	84*-39'-21.3"	Yes
21			Kendupati	67	20*-40'-9.6"	84*-39'-10.7"	Yes
22			Kutugan	46.3	20*-41'-3.1"	84*-38'-34.1"	Yes
23			Badabandha	21.64	20*-41'-44.5"	84*-37'-50.9"	Yes
24	Dhandatopa	Dhandatopa	Baliadhara	41	20*-48'-34.6"	84*-37'-25.4"	Yes
25			Purunapani	20	20*-48'-16.4"	84*-37'-28.8"	-
26			Alekhapur	20	20*-48'-07.3"	84*-38'-06.4"	Yes
27			Sadanandapur	20	20*-47'-27.2"	84*-39'-13.5"	Yes
28			Basudevpur	29.64	20*-47'-42.8"	84*-37'-20.1"	Yes
29			Aamasama	127.13	20*-47'-36.2"	84*-37'-39.9"	Yes
30			Kutulisinga	37.9	20*-47'-14.6"	84*-41'-05.6"	Yes
31			Hatasimili	53.64	20*-46'-47.4"	84*-39'-53.3"	Yes
32			Dhandatopa	46	20*-48'-03.1"	84*-36'-7.9"	-
33		Malimura	Taranda	65	20*-41'-56.2"	84*-42'-28.5"	Yes
34			Dhatikibahal	100	20*-45'-10.0"	84*-41'-19.9"	Yes
35			Korab	40	20*-44'-32.7"	84*-41'-53.7"	Yes
36			Bipradiha	41	20*-41'-10.5"	84*-43'-11.7"	Yes
37		Paiksahi	Kenchuamali	101.6	20*-42'-04.7"	84*-44'-05.8"	Yes
38			Kantapada	48	20*-46'-24.5"	84*-45'-11.2"	Yes
39		Ambsamunda	Hinjagola	26.7	20*-49'-45.9"	84*-53'-30.3"	Yes
40			Chintamanipur	20.24	20*-49'-30.0"	84*-35'-28.1"	Yes

41	Handapa	Handapa	Pachapur	174	20°-56'-37.6"	84°-45'-05.7"	-
42			Solanda	101	20°-54'-15.7"	84°-42'-14.7"	-
43			Madhupur	150	20°-59'-28.3"	84°-46'-31.8"	Yes
44			Nunkapasi	100	20°-55'-30.3"	84°-44'-52.3"	-
45			Anandamunda	80	20°-55'-31.1"	84°-44'-44.8"	-
46			Bidisinga	80	20°-57'-16.5"	84°-42'-41.6"	-
47			Jamunali	160	20°-55'-48.0"	84°-46'-57.5"	Yes
48			Golasar	100	20°-58'-37.8"	84°-47'-38.9"	-
49			Asubahal	80	20°-57'-30.7"	84°-47'-26.9"	-
50			Badbahal	80	20°-56'-25.6"	84°-45'-49.2"	-
51			Pratappur	200	20°-57'-38.5"	84°-39'-59.4"	Yes
52			Idhapur	160	20°-57'-27.4"	84°-44'-29.5"	Yes
53			Kadalimunda	100	20°-55'-26.2"	84°-45'-31.0"	Yes
54			Andabereni	100	20°-59'-13.8"	84°-45'-44.3"	-
55			Khandabar	50	20°-56'-25.6"	84°-46'-55.4"	Yes
56			Chakundamunda	150	20°-57'-19.3"	84°-41'-13.8"	-
57			Chuliapur	50	20°-57'-22.3"	84°-39'-52.7"	-
58			Kanteikolia	100	20°-58'-43.8"	84°-45'-26.9"	Yes
59		Urukula	Tentulipathar	20	20°-51'-56.6"	84°-37'-22.1"	-
60			Nakchi	200	20°-58'-08.2"	84°-37'-15.8"	-
61			Mandamba	80	20°-58'-20.9"	84°-37'-17.6"	Yes
62			Kamarei	50	20°-58'-15.5"	84°-37'-40.3"	-
63			Takaba	80	20°-59'-48.4"	84°-38'-14.3"	Yes
64			Pagabandha	40	20°-57'-31.2"	84°-38'-55.1"	-
65			Madhupur	70	20°-57'-58.0"	84°-35'-07.6"	-
66			Nuabhuin	100	20°-58'-24.2"	84°-35'-22.1"	-
67			Kholadangiani	60	20°-57'-41.6"	84°-35'-31.4"	-
68			Mankadachua	70	20°-57'-30.6"	84°-37'-17.7"	Yes
69			Jamujhari	60	20°-54'-29.7"	84°-37'-14.7"	Yes
70			Chanpur	50	20°-54'-10.8"	84°-36'-36.6"	-
71			Danabahali	60.1	20°-52'-20.0"	84°-37'-21.0"	Yes
72			Udal	30	21°-02'-10.3"	84°-38'-23.2"	Yes
73			Ranibhuin	60	20°-58'-08.1"	84°-37'-13.6"	Yes
74			Tileswar	100	20°-52'-59.7"	84°-37'-20.3"	-
75		Charkhaman	Rajanpal	200	21°-01'-51.1"	84°-44'-57.3"	Yes
76			Laxmipriyapur	80	21°-00'-56.4"	84°-44'-13.9"	-
77			Khalaregeda	200	21°-00'-31.1"	84°-40'-47.8"	-
78			Gundurijhman	200	21°-02'-46.3"	84°-44'-38.9"	Yes
79			Kundali	127.51	20°-59'-35.7"	84°-42'-19.4"	Yes
80			Charkhman	100	21°-00'-07.6"	84°-43'-39.0"	-
81			Baliamba	181	21°-00'-58.6"	84°-45'-33.9"	-
82			Uchhabali	100	21°-00'-35.7"	84°-43'-49.8"	Yes
83		Pedipathar	Batrakhol	95	20°-51'-35.6"	84°-48'-09.1"	Yes
84			Tentuloi	130	20°-52'-06.9"	84°-46'-19.9"	Yes
85			Baraham	36	20°-52'-38.9"	84°-43'-57.2"	-

41	Handapa	Handapa	Padmapur	174	20*-56'-37.6"	84*-45'-05.7"	-
42			Solanda	101	20*-54'-15.7"	84*-42'-14.7"	-
43			Madhupur	150	20*-59'-28.3"	84*-46'-31.8"	Yes
44			Nunukapasi	100	20*-55'-30.3"	84*-44'-52.3"	-
45			Anadamunda	80	20*-55'-31.1"	84*-44'-44.8"	-
46			Bidisinga	80	20*-57'-16.5"	84*-42'-41.6"	-
47			Jamunali	160	20*-55'-48.0"	84*-46'-57.5"	Yes
48			Golasar	100	20*-58'-37.8"	84*-47'-38.9"	-
49			Asrubahal	80	20*-57'-30.7"	84*-47'-26.9"	-
50			Badibahal	80	20*-56'-25.6"	84*-45'-49.2"	-
51			Pratappur	200	20*-57'-38.5"	84*-39'-59.4"	Yes
52			Ichhapur	160	20*-57'-27.4"	84*-44'-29.5"	Yes
53			Kadalimunda	100	20*-55'-26.2"	84*-45'-31.0"	Yes
54			Anlabereni	100	20*-59'-13.8"	84*-45'-44.3"	-
55			Khandabar	50	20*-56'-25.6"	84*-46'-55.4"	Yes
56			Chakundamunda	150	20*-57'-19.3"	84*-41'-13.8"	-
57			Chuliapur	50	20*-57'-22.3"	84*-39'-52.7"	-
58			Kanteikolia	100	20*-58'-43.8"	84*-45'-26.9"	Yes
59		Urukula	Tentulipathar	20	20*-51'-56.6"	84*-37'-22.1"	-
60			Nakchi	200	20*-58'-08.2"	84*-37'-15.8"	-
61			Mandamba	80	20*-58'-20.9"	84*-37'-17.6"	Yes
62			Kamarei	50	20*-58'-15.5"	84*-37'-40.3"	-
63			Takaba	80	20*-59'-48.4"	84*-38'-14.3"	Yes
64			Pagabandhha	40	20*-57'-31.2"	84*-38'-55.1"	-
65			Madhupur	70	20*-57'-58.0"	84*-35'-07.6"	-
66			Nuabhuin	100	20*-58'-24.2"	84*-35'-22.1"	-
67			Kholadangiani	60	20*-57'-41.6"	84*-35'-31.4"	-
68			Mankadachua	70	20*-57'-30.6"	84*-37'-17.7"	Yes
69			Jamujhari	60	20*-54'-29.7"	84*-37'-14.7"	Yes
70			Ghanpur	50	20*-54'-10.8"	84*-36'-36.6"	-
71			Damabahali	60.1	20*-52'-20.0"	84*-37'-21.0"	Yes
72			Udal	30	21*-02'-10.3"	84*-38'-23.2"	Yes
73			Ranibhuin	60	20*-58'-08.1"	84*-37'-13.6"	Yes
74			Tileswar	100	20*-52'-59.7"	84*-37'-20.3"	-
75		Charkhaman	Rajanpal	200	21*-01'-51.1"	84*-44'-57.3"	Yes
76			Laxmipriyapur	80	21*-00'-56.4"	84*-44'-13.9"	-
77			Kholaregeda	200	21*-00'-31.1"	84*-40'-47.8"	-
78			Gundurijhrran	200	21*-02'-46.3"	84*-44'-38.9"	Yes
79			Kundali	127.51	20*-59'-35.7"	84*-42'-19.4"	Yes
80			Charkhman	100	21*-00'-07.6"	84*-43'-39.0"	-
81			Baliamba	181	21*-00'-58.6"	84*-45'-33.9"	-
82			Uchhabali	100	21*-00'-35.7"	84*-43'-49.8"	Yes
83		Pedipathar	Batrakhol	95	20*-51'-35.6"	84*-48'-09.1"	Yes
84			Tertuloi	130	20*-52'-06.9"	84*-46'-19.9"	Yes
85			Baraham	36	20*-52'-38.9"	84*-43'-57.2"	-

86	Handapa	Pedipathar	Kurumtap	10	20*-51'-58.3"	84*-40'-28.4"	-
87			Hemamura	118	21*-51'-08.2"	84*-47'-09.8"	Yes
88			Dhundi	62.53	20*-54'-07.4"	84*-44'-17.7"	Yes
89			Parbatipur	99.6	20*-54'-29.6"	84*-46'-25.6"	Yes
90			Garud	70	20*-53'-06.1"	84*-40'-28.4"	Yes
91			Bad-Govindapur	110	20*-53'-08.8"	84*-39'-16.1"	Yes
92			Laxmipur	101.4	20*-52'-06.8"	84*-47'-54.8"	Yes
93	Bamur	Bamur	Susab	22.09	21*-00'-21.4"	84*-31'-12.2"	Yes
94			Dalpaka	100	21*-00'-14.4"	84*-27'-44.4"	Yes
95			Rengalbeda	30	21*-01'-31.5"	84*-29'-40.5"	Yes
96			Naktinali	58.02	21*-02'-07.4"	84*-29'-12.8"	Yes
97			Phasipal	30	21*-02'-22.6"	84*-27'-32.9"	-
98			Haripur	60	21*-02'-22.8"	84*-27'-43.1"	-
99			Kutasinga	130	21*-03'-05.7"	84*-27'-44.3"	-
100			Bamur Chasa Sahi	105	21*-01'-28.0"	84*-29'-20.0"	Yes
101			Pathargarh	19	21*-03'-35.5"	84*-33'-21.6"	Yes
102			Dangapal	70	21*-02'-03.1"	84*-29'-41.1"	Yes
103			Bamur Tentulisahi	40	21*-00'-52.7"	84*-29'-31.1"	Yes
104			Bhangamunda	100	21*-02'-09.5"	84*-29'-05.3"	Yes
105			Bairagipali	110	21*-00'-31.5"	84*-30'-19.3"	Yes
106			Rangamatia	40	21*-01'-31.1"	84*-31'-01.5"	Yes
107		Kishorenagar	Kardingbahal	20	20*-56'-46.4"	84*-30'-32.6"	-
108			Uskapali	20	21*-01'-26.4"	84*-25'-45.5"	-
109			Brahmanipali	100	20*-57'-31.6"	84*-24'-51.9"	-
110			Himitira	60	20*-55'-53.2"	84*-29'-20.7"	-
111			Ghosar	100	20*-56'-20.0"	84*-29'-27.2"	-
112			Sandhapal	60	20*-56'-04.9"	84*-28'-21.5"	-
113			Badibahal	100	20*-58'-13.9"	84*-24'-20.5"	-
114			Gargadabahal	60	20*-59'-56.2"	84*-25'-29.5"	-
115			Dalimura	62.96	21*-00'-58.9"	84*-26'-46.5"	Yes
116			Talpadar	47.52	20*-58'-21.4"	84*-24'-52.9"	-
117			Khariakani	40	20*-56'-42.4"	84*-30'-50.3"	-
118			Karamalakata	40	20*-59'-07.7"	84*-26'-35.9"	-
119			Jhinkibahal	80	21*-01'-16.8"	84*-26'-16.9"	-
120			Dohali	100	20*-56'-19.4"	84*-25'-57.8"	-
121			Baija	60	20*-59'-18.7"	84*-28'-15.1"	-
122			Sahadevbandhupal	60	20*-57'-39.9"	84*-29'-30.2"	-
123			Khandahota	50	20*-58'-35.1"	84*-29'-15.0"	Yes
124			Chintamanipur	50	20*-56'-33.8"	84*-31'-30.4"	Yes
125			Pipalbahal	10	20*-58'-35.3"	84*-28'-08.6"	Yes
126			Dadarpali	78.7	20*-59'-54.8"	84*-25'-27.3"	-
127		Kadalimunda	Tentalapani	50	20*-52'-50.3"	84*-23'-37.2"	Yes
128			Bhejidihi	97.13	20*-56'-34.0"	84*-22'-56.6"	Yes
129		Sargipali	Champapur	60	20*-59'-41.7"	84*-32'-00.7"	Yes
130			Jharabereni	40	20*-58'-19.7"	84*-31'-16.7"	-

131	Bamur	Sargipali	Thelkamali	40	20*-59'-03.6"	84*-34'-58.9"	-
132			Phuljhari	145.1	20*-53'-54.2"	84*-33'-16.5"	-
133			Gurujanga	100	21*-00'-17.3"	84*-32'-52.0"	-
134			Khairamunda	60	20*-59'-47.9"	84*-33'-47.3"	-
135			Sandhamunda	20	21*-00'-09.6"	84*-32'-46.8"	-
136			Dhadarpala	200	20*-58'-37.6"	84*-24'-34.7"	-
137			Purunapani	76	20*-59'-26.2"	84*-34'-49.7"	-
138			Gatikrushnapur	40	20*-59'-41.1"	84*-34'-23.7"	Yes
139			Brundabanapur	100	21*-00'-59.2"	84*-32'-26.4"	Yes
140			Ambapal	64	20*-58'-20.2"	84*-31'-19.8"	Yes
141	Madhapur	Madhapur	Gadadharpur	192	20*-48'-43.8"	84*-27'-30.4"	-
142			Manarbeda	17	20*-51'-09.1"	84*-24'-47.2"	Yes
143			Digipadar	25	20*-50'-00.7"	84*-26'-28.1"	Yes
144			Kundamali	134.75	20*-48'-19.8"	84*-27'-59.2"	-
145			Chandarpur	151	20*-48'-21.6"	84*-27'-51.7"	Yes
146			Nuagoan	47	20*-49'-11.5"	84*-26'-28.8"	Yes
147			Madanpur	16.5	20*-48'-57.6"	84*-26'-47.9"	-
148			Sargiseni	55.6	20*-49'-19.4"	84*-26'-47.4"	Yes
149			Kudugoan	51	20*-44'-38.9"	84*-28'-12.4"	Yes
150			Sorishpanka	42	20*-49'-12.6"	84*-26'-18.1"	Yes
151			Bijipur	63	20*-48'-32.4"	84*-29'-17.0"	Yes
152		Kiakata	Dhuliapada	40	20*-53'-53.6"	84*-17'-19.9"	Yes
153			Tasarbeda	50	20*-55'-33.4"	84*-18'-23.0"	Yes
154			Daultpur	87.6	20*-52'-41.4"	84*-22'-46.9"	Yes
155			Hatuapada	95.04	20*-52'-57.1"	84*-17'-52.7"	-
156			Kiakata	98.6	20*-52'-41.3"	84*-19'-28.5"	-
157			aghunath (Kadapad	35.7	20*-52'-51.7"	84*-20'-34.1"	-
158			angalapur (Kadapa	200	20*-52'-46.5"	84*-20'-43.0"	Yes
159			Khajurijharan	80	20*-54'-39.3"	84*-20'-20.3"	Yes
160			Maa Narayani	200	20*-54'-27.9"	84*-17'-21.0"	-
161			Subarnapur	200	20*-52'-58.0"	84*-22'-34.2"	-
162			Nuapada	50	20*-50'-54.4"	84*-20'-39.1"	-
163			Shri Jagannath	37	20*-54'-03.2"	84*-17'-30.5"	-
164			Maa Dasabhuja	40.5	20*-53'-39.5"	84*-16'-18.6"	-
165		Dekrud	Bhartapur	191	20*-51'-55.5"	84*-27'-50.2"	Yes
166			Goratopa	120	20*-52'-05.6"	84*-27'-12.8"	Yes
167			Ghosarakhol	60	20*-51'-02.8"	84*-31'-17.4"	Yes
168			Taldar	20	20*-53'-54.9"	84*-26'-55.6"	-
169			Raibahal	46	20*-54'-31.9"	84*-27'-09.4"	-
170			Titirikata	172	20*-50'-19.7"	84*-27'-05.8"	-
Total				**12,959.362 Ha**			

9.6.2 Silvicultural System

No specific system in general has been prescribed for this overlapping working circle. The prescription for the main working circle to which the assigned area primarily allotted is applicable for this working circle. The system of working in these particular areas would be guided by the micro plan prepared in conformity with the prescriptions of the main working circle, by the DFO for the individual VSS area. The management of JFM area is site specific for which there is provision for preparation of a micro plan for each VSS area. The silvlicultural system as provided in the micro plan will be adopted.

9.6.3 Rotation period :

No rotation period is possible for prescription in general due to variable nature of crop composition and condition in scatted manner.

9.6.4 Methods of Execution

9.6.4.1 Execution under selection/improvement/rehabilitation working circles :

VSS is executing agency for successful implementation of Joint Forest Management (Overlapping) Working Circle. The technical guidance and support along with financial grant/ aid will be provided by the Forest Department. Though the management will be specifically done through micro plan of individual VSS but following broad prescriptions are made in general to accomplish the special objectives of management of this working circle as well as facilitating the effective working of joint forest management.

1. **Strengthening of VSS-**This is a cutting edge institution for implementation of this working circle. It has to be institutionalised through repeated effort by the Forest Dept.

Capacity Building-Regular training camp and awareness campaigning shall be organised to ensure this aspect. Only through such process the VSS can be stabilised and built up necessary capacity to discharge their function effectively.

1 **Preparation of Micro plan-** it is the most crucial aspect of this working circle. It shall be prepared with active participation and technical supervision of the officials of the Forest Dept. Emphasis shall be given on following items i.e. protection mechanism, restoration and development of forest, sharing of usufruct and conflict resolution. However it will be done as per micro plan on site to site basis. The sharing of the intermediate and final yields should be clearly spelt out in the micro plans. This sharing mechanism should be on the basis of the JFM resolutions of Government of Orissa. Effort should be made to obtain funds from different sources like State Budget, District Budget, DRDA, MP & MLA grants and any other sources. While preparing the micro plans, tools like GIS could also be used for better planning. For this, help of ORSAC can also be taken.

As per the JFM Resolution of the State, (Annexure-XIII) Micro plans are prepared for the area allotted to the VSS. Since degraded forest areas have been recently allotted to the VSS, these forests are still in a degraded state and have been allotted to the Rehabilitation or Selection Working Circle. It is expected that the broad treatment for the crop and soil and moisture conservation will be similar. The VSS Micro Plans will be site specific treatment plan and will generally follow the prescription of the main Working Circle.

Micro Plan shall be prepared for every VSS adopting the 'Participatory Rural Appraisal' technique (PRA). Before the preparation of Micro Plan, the Forest assigned to the VSS shall be surveyed and demarcated. Pillars should be posted to avoid any area dispute in future among different VSS. The area of VSS shall be demarcated using concrete/cut stone pillar of 15cmx15cm cross-section and of 60cm length of which 40cm shall be below the ground and 20 cm above the ground.The name of VSS on the side & pillar number on the top shall be written. A map to scale will be prepared to field staff and enclosed with the Micro Plan. Different activities like plantation, soil conservation measures, silvicultural operations like tending, and cultural operations, disposal of the cleaning materials, water harvesting structures, pastures etc shall be discussed in detail along with financial outlay in the Micro Plan. Even, sharing mechanism shall also be clearly spelt out. However, the provisions of this Micro Plan shall be in conformity with the overall prescriptions of this Working Plan.

9.6.4.1.1 Market Linkage

It is the most vital component. The forest Dept. will provide necessary input for scientific harvest, processing, storage and sale of the forest produce particularly NTFP so that the VSS will get proper price.

9.6.4.1.2 Fund Mobilisation

The Forest Dept. will arrange the flow of adequate fund to the VSS for proper and timely implementation of the micro plan. An integrated approach shall be made to dovetail fund by converging with other rural Development schemes of the Govt.

9.6.10.1.3 Motivation : It is important that the motivation level of the people to protect the forests should be sustained for a long period for the forest to respond to the protection provided. The gestation period for the forest to provide returns is quite long.

There may be conflicts among groups of people or stakeholders. Most of the time it is difficult for the forest personnel to keep up the motivation level at the village level due to the multifarious role of the staff. Hence it is advisable to identify genuine NGOs or eminent local persons who are closely associated with the people to convince the people and keep up their motivation level and enthusiasm. These persons and institutions should be encouraged and if possible some remuneration hould be given to them.

9.6.4.1.4 Entry point activities: In each village, efforts should be made to create sustainable income generating activities which may be forest product based. Income generating activities like sericulture, Pisciculture, Vermiculture, Lac, Honey collection, Apiculture could be encouraged through the VSS. Many NTFP items are also collected from thr forests and efforts should be made to explore processing, value addition and finding good markets for these forest based products. NGOs specializing in IGA and marketing should be entrusted with promotion of livelihood amongst the members of the VSS. These NGOs could impart vocational training on sustainable livelihood and value addition for different NTFP items.

9.6.4.1.5 Reward: Well managed VSS should be identified and rewarded. Their success stories should be given wide publicity. The other VSS members and potential VSS villages should be taken to these successful VSS villages to get inspiration and ideas. These promotional visits would help a great deal to promote the VSS movement in the Division. Awards should be instituted to adjudge the best VSS of the Year in the Division.

9.6.4.1.6 Training: The capacity of the lower functionaries of the Forest Department should be improved by training and exposure visits, to help them to work along with the villagers. During training special emphasis should be on enhancement of communication skills of the staff. Proper orientation of the field staff through training, workshops and discussions on the need of Participatory forest management should be imparted. Similarly the VSS members also need training and exchange of ideas.

9.6.4.1.7 Subsidiary Operation

It will vary from site to site due to different crop condition for which a general prescription will not be suitable. However it will be done as per micro plan on site to site basis.

9.6.4.2 Execution under protection working circle:

In view of proposed tiger landscape & rationalization of satkosia gorge sanctuary; the area of Handapa RF ,Northern RF(p) included under selection working circle in the previous working plan has been brought under protection working circle. Accordingly, the VSSs constituted in the above areas will stand cancelled and the status will be converted to EDC (Ecodevelopment committee). The list of VSS proposed for conversion to EDC is furnished in **Table No.9.3** as follows.

Table No. 9.3: List of VSS proposed for conversion to EDC

Sl. No.	Range	Section	Name of the VSS	G.P.	Forest area assigned (Ha.) R.F	Remarks
1	2	3	4	5	6	7
1	Handapa	Urkula	Udal	Nakchi	30	Northern R.F Comp. No.-24
2		Handapa	Ichhapur	Kenteikolia	60	Handapa R.F
3			Kanteikolia	Kenteikolia	100	Handapa R.F
4			Kadalimunda	Nunukapasi	100	Kadalimunda
5			Jamunali	Jamunali	100	Kadalimunda
6		Pedipathar	Dhundi	Gan-Boinda	62.53	Dartarikhol R.F Comp. No.-5
				Total	452.53	

In view of the above, it is essential to improve the current practices and also develop ecologically sustainable & economically viable packages of alternatives that are acceptable to people. Livestock grazing, Household energy requirements, scarcity of drinking water, year round income generating activities,agricultural practices,education & medical care are examples that are likely to feature on village level site specific strategies.Income generation activities through alternative means such as Sericulture,Apiculture,Vermiculture,Pisciculture,Horticulture,Vermiculture,Poultry etc. can be tried. In order to reduce the dependency on Forest for Livestock Grazing &

Firewood, plantation of firewood & fodder species can be tried in village areas. Under entry point activities, facility of drinking water, water bodies for bathing and other uses, development of communication network to villages can be tried. A close look on the ongoing developmental activities & future planned activities by the other line departments need to be done and it would be wise to convince the District Administration to take up rural developmental works which are ecologically sustainable. However it will be done as per micro plan on site to site basis.

9.6.5 Regeneration

It will vary from site to site due to different state of regeneration status for which a general prescription will not be suitable. However it will be done as per micro plan on site to site basis.

9.6.6 Associated regulations &measures

It will be executed as provided in the micro plan for individual VSS.

9.6.7 Right and concessions:

Right and concessions in this working circle shall be regulated in accordance with the provision of the relevant Gazette Notification of the respective Forest Blocks and the Govt. of Odisha policy with regard to JFM.

9.7 General prescriptions:

It is observed that only 5% of the Forest area is covered under JFM. It is proposed to take up more villages under the purview of JFM considering large chunk of forest area under rehabilitation category.

It is found that micro plans are prepared for 100 VSS only out of 170 VSSs. Emphasis should be given to prepare micro plan for rest of the VSS.

Micro plans prepared need to be approved and implemented. DFO should take urgent step in the matter.

The performance of each VSS need to be ascertained and in case of poor performance even after repeated persuasion, step should be taken to cancel the MOU.

All the areas assigned to the VSS should be marked on the topo sheets of 1:25000. The works taken up in the VSS areas should be entered in the compartment histories. The checking of compartment histories should form a part of the office inspections by the Regional Chief Conservator of Forests and the DFO.

CHAPTER 10
FOREST PROTECTION

10.1 Introduction:

The main objective of scientific management of forests is to augment productivity as far as possible but some times, indiscreet and greedy persons damage the forests considerably. They fell trees illicitly and clandestinely remove forest produce. Thus it results not only in losing a few trees at present but also in damaging chances of a good future crop. This damage occurs mostly in forests in the neighbourhood of villages and towns. It forms the greastet percentage of even the recorded offences committed in the forest.

10.2 Causes of illicit felling:

The following are the causes of Forest offence.

- By villagers to meet the personal requirements.
- By villagers to earn livelihood.
- By timber mafia for profit motive.
- By corrupt staff for extra income.

Timber smuggling activities occurring in the Division (Range wise) is furnished in **Table No. 10.1** as follows.

Table No. 10.1 TIMBER SMUGGLING IN ATHMALLIK FOREST DIVISION

Name of the Range	Name of the Village involved in smuggling	Name of the forest	Species theft	Means of transporation	Used locally or transpoarted	If transported to where	Route of transportation
Dhondatopa	Khalitaila	Hatidhara RF	Teak & Misc.	Bullock card & Dragging	Transported & Local furniture unit	Angul,	By road
	Mahimura					Nalco &	via
	Paikasahi					Jarpada	Kandhakoli & Ugi
	Thakurgah						
	Tapdhol						
	Dhondatopa						
	Paikasahi	Kutulsingha R.F	Teak & Misc.	do	Transported & Local furniture unit	Angul,	By road
	Kantapada					Nalco &	via
	Mahimura					Jarpada	Kandhakoli
	Ghanajodi						& Ugi
	Khalitaila						
Athmallik	Athmallik	Hatidhara	Teak &	do	Transported & Local furniture unit	Athmallik & Boudh through River Mahanadi near Kudgaon	By road & River Mohanadi
	Jadupur	R.F and Taleipathar R.F	Sal				
	pataka						
	Manitri						

Madhapur	Sanjamura	Talaipathar	Sal & Misc.	Bullock card &	Locally for	-	-
	Raniakata	& Nuagaon					
	Nuagon						
	Bandhapalli						
	Lunahandi						
	Ghosarakhol						
	Ghodagadi	East & West	Sal & Misc.	Bullock card &	Locally for		
	Balataila						
	Sankhamal						
	Naikpada						
Handapa	Kanaloi	Northern R.F	Sal & Misc.	do	Locally for	Talcher & Kaniha	By Road by
	Machhakota						
	Chhendipada						
	Bagedia						
	Patrapada						
	Handapa	Handapa R.F	do	do	Locally for	-	-
	Bainda						
	Luhamuda						
	Nakichi	Dandarugudi	Teak	do	do	-	-
	Angapada						
	Pedipathar	Dantarikhol	Sal & Misc.	do	do	-	-
	Sanahula						
Barmur	Sargipalli	Northern R.F	Sal & Misc.	do	Transported &	Rairakhol & Boudh	By Road by
	Nakichi						
	Ambapal						
	Dahimal						
	Bhangamuda						
	Himitira	Ghosar R.F	Teak & Sal	do	Local for furniture use	-	-
	Sanjamura						
	Manipur						
	Haridanali						

10.3 Preventive measures:

The following preventive measures are suggested.

- **Publicity:** Protection of extensive forests is not possible without the active cooperation of the villagers. The best preventive measure is to make public conscious of its duty to forests not only for their own good but also that of their future nation and hence proposed.
- **Good –will:** Mere publicity about the advantages of forests would not achieve without the goodwill of the people. It is essential that the forest staff should demonstrate by their actions.
- **Creation of alternative income generation activities:** All forest works should be got done by engaging local labour & not by imported labour which should be used only when the local labour can not cope up with the work.Ecologially sustainable,economically viable & locally acceptable income generation activities should be devised and hence proposed.
- **Proper patrolling:** Illicit felling and clandestine removal of forest produce can be decreased to a large extent by proper patrolling. To assist the field staff, the following squads are engaged, the details of engagement range wise is furnished in **Table No.10.2** as follows.

Table No. 10.2 List of engagements of Forest Squad under different schemes

Name of the Range	Scheme	Name of the squad	Nos engaged.	Period of engagement.
Bamur	Campa(WL)	Elephant squad	05 Nos	Whole year.
		Para protection squad	10 Nos	Whole year.
	Campa	Fire watcher.	10 Nos	Feb to June.
	General (WL)	Elephant management Squad.	05 Nos	Whole year.
Handapa	Campa(WL)	Elephant squad	10 Nos	Whole year.
		Para protection squad	10 Nos	Whole year.
	Campa	Fire watcher.	10 Nos	Feb to June.
Dhandatopa	Campa(WL)	Elephant squad	10 Nos	Whole year.
		Para protection squad	10 Nos	Whole year.
	Campa	Fire watcher.	10 Nos	Feb to June.
	Intensive protection of critically endangered areas.	Protection squad	10 Nos	Whole year.
Athmallik	Campa(WL)	Elephant squad	05 Nos	Whole year.
	General plan	Elephant squad	05 Nos	Whole year.
	Campa	Fire watcher	10 Nos	Feb to June.
Madhapur	Campa(WL)	Elephant squad	05 Nos	Whole year.
		Elephant tracker	02 Nos	Whole year.
	Campa	Fire watcher	10 Nos	Feb to June.

The engagement of the above squad should continue.

10.3.1 : Installation of VHF

10.3.1.1 Fixed VHF stations: The Division office as well as all the Range headquartes should be installed with VHFs. Beside that VHF should be fixed in all the 04 mobile barracks as well as in the FRH at Takoba & Korab. If possible, the non functional VHFs should be made operational.The watch tower in Madhapur Range should be equipped with VHF. Beside that all the vehicles should be installed with VHF. DFO should ensure that the VHF are functional & operational. Some staff should be specifically trained in operation and maintenance of VHF sets, coding and decoding of messages, in this regard professionalism needs to be brought in the operation management. For this a circle level workshop is necessary for proper operation and maintenance of VHF sets.

10.3.1.2 Walki-talkies: The status has already been reflected in the chapter 11.3. Each section should have two sets of walki-talkies. The mobile staff as well as the staff posted in checkgates should have two sets of walki-talkies and hence proposed.

10.3.3 Arms & Ammuniation: All the Ranges are equipped with arms & ammuniation. These should be made operational. The weapons should not become ornaments and proper training is necessary for the maintenance and operation. There should be regular firing practices by the staff. A list of registered gun licence holders of the Division should be obtained from the local police stations for record.

10.3.4 Check gates:

There are two manned check gates in the Division i.e on NH 55 near Boinda & at Kiakata. They should be installed with CC TV cameras. For effective controlling of illicit trafficking of timber and kendu leaves, there is need to install new gates at Kanthapada and Bhangamunda.

The unmanned check gates should continue as usual. Two unmanned check gates should be fixed on Girida- Lenkadachhida Forest Road i.e one at either end. The list of existing & proposed unmanned check gates is furnished in **Table No. 10.3** as follows.

Table No. 10.3: List of unmanned check gates			
Sl.No	Name of the Range	Location	Forest Road
1	Athmallik	Jadupur	Jadupur-Darua
2	Dhandatopa	Kantapada	
		Maimura	
		Pathrakhumpa	
		Dhandatopa	Dhandatopa--Bipradia
3	Handapa	Takaba	Kamari-Udal-Dimiridihi
		Udal	Kamari-Udal-Dimiridihi
		Dimiridihi	Kamari-Udal-Dimiridihi
4	Bamur	Pathargarh	Haripur-Dimridihi-
Proposed:			
5	Madhapur	Lenkadachhida	Girida-Lenkadachhida
6	Dhandatopa	Dhandatopa	Dhandatopa--Girida

10.3.5 Vehicles: All the Ranges are equipped with four wheelers. However during fire season, one additional vehicle should be engaged in each Range.

10.3.6 Construction of Mobile Barracks: It is proposed to construct mobile barracks at four locations, the details of which is furnished in **Table No 10.4** as follows

Table No 10.4 Location of proposed Mobile Barracks		
Sl.No.	Name of the Range	Location
1	Dhandatopa	Bipradiha
2	Madhapur	Ghosrakhol
3	Bamur	Pathargarh
4	Handapa	Gundurijharan

10.4 Remedial Measures: Inspite of the preventive measures described above; cases of illicit felling and poaching occur here and there. The only way to deal with them is to take a prompt action against the offenders. Therefore it is necessary that at the time of enquiry all conclusive evidence to prove the guilt of the offender should be collected. Prompt action and successful prosecution will have a deterrent effect on other offenders. All persons who give evidence to make the case successful should be rewarded.

CHAPTER -11
ECO-TOURISM:

OUT SIDE THE FOREST AREA:

11.1 Nature Trails :

Trails, perhaps, are the best way to acquaint the visitor with the forest and its environs.They enable the person to see, hear and feel first-hand the flora,the micro-fauna and, hopefully,the larger wildlife. There is no better way to experience wilderness than while taking a trail on foot in a small group. Trails add variety to the visitor programme and bring visitors into closer contact with nature. If provided with interpretation they have considerable education value. Short (up to one hour) and easy trails in the vicinity of day use areas can be established as self-guided trails.

11.1.1 Planning and constructing a trail:

- Survey the areas having potential for nature trail. A good trail leads past, pleasant or spectacular scenery.
- An inventory of possible interpretive themes.
- Points of interest.
- Join the resource points by a foot track (not more than four feet wide)and indicate them by markers and numbers.
- Consider the length of the route and time it will take to cover. It should normally be between 1 to 1.5 km and should take from 1 hour to one and half hour.
- The trail should be so designed so that it is not repeated. It should start from one end and culminate at the starting point by covering the desired length.
- Avoid fire lines or long straight stretches. Do not disturb or remove anything from the trail unless absolutely essential in the interest of comfortable trail use. Trails can easily lead around obstacles.
- On reasonably dry and level ground it is not necessary to give special treatment to the trail surface. Do not make the trail artificial. The trail edges may be marked with rocks but grass, moss, fallen leaf need not and should not be removed.
- Impress upon the workmen that under no circumstances should timber or saplings right next to the trail be cut.
- People must be able to easily find the starting point of a trail by a prominent sign.
- On a trail, people must be reassured by direction and distance markers at intervals of 50 to 100 mtrs.
- Point markings on rocks or trees are the easiest ways of doing this. Wooden posts sunk in the ground are better.

11.1.2 Trail Interpretation:

—Trail interpretation should be to draw the visitors' attention to features along trail or viewing routes and explaining them which can maintain a visitor's interest even if animals are not seen. Encourage people to look for and see the seemingly insignificant detail. Help them discover the amazing world of micro-fauna and flora, example of mimicry and adaptations in nature. Highlight interdependence and relationships between plants, animals and abiotic ecosystem

— One often finds labels with local and scientific name stuck to trees. This is not interpretation. The interpretation of a tree would say something about its wood, how much water it evaporates, about its seeds or about the animals that live and feed on it. Interpretation should satisfy people's natural curiosity. At the same time, draw attention to the inconspicuous.e.g.how ants and termites are important links in the recycling of organic matter.
— Fallen trees provide shelter for many animals.
— Look for footprints, droppings and drag marks caused by the wild animals.
— Coverage of vegetation by the side of the river/nalha banks make the site stable.
— Fig trees provide food and shelter for a lot of animals, monkeys, civets, birds, bears, pigs and deer. When the fruit is ripe, animals congregate in large numbers and it becomes an excellent place to watch wild animals.

11.1.3 Methods of trail interpretation:

Printed handout- A sketch map with interpretive resources marked, and to help the visitor orient himself. The text of the handout refers to easily recognizable features along the trail.

Guides: Guide service may be made available to accompany the visitors on the trails. There are beautiful places in the Athamallik Division that can be developed into nature trail spots. However the following points are proposed for Nature Trails.

Development of Nature Trail near Jhemei chuan:

The site Jhemei chuan is situated at 2 kms from village Jadupur located on Boinda- Athmallik PWD Road. A very old and famous Siva temple is established at Jhemei chuan. It is situated at the foothill of out side the Hatidhara R.F. A water harvesting structure is located within the forest belt nearby. The site can be developed as a nature trail and hence proposed.

11.2 Nature Camp:

Nature Camps provide outdoor recreation and conservation education for the urban and local students from upper primary to college level. They offer a unique opportunity to instill love and concern for nature at a young and impressionable age. A permanent Nature camp accommodating some 20 youngsters on a 2-day visit can cater the purpose. Over time, the staffs of a permanent camp are able to improve and professionalize their approach and develop better teaching aids and activities. Nature camps offer an ideal opportunity for the VSS and the Field Staff to work together. For instance, the Department can appoint the camp supervisor and provide logistic support, while the VSS organizes visits, transport and employment of camp councilors and teaching staff. The nature camp should be conducted twice in a month on 15 days duration except during the rainy season.

11.2.1 Objectives:

— Introduce basic ecological principles in ways which are conducive to learning by personal experience.

— Motivate participants to gather information on aspects of the biotic and abiotic environment.

— Encourage participants to analyse and discuss conservation issues in a constructive and problem – solving manner.

— Foster admiration and respect for the complexities of relationships between species and within natural communities.

—— Dispel unfounded fear of wild animals and help participants feel comfortable in wilderness.

11.2.2 Activities:

A camp is successful if it is fun for the participants and also if the objectives have at least partially been met. Choosing activities which allow a maximum of personal involvement is the key to success. The programme activities should be planned in three phases.

In the **discovery phase** participants are allowed to discover nature on their own and encouraged to observe, question, speculate and phantasize. It is important not to lead the group from place to place and explain everything so that they become passive bystanders. The camp instructor introduces the programme, answers questions, and puts participants at ease.

In the **directed investigation phase**, the participants are entrusted with certain tasks to complete by themselves or in small groups, collect record, measure,discuss,carry out simple experiments. Allow collection of only non-living materials. Explain the use of field guides. The instructor makes suggestions, gives advice, issues materials and equipment,and helps analyse the collected data.

In the **small project phase,** the youngsters get an opportunity to put experiences into perspective, depending on ageand interest, e.g. write a report on findings of an examination. The instruructor facilitates discussion, draws experiences together,discusses follow-up with teachers/group leaders.

11.2.3 Camp Organisation:

Two–day visits by groups of 20 students together with their teachers can be comfortably handled by a staff of one supervisor and one instructor. Visits should be arranged well ahead of time so that camp staff and facilities are fully prepared and utilized.

The camp supervisor should either stay at the camp site or live within reasonable travel time of it. Instructors must live at the camp while it is in session.

11.2.4 Sites and accommodation:

An appropriate nature camp should be-
Away from sensitive and valunerable habitats.
Near areas and points of attraction.
Safe for walking.
Accessible by hired bus.
Accommodation should normally be in tents.

11.2.5 Staff and staff training:

Nature camps require regular and specialized staff. For a camp with a capacity of about 20 participants, the camp staff should consist of a camp supervisor, one instructor and support staff.Camp supervisor and instructor is responsible for organizing the camp and developing and conducting the activities. Although camps might only operate seasonally, staff should be permanently assigned. During the off-season they can prepare for next year's camp or offer programmes at local schools. During the off-season, especially in the beginning, the staff could be allowed to acquire additional expertise via internships and workshops. If staff are permanently assigned, the experience thus gained will not be wasted and eventually the team will become"nature camp specialists", who are able to train others.

11.2.6 Equipment/materials:

Cots, hurricane lanterns, buckets, cooking utensils etc are necessary for minimum comfort at the camp. There are beautiful places in the Athamallik Division that can be developed as nature camp spots. However the following points are proposed for Nature Camps.

(a) Deulajhari:

It is the ancient citadel of Saivism, located at 6 Km. away from Athamallik. The temple has been constructed amidst dense indigenous-keoda forest (locally known as Kiabana) that stands as the high walls around the temple. The uniqueness of the place lies in its hot springs that surround the temple. As per the ancient records there were eighty-four such springs. But many of these have been overshadowed in the koeda forest. Now twenty-four springs are alive. Among these, the springs bearing the names like Agnikunda, Taptakunda, Himakunda, Amrutakunda and Labakusakunda are prominent ones. The temperature of water in these springs varies from 40 degree Celsius to 62 degree Celsius.The temple complex covers an area of twenty-four acres of land. The presiding deity Sidheswar Baba adores the main temple. (Source: Angul District Gazetteer)

(b) Binikei Pitha:

The pitha of Goddess Binikei is another spot of tourist attraction in the Sub-division of Athamallik. The place is located on the bank of the river Mahanandi and is only 25 Kms. away from the Sub-divisional headquarters. The spot is the gateway to the famous Satakosia gorge in river Mahanadi. At the back of the temple stand the towering Panchadhara hills like a crown on the head of the deity. (Source: Angul District Gazetteer).

CHAPTER 12

CLIMATE CHANGE

12.1 Introduction: Evidence of climate change and its impact on forests has grown stronger with each passing year. Human activities such as fossil fuel combustion, fertilizer production and use, and land use change are driving up concentrations of carbon dioxide and other greenhouse gases in the atmosphere. The emissions of these gases, which are accelerating, are trapping heat and altering the Earth's climate. Our climate shapes our basic living conditions. It controls the growth of agricultural and forest crops that supply our food and fiber, determines our energy needs for heating and cooling, influences the potency of pollutants in our air and water, and drives the melting of glaciers and sea level rise. Even small changes in climate may therefore have major effects on forests and thus for society.

Climate differs from weather. Weather refers to the day-to-day changes in local conditions such as temperature, precipitation, and humidity. Climate is a long-term average; shifts in climate are harder to observe than changes in weather. By tracking temperature and precipitation patterns over time and in response to the changing atmospheric conditions-such as rising greenhouse gas concentrations-researchers can trace long-term patterns in climate as distinct from the weather patterns we experience day to day.

The Earth's surface air temperature has warmed by approximately 1.4 F (0.8 C) over the past century. The amount and patterns of precipitation have also changed. Over the next century, temperature will continue to increase. The increase will depend on the amount of greenhouse gases emitted to the atmosphere from human activities and, to a smaller extent, on natural climate variability.

Model projections of future change based on low and high emission scenarios developed by the Intergovernmental Panel on Climate Change estimate a 5.2 to 9.5 F(2.9 to 5.3 C) increase in the Earth's average air temperatures by the year 2100.

In 2011, the average global concentration of atmospheric carbon dioxide(CO2), the most common greenhouse gas, was 387 parts per million (ppm). This is the highest level in the last 800,000 years. Projections for the future suggest that the world will follow or exceed the high emission scenario.

Rising greenhouse gas concentrations in the Earth's atmosphere have implications for both local and global climates.

12.2 Effects of climate change on natural resources:

Climate Change:

Climate change affects many natural resources when:

- Lakes freeze and thaw
- Trees bud in the spring
- Changing temperature and precipitation cause extreme events that affect water resources(e.g. floods, droughts)

Plants and animals

As the climate changes, some species will adapt by:

- Migrating to new locations
- Changing their breeding seasons
- Seeking new food sources

Less adaptable species may even disappear from their current habitats.

Biodiversity

- The way certain species interact with one another and their environment may change
- Species at risk and isolated habitats may be the most sensitive to changes
- Changes in water and air temperature may make conditions more favorable for diseases and invasive species, which puts pressure on native species

Forests

- There may be more insect and disease outbreaks
- Increased tree stress may affect forest growth
- Drier forests will lead to more intense and frequent forest fires
- Local tree species will be less suited to local conditions. Climate conditions may change faster than local trees can migrate, which may cause them to die off in some areas.
- Healthy forests store carbon; damaged and unhealthy forests will be less effective at this
- Healthy forests can withstand-and reduce- the impacts of climate change

Water

- Milder, shorter winters lead to

(a) Changing rainfall patterns

(b) Changes in water's movement between air, soil, plants and bodies of water

* There may be less water available for renewable energy production and waterways

* increasing water temperature may result in lower water quality

* more extreme weather may result in more frequent flooding, erosion,shoreline damage, infrastructure failures and decreased water quality due to increased runoff and debris

Fish

- Most aquatic species growth and reproduction are strongly influenced by water temperatures
- Changes to water quality, water levels may affect the type and number of fish in rivers

Wildlife

- Some wildlife species will be forced to move to a more favourable habitat
- Hybridization between different animal species will be experienced
- While some animals will adapt, species that require a narrow range of temperature and precipitation conditions are most likely to decline or die out completely

- Climate change may affect

  (a) Wildlife reproduction

  (b) Relationships between predators and prey

  (c) Survival

  (d) Rates of disease in wildlife species

  (e)the availability of food and habitat

Wetlands

- Wetlands help reduce the effects of climate change by capturing and storing carbon
- Climate change alters wetlands and the native species living there
- Changes in precipitation and temperature may change wetland water systems, causing flooding and droughts
- When there is a decrease in precipitation and increased evaporation due to warmer air, wetlands may dry up or disappear

12.3 Climatic parameters:

Climate:- There are four seasons distinctly seen in this Division.

Hot and Dry summer:-

It extends from early February to middle or end of June. The temperature shoots up to 46*C in May. The humidity is very low in April and May. On an average, rainfall received in March and April is less than 50 mm. Light showers occur in the season.

Hot and Humid Wet Season:-

Monsoon breaks in the first fortnight of June and lasts up till September (Occasional showers occur in October and November) Maximum rainfall is received in July & August, on an average 300-400 mm. rain is received in these months. The relative humidity is also high in this season, average relative humidity being 80% in July, 82% in August, and the sky is heavily clouded. The average maximum temperature in July is 34.5* C and in August is 33* C and thus the season is hot and wet.

Post Monsoon Season:-

In this season there are occasional showers. The humidity is high, average is 82% in October and in November it is 79%. There is moderate cloud in this season and the temperature starts falling down.

Winter season:-

This extends from December to last part of January or first fortnight of February. It is not severe in plains but in forest areas like Korab, Pathargarh, Balajimath the winter is severe. The coldest month is January in which the temperature dips down to 4*-5* C in areas like Takaba. There is no temperature recording station in Athmallik Sub-Division, the nearest recording station is located in Angul. Hence it is difficult to know the exact temperature in different localities of the subdivision. The humidly also reduces in December and January. There are almost no rains in December, January and February.

Rainfall:-

The distribution of rainfall is largely influenced by the ghat terrain of the Division. The Division receives pre monsoon showers in late June. By July, the monsoon almost gets established. Months of July, August & September are the peak rainy months with maximum rainfall during this period. In fact, about 70% of the annual rainfall is received in these three months only. It is quite common to receive a few showers in October which gradually becomes less in the month of November. Thus, monsoon being quite prolonged is highly conducive for any type of plantation activity. However, gradually, the rainfall has become erratic as can be seen from the rainfall data for last decade. The rainfall data recorded from 1984 to 2003 and from 2006 to 2015 is given as below.

MONTHLY RAINFALL (mm) IN ATHAMALLIK BLOCK													
Year	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct.	Nov.	Dec.	Total
1984	3	45	8		23	218	294	426	177	112	70	–	1376
1985	–	27	18	72	91	274	506	214	163	54	16	–	1434
1986	–	–	34	37	58	313	660	545	216	135	32	–	2020
1987	–	–	–	76	112	416	522	264	172	96	47	4	1709
1988	–	–	18	34	96	582	568	254	154	39	–	–	1745
1989	–	–	42	54	102	382	294	426	109	58	70	–	1537
1990	–	18		74	81	418	495	602	213	112	94	10	2117
1991	–	–	45	88	92	294	359	473	177	113	42	–	1683
1992	–	–	29	62	48	283	324	306	240	69	42	–	1403
1993	–	6	23	106	93	316	652	426	217	135	44	–	2018
1994	–	–	41	95	102	298	318	293	209	88	27	–	1471
1995	–	–	–	28	408	512	374	266	199	87	121	10	2004
1996	–	–	22	–	56	378	384	306	148	103	71	–	1468
1997	–	–	29	74	126	396	402	377	206	92	49	4	1755
1998	–	34	119.6	28	21	132	230	144	294.6	47.4	40.9	–	1091.5
1999	–	–	–	–	88.8	262	237.6	288.6	275	127.7	1.5	–	1281.2
2000	–	14.2	–	1	77.6	106.8	216	305.4	188.6	63.6		–	973.2
2001	–	–	6.6	25.2	56.4	418.9	124.8	216.6	60.8	17.2	3	–	2112.1
2002	10.4	–	1.5	69.2	104.8	171.2	27.0	398.4	229.6	–	–	–	1268.6
2003	–	–	22.6	8.4	4.1	79.5	511.4	514.1	33.9	18.5	2.3	–	1687.1
Avg													1608

MONTHELY RAINFALL OF KISHORENAGAR BLOCK													
Year	Jan	Feb	Mar	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1984	18	32	13	6	26	202	274	398	191	112	58	--	1330
1985	--	20	24	62	88	256	498	187	154	56	8	--	1353
1986	--	--	32	39	63	318	642	506	198	132	16	--	1946
1987	--	--	5	86	106	408	496	278	170	98	43	--	1690
1988	--	--	12	37	102	588	560	237	141	32		--	1709
1989	--	--	46	42	91	378	272	408	103	44	68	--	1452
1990	--	--	2	58	90	406	483	600	222	96	101	--	2058
1991	--	--	32	79	95	288	356	442	163	98	34	--	1587
1992	--	--	27	68	41	278	302	296	229	66	52	--	1359
1993	--	--	20	104	86	305	646	402	248	130	46	--	1987
1994	--	--	36	92	106	289	306	278	202	79	16	--	1404
1995	--	--	46	32	404	228	212	259	188	84	106	--	1559
1996	--	--		2	53	346	298	292	146	98	73	--	1308
1997	--	--	18	66	92	282	259	373	208	86	42	--	1426
1998	--	12	51	14.5	14	106.8	373.8	183.2	401.7	97	12.4	--	1266.4
1999	--	--	--	--	177.8	191.6	268.4	375.4	280.4	96	--	--	1389.6
2000	--	50.4	--	--	77.5	137	207.2	307.4	138.2	8.2	--	--	925.9
2001	--	--	29.2	22.2	47.2	501	1154.4	416.5	97	357	--	--	2624.5
2002	13.8	--	--	4	89.8	163	37	459.8	267.5	1.6	--	--	1036.5
2003	--	44.6	--	31	23.2	289.4	531.8	495.4	467.8	101	--	28.6	2012.8
Avg													1571

MONTHLY RAINFALL DATA OF ATHAMALLIK BLOCK(mm)											
Year	**Jan**	**Mar**	**April**	**May**	**June**	**July**	**Aug.**	**Sep.**	**Oct.**	**Nov.**	**Total**
2006	0	7.1	10	99	144	425.3	907	255	23.6	0	1871
2007	0	0	10	22.8	512.3	167.4	128	378.4	17.2	0	1252.1
2008	93	5.2	68.2	5	412.5	231	273	294.6	34	0	1418.3
2009	0	0	0	19.4	24.8	746	502.6	121.4	59.8	26.6	1500.6
2010	5.2	0	0	63.2	129.4	225	192	207.6	84.2	6.4	945.6
2011	0	14.6	42.2	140.2	211	173.2	247	345.2	7.4	0	1220.2
2012	105.2	0	0	0	215.8	397	357	226.6	77	29.2	1302.6
2013	0	24.8	32.2	0	288.6	265	161	174.4	446.2	0	1412.2
2014	0	36	2	69.8	56.8	657.4	641.6	291.8	79	0	1863
2015	3.4	4	46	38.6	156	337	216	126.8	11	1.8	970.4
Avg	20.7	9.2	21.1	45.8	215.1	362.4	362.5	242.2	83.9	6.4	1376
Source:Director,Materology, Bhubaneswar											

MONTHLY RAINFALL DATA OF KISHORENAGAR BLOCK(mm)											
Year	**Jan**	**Mar**	**April**	**May**	**June**	**July**	**Aug.**	**Sep.**	**Oct.**	**Nov.**	**Total**
2006	0	24	13.6	114.6	134.4	427.6	881.4	151.2	28	4	1778.8
2007	0	0	25.4	68.4	308.6	440.6	220.2	448.6	18.2	12.2	1563
2008	25.6	10.6	7	0.6	358.4	332.8	239.2	406.6	10.2	1.2	1403.6
2009	0	0	0	4.8	23.8	753.2	318.8	109.2	120.6	18.2	1348.6
2010	1.8	19.4	0	129.8	81	153.8	227.4	351.2	41.6	1.8	1038.6
2011	0	4.2	16.8	142.8	281.6	195.4	199.8	504.2	21.2	0	1366
2012	80.4	0	23.4	4.2	216.4	338.4	550.2	173.2	135.6	30	1551.8
2013	0	19	14	7.6	206.6	258.6	111	206.8	229.6	0	1057
2014	0	0	3.8	65	69.4	545.2	557.4	204.6	97.4	0	1554.4
2015	0	0	57	24.4	288.1	216.4	215.6	94.4	0	0	907.9
Avg	10.8	7.7	16.1	56.2	196.8	366.2	352.1	265	70.2	6.7	1357

On analysis of the annual rainfall pattern of Athmallik Block for the period from 1984 to 2003 to that of 2006 to 2015; it is observed that the total average rainfall has decreased from 1608 mm to 1376 mm. Similarly, On analysis of the annual rainfall pattern of Kishorenagar Block for the period from 1984 to 2003 to that of 2006 to 2015; it is observed that the total average rainfall has decreased from 1389.6 mm to 1357 mm. However, the percentage of decrease is comparatively much less in Kishorenagar Block than that of Athmallik Block.

Orissa is divided into 10 agro climatic zones based on the climate and cropping patterns

1. North-Western Plateau

2. North-Central Plateau

3. North-Eastern Coastal Plain

4. Eastern and South Eastern coastal plain

5. North Eastern Ghat

6. Eastern Ghat Highland

7. South-Eastern Ghat

8. Western Undulating

9. Western-Central Table Land

10. Mid-central Table and Zone

Angul district comes under Mid Central Table Land zone. This zone comprises Dhenkanal, Angul, Athagarh and Sukinda block of Jajapur district. This zone is physiographically located in the middle of the central table land, raises from east to west and has an average elevation of 300 mts from mean sea level. The rainfall distribution pattern shows that during the pre-monsoon period (during the month of Feb, March and April) less than 5 cm rainfall is received. In the monsoon period, June receives 20-30cm. July and August receive more than 30 cm rainfall. In the post monsoon period, October receives 5-10 cm. November and December receive 4-5 cm. This zone is considered as medium moisture deficit class, which means that the residual soil moisture is insufficient for the sustenance of the second crop in the Rabi season.

Temperature:-

There is no temperature recording station at Athmallik Subdivision. So the data recorded for Angul District is taken for the reference. The coldest month is January with the minimum temperature falling to even 11ºC. The average maximum temperatures is 33.49º C. and the average minimum temperature is 20.65ºC. The maximum temperature is experienced in the month of May. Average Annual temperature of Angul station for the period from 1989 to 2003 and from 2006 to 2015 are reflected in the Table as given below.

AVERAGE ANNUAL TEMPERATURE IN ANGUL DISTRICT												
	1989	1990		1991		1992		1993		1994	1995	
Month	Max	Max	Mn	Max	Mn	Max	Mn	Max	Mn	Max	Max	Mn
Jan	28.6	30.4	11.3	30.9	14.4	32.2	9.2	30.4	11.1	30.8	25.9	15.8
Feb	29.2	29.8	17.6	33.1	11.2	30.8	9.4	32.2	16.4	30.5	31.9	18.6
Mar	39.4	40.7	17.4	38.6	18.3	40.1	23.4	38.3	16.2	38.9	35.6	21.7
Apr	38.8	40.3	19.5	40.7	14.4	39.6	21.2	38.4	17.1	38.5	39.2	23.4
May	40.3	41.4	18.9	40.7	23.8	42.2	26.4	40.2	22.1	40.2	36.4	23.8
June	34.8	36.3	22.2	33.4	19.2	37.8	21.2	40.4	21.2	33.8	36.8	24.1
July	31.2	29.6	20.2	30.4	21.6	32.3	24.4	30.4	21.2	30.8	32.5	22.3
Aug	33.4	33.1	19.6	30.2	23.2	34.4	24.6	32.2	20.6	30.8	32.5	22
Sep	32.2	30.1	18.4	33.4	24.2	29.6	21.2	30.31	18.4	32.8	32.5	21.5
Oct	33.4	33.2	20.1	31.4	18.6	33.1	19.2	30.4	14.2	33.1	31.7	19.2
Nov	30.3	31.1	18.6	32.4	22.2	30.6	15.4	29.4	12.2	30.7	29.6	16.1
Dec	28.4	29.2	14.4	30.1	16.2	29.2	12.6	29.3	11.1	28.5	29.8	14.9
Avg	33.33	33.77	18.18	33.78	18.94	34.3	19.02	33.49	16.8	33.28	32.9	20.28

AVERAGE ANNUAL TEMPERATURE IN ANGUL DISTRICT														
Month	2006		2007		2008		2009		2010		2011		2012	
	Max	Mn	Max	Mn	Max	Mn	Max	Mn	Max	Mn	Max	Mn	Max	Mn
Jan	29.4	13.3	29.8	14.6	28.1	13.3	31.3	13.9	27.6	11.4	25.5	11.3	27.6	15.4
Feb	35.7	15	32.2	16,3	29.5	16.5	34.4	17.9	33.1	15.3	30.8	15.4	32.7	16.8
Mar	35.8	22.1	35.6	16.9	35.8	20.2	37.5	19.3	38.4	21.2	37	20.1	37.4	20
Apr	39.2	26.4	39.9	24.2	38.8	23.5	42.1	24.6	42.9	25.5	37.3	21.2	39.9	25.2
May	38.2	27.5	39.2	25.6	40.8	25.7	40.5	25.2	39.4	24.9	39.6	23.5	39.9	27.1
June	36	22.6	36.1	25.9	33.2	24.5	40.4	26.3	38	23.5	34.8	23.5	38	27.4
July	32.7	21	33.6	25.2	31.9	24.7	31.3	24.4	33.5	22	33	23.5	31.5	25.4
Aug	30.9	19.6	32.8	24.9	31.7	24	33.5	25	31.6	21.3	31.8	22	31.7	25.2
Sep	32.1	21	32	24.5	31.5	24	33.6	24.5	32.5	22.4	30.8	22.2	32.3	25
Oct	33.6	19.9	32.2	20.5	32.6	21.7	31.2	19.7	32	21.2	33.5	20.7	32.2	21.6
Nov	28.7	18.3	30	17	29.8	17.1	30.1	17.2	30.5	19.8	32	16.2	28.9	17.6
Dec	29.4	16	29.1	13	29.2	14.2	28.1	12.4	26	13.9	29	13.5	28.9	14
Avg	33.5	20.2	33.5	20.7	32.7	20.8	34.5	20.9	33.8	20.2	32.9	19.4	33.4	21.7

Month	2013		2014		2015	
	Max	Min	Max	Min	Max	Min
Jan	28.3	16.3	28.9	11.9	27.9	16.5
Feb	31.4	15.5	31.7	14.5	33..5	20.9
Mar	36.9	19.2	35.2	18.2	36.8	24
Apr	39.2	22.7	40.7	21.5	38.5	26.3
May	41.1	25.8	38.9	25.8	41.3	25.7
June	34.7	24.6	37.3	27.7	35.5	24.6
July	31.8	23.8	31.6	25.2	32.8	24.6
Aug	32.1	23.7	32.6	25.5	33..0	24.3
Sep	32.8	23.4	32.5	24.9	33.4	22.2
Oct	30.4	21.1	32.2	23.4	33.7	17.3
Nov	33.1	18.6	31	16.9	31.4	15.6
Dec	28.9	12.5	27.7	13.3	28.4	21.3
Avg	33.4	20.6	33.4	20.7	33.8	263.3

AVERAGE ANNUAL TEMPERATURE IN ANGUL DISTRICT							
Month		**2007**	**2008**	**2010**	**2011**	**2012**	
	Min	**Max**	**Max**	**Max**	**Max**	**Max**	**Min**
Jan	13.3	29.8	28.1	27.6	25.5	27.6	15.4
Feb	15	32.2	29.5	33.1	30.8	32.7	16.8
Mar	22.1	35.6	35.8	38.4	37	37.4	20
Apr	26.4	39.9	38.8	42.9	37.3	39.9	25.2
May	27.5	39.2	40.8	39.4	39.6	39.9	27.1
June	22.6	36.1	33.2	38	34..8	38	27.4
July	21	33.6	31.9	33.5	33	31.5	25.4
Aug	19.6	32.8	31.7	31.6	31.8	31.7	25.2
Sep	21	32	31.5	32.5	30.8	32.3	25
Oct	19.9	32.2	32.6	32	33.5	32.2	21.6
Nov	18.3	30	29.8	30.5	32	28.9	17.6
Dec	16	29.1	29.2	26	29	28.9	14
Avg	20.2	33.5	32.7	33.8	32.9	33.4	21.7

Month	**2013**		**2014**		**2015**	
	Max	**Min**	**Max**	**Min**	**Max**	**Min**
Jan	28.3	16.3	28.9	11.9	27.9	13.3
Feb	31.4	15.5	31.7	14.5	33..5	16.5
Mar	36.9	19.2	35.2	18.2	36.8	20.9
Apr	39.2	22.7	40.7	21.5	38.5	24
May	41.1	25.8	38.9	25.8	41.3	26.3
June	34.7	24.6	37.3	27.7	35.5	25.7
July	31.8	23.8	31.6	25.2	32.8	24.6
Aug	32.1	23.7	32.6	25.5	33..0	24.6
Sep	32.8	23.4	32.5	24.9	33.4	24.3
Oct	30.4	21.1	32.2	23.4	33.7	22.2
Nov	33.1	18.6	31	16.9	31.4	17.3
Dec	28.9	12.5	27.7	13.3	28.4	15.6
Avg	33.4	20.6	33.4	20.7	33.8	21.3

Analysis of Temperature	Average Maximum	Average Minimum
Average temperature of the period from 1989 to 2003	34.89	18.36
Average temperature of the period from 2006 to 2015	33.49	20.65

On analysis of average maximum temperature of the period from 1989 to 2003 to that of the period from 2006 to 2015; it is observed that there is decrease by 1.4 ºC. However, the average minimum temperature has increased by 2.29 ºC during the corresponding period. The average mean temperature during the corresponding period has increased from 26.63 ºC to 27.07 ºC.

Relative Humidity:-

It is generally high in the Division. Maximum humidity is seen in the month of August-september and minimum in April and May. It generally crosses 80 percent in August, September and October in other months it varies between 60-70%. But the humidity reduces towards March, April and May and is minimum in April and May. The average humidity of Angul district for the period from 1994 to 2003 and from 2006 to 2015 is given in Table No.

AVERAVGE RELATIVE HUMIDITY OF ANGUL DISTRICT					
Year	Jan	Feb	Apr	Sep	Dec
1994	85	82	66	81	88
1995	73	80	49	78	66
1996	84	66	67	76	75
1997	64	82	46	74	58
1998	85	56	88	88	74
1999	76	81	68	80	74
2000	76	72	77	81	78
2001	77	86	78	81	73
2002	83	85	74	84	84
2003	81	85	81	80	83
AVG.	78	78	69	80	75
Source: Directorate of Meteorology, Bhubaneswar					

AVERAGE RELATIVE HUMIDITY IN ANGUL DISTRICT														
Month	2006		2007		2008		2009		2010		2011		2012	
	08.30hrs IST	17.30hrs IST	08.30hrs IST	17.30hrs IST	08.30hrs IST	17.30hrs IST	08.30hrs IST	17.30hrs IST	08.30hrs IST	17.30hrs IST	08.30hrs IST	17.30hr IST	08.30hrs IST	17.30hrs IST
Jan	58	62	64	58	84	78	80	75	72	62	62	63	90	67
Feb	43	40	61	61	81	78	69	54	78	56	69	67	82	54
Mar	51	52	61	50	82	82	68	59	80	55	69	56	77	36
Apr	60	46	57	45	70	58	68	54	76	47	73	56	73	41
May	68	54	50	48	52	67	68	55	75	63	77	52	75	36
June	64	58	71	70	73	69	59	58	78	63	81	70	72	54
July	68	62	88	66	81	75	79	75	74	67	88	79	86	81
Aug	80	65	81	74	82	79	77	70	70	67	91	86	85	83
Sep	69	62	78	77	80	74	75	73	74	70	92	80	88	81
Oct	59	54	73	75	75	66	77	73	72	65	85	67	83	72
Nov	62	47	58	62	77	72	76	70	74	63	83	65	88	80
Dec	51	47	65	62	81	78	79	64	71	74	84	64	84	66

AVERAGE RELATIVE HUMIDITY IN ANGUL DISTRICT						
Year	2013		2014		2015	
Month	08.30hrs IST	17.30hrs IST	08.30hrs IST	17.30hrs IST	08.30hrs IST	17.30hrs IST
Jan	84	63	85	57	84	55
Feb	81	51	76	49	79	46
Mar	41	41	76	57	75	42
Apr	77	98	71	51	75	48
May	75	50	67	52	71	46
June	79	71	74	61	79	72
July	84	81	90	81	87	79
Aug	84	78	87	82	85	82
Sep	83	82	89	82	85	79
Oct	86	81	85	74	83	70
Nov	91	88	79	57	85	67
Dec	79	63	82	55	84	69

ANALYSIS OF AVERAVCE RELATIVE HUMIDITY OF ANGULL DISTRICT												
JAN	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1994-2003	78	78	71	69	70	74.2	79.9	82	80	82	78	75
2006-15	70.1	63.8	62.3	62.2	60	68.8	78.5	79.4	78.6	73.8	72.2	70.1
Source: Directorate of Meteorology, Bhubaneswar												

High relative humidity and other forms of precipitation, e.g., mist and dew, are helpful in prolonging humid conditions in the locality. These conditions are favourable for development of natural vegetation and other growth like orchids and epiphytes. On analysis of the percentage of average relative humidity of the period from 1994-2003 to that of 2006-15; it is observed that the percentage of relative humidity has decreased throughout the year.

Cloudiness: In the southwest monsoon season, the sky remains heavily clouded and in the summer and post monsoon months there is moderate cloud.

Winds: Winds are light to moderate, with slight increase in summer and in south west monsoon season winds usually blow from south west and North West directions in the monsoon. In the post monsoon and cold seasons wind blows between the west and north. In summer the winds become variable in direction**.**

Special weather phenomenon: In Angul district hailstorms and depressions occur in monsoon season and in October when the wind force is high. Thunderstorms occur mostly in the afternoon in the summer months and in October.

12.4 Phenological periods of important tree species:

This pertains to the time of leaf shedding, flowering, fruiting or the appearance of new shoots, all of which are time bound events. Most of the species in a deciduous forests are leafless during the dry season; however, in the evergreen forests, the appearance of new leaves and the falling of old ones occur simultaneously, as a result of which it does not look leafless. All plants have a definite flowering and fruiting period and these are important for the wild herbivores, which depend on the plant material for food. It becomes essential, in a wild life habitat, to have a record of the phenology for correlating with the animal abundance. Important plant species occurring in an area should be recognized, and their flowering, fruiting and other phonological attributes should be properly recorded. Accordingly, the phenology of plants occurring in the area is furnished in **Table No12.1**. as below.

Table No. 12.1		PHENOLOGY OF PLANTS					
Sl.No	Botanical Name	Flowering Period	Fruiting Period	Period of seed collection	No of seeds per Kg	Period of leaf shedding	Period of leaf renewal
1	*Terminalia arjuna*	May-July	Dec	Feb-May	1600	Evergreen	----
2	*Terminalia tomentosa*	June-Aug	April-May	April-May	530-600	Jan-Feb	April-May
3	*Emblica officinalis*	Feb-May	May-Oct	Mar-Apl	------	Dec-Jan	Feb-Mar
4	*Morinda tinctoria*	May-Aug	Oct-Nov	January	-----	------	------
5	*Mangifera indica*	February	Apl-May	June-July	--------	Evergreen	
6	*Ficus religios*	June	Dec-Jan	Mar-May	-----	------	------
7	*Pongamia pinnata*	April	May-June	Mar-Apl	5000	Evergreen	------
8		Apl-May	July-Aug	Apl-May	2000	March	June
9	*Mallotus philippinensis*	Oct-Nov	Feb-Mar	April	---	Evergreen	
10	*Bridelia retusa*	Aug-Oct	Nov-Jan	January	---	----	----
11	*Cleistanthus collinus*	Apl-May	May	May-June	----	Mar-Apl	-----
12	*Xylia xylocarpa*	Apl-May	Jan-Feb	April	-----	Feb-Apl	Apl-May
13	*Careya arborea*	Mar-Apl	July	------	-----	Feb	Mar-Apl
14	*Anthocephalus cadamba*	June-Aug	Aug-Nov	Feb-Apl	-----	Jan-Feb	Feb-Mar
15	*Hymenodictyon excellsum*	June-Aug	Nov-Dec	Apl-May	1,70,000	Nov	May
16	*Anacardimum occidentale*	March	April	May	180	Evergreen	-------
17	*Schleichera oleosa*	Mar-Apl	May-June	Aug-Sept	1800	Jan-Feb	Mar-Apl
18	Adina cordifolia	June-Aug	October	May-June	------	Feb	May
19	*Diospyros melanoxylon*	May	May-June	May-June	------	Evergreen	-----
20	*Strychnos nuxvomica*	Mar-Apl	May-June	Dec-Jan	------	Mar-Apl	May-June
21	*Gmelina arborea*	March	Apl-May	May-June	1600	Jan	March
22	*Acacia leucophloea*	Aug-Oct	Jan-Apl	April	45000	Evergreen	Evergreen
23	Micelia champaca	Apl-July	July-Aug	Aug-Sept	7,000	Evergreen	Evergreen
24	Santalum album	May-June	Oct-Dec	Jan	6000	Evergreen	Evergreen
25	*Cassia siamea*	Sept-Dec	March	May	35000	Evergreen	-----
26	*Syzygium cumini*	March	May-June	June-July	-----	Evergreen	Evergreen
27	*Casuarina equisetifolia*	Feb-Sept	May-Dec	Jan-June	700000	Evergreen	Evergreen
28	*Tamarindus indica*	April	May	April	----	Evergreen	-----
29	*Anogeissus latifolia*	May-Aug	Dec-Feb	March	120000	Feb	April
30	*Grewia tiliifolia*	Apl-May	Sept-Oct	Nov	-----	Apl-May	July
31	*Azadirachta indica*	March	Apl-May	June-July	4400	Feb	May
32	Eucalyptus hybrid	Throught the year	Throught the year	Sept-Mar	270000	----	----
33	*Artocarpus integrifolia*	January	March	June-Aug	----	Evergreen	Evergreen

41	*Bauhinia purpurea*	Mar-May	Apl-June	Mar-Apl	----	Jan	March
42	*Aegle marmelos*	May	June	Apl-May	5300	Apl-May	May-June
43	*Chloroxylon swietenia*	Mar-Apl	May	August	----	Feb-March	April-May
44	*Madhuca indica*	Jan-Feb	Apl-May	July-Aug	----	Mar-May	May-June
45	*Ailanthus excelsa*	March	April	May-June	----	----	----
46	*Lannea coromandelica*	Mar-Apl	June-July	July-Aug	-----	Mar-May	-----
47		Jan-Feb	May	May-June	9000	Apl-May	May-June
48	*Soymida febrifuga*	Feb-Mar	Apl-May	June	10000	Mar-May	May-June
49		Mar-Apl	May-June	June-July	46000	February	May
50	*Shorea robusta*	Feb-Mar	Apl-May	June-July	500	Feb-mar	Mar-Apl
51	*Tectona grandis*	June-Aug	Aug-Nov	Feb-Mar	1700	January	May
52	*Bombax ceiba*	January	March	May	26000	Jan-Mar	Mar-Apl
53	*Dalbergia sissoo*	Jan-June	Mar-Sept	June-January	53000	Jan-Feb	Feb-Mar
54		May-June	January	April	7000	Apl-May	May-June
55	*Lagerstroemia parviflora*	Apr,-May	August	Dec-Jan	50000	Feb-Mar	Apl-May
56	*Cassia fistula*	Apl-July	Nov-Dec	Mar-Apl	5500	Mar-Apl	Apl_July
57		Sept-Nov	Dec-Jan	Jan-Mar	40000	Evergreen	Evergreen
58		April	June	Feb-Mar	----	-----	------
59	*Terminalia chebula*	April	Jan-Feb	March-April	230	Feb-Mar	April

It is observed that the phonological periods of common vegetations has remained more or less unchanged.

12.5 Prescriptions:

(a) A detailed analysis should be made regarding phonological characteristics of vegetations on year wise basis in each beat to ascertain the effect of climate change.

(b) A study on water resources available in Forest areas should be made on year wise basis in different seasons to ascertain any change.

(c) A study on wild animals should be made to ascertain their population and change in behavior pattern.

To ascertain the effect of microclimate, recording of daily temperature, rainfall & humidity should be done for which measuring instruments should be installed in Dhandatapa & Takaba and recorded accordingly. This should be compared with the data of fixed stations already available in District headquarters & Block headquarters.

CHAPTER—13
WATER RESOURCES MANAGEMENT

13.1 Introduction:

Living organisms need water to survive. All oxygen-dependent organisms need water to aid in the respiration process; some organisms, such as fish, cannot breathe outside its presence, while other organisms need water to help break down food molecules or generate energy during the respiration process. Water is also used to help regulate metabolism and dissolve compounds going into or out of the body.

13.2 Uses of Water:

There are four basic uses for water in living organisms: as a solvent, as a temperature buffer, as a metabolite, and as a living environment.

As a solvent, water dissolves molecules such as sugar; as a temperature buffer, it helps regulate body temperature; as a metabolite, it regulates important chemical reactions within the body and as a living environment, it enables organisms such as fish to breathe.

(i) Water as a Solvent: Water attracts both positive and negative ions because of the nature of the chemical bonds in water. Thus, positive ions are attracted to the oxygen in water, while negative ions are attracted to the hydrogen. This allows water to dissolve compounds important for survival, such as glucose gleaned from ingesting food.

(ii) Water as temperature buffer: Temperature regulation is vital for chemical reactions important to cellular activity, such as cellular respiration. Enzymes, or proteins that act as catalysts to start chemical reactions, are heat sensitive and will operate only at specific temperature. Water has a relatively high specific heat capacity. Thus, water absorbs much heat without the temperature of the organisms being raised. This prevents enzymes from becoming overheated and failing to function.

(iii) Water as a metabolite: Cell works via chemical reactions. The sum total of chemical reactions within an organism is called metabolism. Water is a metabolite, or a chemical involved in reactions. It is necessary for the continued survival of plants and animals.

In plants, water aids in photosynthesis, the process by which plants convert sunlight into food. During the first stage of photosynthesis, water is split into hydrogen and oxygen atoms. Oxygen is released into the atmosphere, while hydrogen is used in the rest of the chemical reaction to produce glucose to feed the plant**.**

In animals, water aids in respiration. Water is used to split adenosine triphosphate (ATP) into adenosine diphosphate (ADP) and phosphoric acid. Cellular energy is released as a byproduct of this process. Water formation from oxygen and depleted hydrogen also moves waste products out of the body after the respiration cycle is complete**.**

(i) **Water as living environment:** Water-based organisms such as fish require water to breathe. These organisms directly breathe oxygen dissolved in water. Without water supply, they cannot access oxygen and would suffocate. Water also helps insulate the living environment for these organisms.

13.3 Effects of water pollution on trees and plants:

- It causes disruption in photosynthesis in aquatic plants with eventual negative impact on ecosystem.
- Contaminated water destroys flora and fauna in the water.
- Excessive sodium chloride in water affects the growth of the plants in the water.

13.4 Effects of water pollution on animal life:

- Pollution nutrients cause excessive growth of toxic algae leading to the outbreak of diseases in fish.
- Chemically contaminated water suppresses frog and tadpole biodiversity.
- Polluted water retards the reproductive efficiency of animals.
- Persistent organic pollutants contain the growth of fish and wipe out their breed.
- Excessive quantity of sodium chloride in water may kill animals.

13.5 Importance of water as wildlife habitat:

Water replenishment is essential for wild animals. Presence of abundant food in a wildlife habitat is rendered useless, if water is not available in close proximity. A habitat becomes poor from the wildlife point of view if it is devoid of water source. Good wildlife areas have well distributed water points. Many major animals replenish their water by drinking from the available source.

Good wildlife areas have well distributed water points. Many major animals replenish their water by drinking from the available source. Water is the living medium of the habitat in a wetland. Riparian vegetation along stream banks harbour many animals and also serve as 'corridors' for animal movement. Contamination of water points in a habitat from cattle need to be avoided, to prevent the outbreak of disease among wild animals-especially the ungulates.

13.6 Water resources of Athmallik Forest Division:

Water resources of Athmallik Forest Division with their status is furnished in **Table No.13.1** as below.

Table No.13.1 Duration of water flow in the selected seasonal streams

Name of the Block	Name of Stream	Original from	Passes through	Duration of water flow
Kusum Kuhari RF	1) Rathipur nallah	Ridge of Kusum- Kuhuri RF	Kusum Kuhuri RF & Private land	Up to Feb.
	2) Gangapani Nallah	Ridge of Hatidhara RF	Kusum Kuhuri RF & Private land	Up to Feb.
Mahendrapur RF	1) Kadakia Nallah	Ridge of Talaipathar RF	Mahendrapur RF	Up to Feb.
Talaipathar RF	1) Purnapani Nallah	Ridge of Talaipathar RF	Forest of Talaipathar RF and cultivated land of Bharatapur	Up to Feb.
	2) Dhandatopa Nallah	Ridge of Hatidhara Talaipathar, Kutulsingha & Thakurgarh D.P.F	It forms the estern natural boundary of Taleipather RF and Western boundary of Hatidhara	Up to Feb.
	3) Ketaki jharan nalla	Ridge of Talaipathar RF	Taleipathar RF and cultivated land of village Bijipur, Kondha pali	Up to Feb.
	4) Kukuda darah nallah	Ridge of Taleipathar RF	Taleipathar RF -20	Perennial
	5) Kuakhol Nallah	Ridge of Taleipathar RF	do	
	6) Tapakhol Nallah		Taleipathar Comp-1	Up to March
	7) Raja basa Nallah		Taleipathar Comp-2	Up to March
	8)Chintamanipur Nallah		Taleipathar Comp-2	Perennial
	9)Rajing Jharan-1		Taleipathar Comp-3	Perennial
	10)Rajing Jharan-2		Taleipathar Comp-3	Up to Dec
	11)Mamurijharan Nallah		Taleipathar Comp-3	Up to Dec
	12)Adeswar Nallah 1 & 2		Taleipathar Comp-3	Up to Dec
	13) Grida Nallah		Taleipathar Comp-4	Up to Dec
	14) Taleipathar Nallah		Taleipathar Comp-22	Perennial
	15) Pathan taila Nallah-1		Taleipathar Comp-23	Up to Dec

	17)Karadabania Nallah		Taleipathar Comp-20 & 21	Up to Apl
	18) Makarchua Nallah		Taleipathar Comp-19	Up to Oct
	19)Maharmunda Nallah		Taleipathar Comp-19	Dried
	20) Khambeswari khol Nala		Taleipathar Comp-19	Up to May
	21) Kaliadara Nallah		Taleipathar Comp-17	Up to Feb
	22) Kukurpita Nallah		Taleipathar Comp-16	Up to Dec
	23) Charbati Nallah		Taleipathar Comp-5	Up to Sept
	24) Bhuasuni Nallah		Taleipathar Comp-5	Up to Aug
	25) Gardari Nallah		Taleipathar Comp-6	Perennial
	26) Chandrabasa Nallah		Taleipathar Comp-6	Up to Sept
	27)Purunapani Nallah		Taleipathar Comp-6	Perennial
	28) Kankarakhai Nallah		Taleipathar Comp-7	Up to Aug
	29) Karadabania Nallah		Taleipathar Comp=7	Up to Sept
	30)Chhachina Nallah		Taleipathar Comp-8	Up to Sept
	31)Kuakhol Nallah		Taleipathar Comp-8	Up to Sept
	32) Ketaki jharan Nallah		Taleipathar Comp-10 &12	Up to Nov
Dantarikhol RF	1) Makarkenda Nallah	Ridge of DantariKhol RF	Dantarikhol RF	Up to Oct.
	2) Pita Khol Nallah	do	do	Up to Oct.
	3) Baghumunda Nallah	do	do	Up to Oct.
	4) Bada nallah	do	do	Up to Oct.
	5) Kumbhatua khol Nallah	do	do	Up to Oct.
	6) Katranga Khol nallah	do	do	Up to Oct.
	7) Bada Nallah	do	do	Up to Oct.
	8) Swain Nallah	do	do	Up to Oct.
	9) Majhurbeka Nallah	do	do	Up to Oct.
	10) Amba Khol Nallah	do	Dantarikhol Comp-3	Up to Dec
	11) Dengeai Nallah	do and Katada RF of Angul Division	Dantarikhol RF	Up to Dec.
	12) Bantul Nallah		Dantarikhol Comp-2	Up to Dec
	13) Jhilimunda Nallah		Dantarikhol RF	Perennial

	14)Sanhulla Nallah		Dantarikhol RF	Up to Dec
	15) Laxmipur Nallah		Dantarikhol RF	Up to Dec
	!6) Batrakhol Nallah		Dantarikhol RF	Up to Dec
Kutulsinga RF	1) Jogibandha Nallah	Ridge of Kutulsinga RF	Kutulsinga RF	Up to Dec.
	2) Nabing Nallah	do	do	Up to Dec.
	3) Somanathpur Nallah	do	do	Up to Dec.
	4) Ghanajori Nallah	do	Kutulsingha RF-1,2&7	Up to Dec
	5) Barabankia Nallah	do	do	Up to Dec.
	6) Mahantapal Nallah		Kutulsingha RF-3 & 4	Perennial
	7)Jaypur Nallah		Kutulsingha RF-5	Up to Dec
	8)Taleipathar Nallah		Kutulsingha RF-6	Up to Dec
	9)Kutulsingha Nallah		Kutulsingha RF-6	Perennial
Northern RF	1) Sureswari Nallah	Ridge of (Nothern RF)	Bhangamunda D.P.F and adjoining villages	Perennial
	2) Susab Nallah	Ridge of (Northern RF	Northern RF Rangamatia KF and Susab D.P.F	Perennial
	3) Gurujang Nallah	Ridge of (Northern RF	Gurujang KF	Perennial
	4) Jharjhri Nallah	Ridge of Northern RF)	Northern RF Purunapani D.P.F and Nakchi K.F	Perennial
	5) Bada Nallah	Ridge of Northern RF	Northern RF	Perennial
	6) Mochikhol Nallah	Ridge of Northern RF	do and Gundurijharana K.F	Up to Feb
	7) Takaba Nallah		Northern RF	Perennial
	8) Nuabhuin Nallah		Northern RF	Perennial
	9) Nakchi Nallah		Northern RF	Perennial
	10)Khola Nallah		Northern RF	Perennial
	11) Samki Nallah		Northern RF	Up to Feb
	12) Chingudikhai Nallah		Northern RF	Up to Feb
	13)Aldra Nallah		Northern RF	Up to Feb
			Northern RF	
	14) Khandichapa Nallah			Up to Dec
	15) Dehury Nallah	Ridge of Northern RF	Northern RF- Comp No 5,10,11	Perennial
			Northern RF-Comp No	
	16)Aunli Nallah	Ridge of Northern RF	6 & 7	Perennial

Handapa RF	1)Jogi bandha Nallah	Northern RF	Handapa RF	Up to Oct
	2) Jharana Nallah		Handapa RF	Perennial
	3)Badapola Nallah		Handapa RF	Up to Oct
	4)Bhatkhia Nallah		Handapa RF	Perennial
	5)Badpal Nallah		Handapa RF	Perennial
	6)Madlia Jora		Handapa RF	Perennial
	7)Kundali Nallah		Handapa RF	Up to Sept
	8)Hinjirida-Ghatitala Nallah		Handapa RF	Up to Sept
Kholadangiani RF	1) Bada Nallah	Ridge of Khola dangiani RF and adjoining village	Kholadangiani RF	Up to Oct
	2) Padianali Nallah	do	Budulimunda village	Up to Oct
	3) Kurum Tapa Nallah	do	Kurum tapa village	Up to October
	4) Kholamunda Nallah	do	Madhapur village	Up to Oct
Kadalimunda RF	Jamukhol Nallah	Ridge of Kadalimunda RF	Kadalimunda RF and Kadalimunda village	Up to Oct
Bankimundi RF	Khadal Khola Nallah	Ridge of Bankimundi RF	Bankimundi RF Darabahal village	Up to Oct
	Jamujhari Nallah		Bankimunda RF	Up to October
	Tentulipathar Nallah		Bankimunda RF	Perennial
Bindyabasini RF	1) Goja khol Nallah	Ridge of Bindyabasini	Bindyabasini RF and cultivated land of Sahajabahali	Up to Oct
Gundurijharan	1) Tipei Jharana Nallah		Gundurijharan	Up to Oct
DPF	2) Badrikhol Nallah		DPF	Up to Oct
	2) Jamiri Nallah	do	do	Up to Oct
Kishoreban RF	1) Pendera Khol Nallah	Ridge of Kishoreban RF	Kishoreban RF	Up to Oct
Guja RF	1) Guapada Nallah	Ridge of Guja	Guja RF	Up to Oct
	2) Orada Nallah	do	do	Up to Oct
	3) Banapur Nallah	do	do	Up to Oct
East Baruni RF	1) Daulatpur Nallah	Ridge of East Baruni RF	Comp No 2	Up to Oct
	2) Digdar Nallah	do	do	Up to Oct
	3) Mangalpur Nallah	do	Comp No 5	Up to Dec
	4)Patukhol Nallah		Comp No 3 &4	Up to Dec
	5)Rajamunda Nallah		Comp No 3 &4	Up to Dec
	6)Kathabenta Nallah		Comp No 3	Up to Oct
	7)Bandhakata Nallah		Comp No 3	Up to Jan
	8)Jharananali Nallah		Comp No 2	Up to Feb
	9)Batrakhol Nallah		Comp No 5	Up to Oct
	10)Giridikhol Nallah			Up to Oct
	11) Bada Nallah			Up to Oct
	12) Banadurga Nallah			Up to Oct
	13)Rajamatu Nallah		Comp No 7	Up to Feb
	14) Tangrijharan Nallah			Up to Jan
	15)Gilirimundia Nallah			Up to Dec
	16) Bagdulikhol Nallah			Up to Feb
	17)Purunapani Nallah			Up to Apl

West Baruni RF	1)Sankamal Nallah	Ridge of W. Baruni	West Baruni RF Comp No 1	Up to Jan
	2) Madhaiakhol Nallah		Comp No. 1	Up to Dec
	3) Pathanakupa Nallah			Up to Dec
	4) Kanakagada Nallah			Up to Dec
	5)Jhankei Nallah			Up to Mar
	6) Kahirakupa Nallah			Up to Jan
	7)Kankadamaliha Nallah			Up to Feb
	8)Matukhol Nallah		Comp No. 3	Up to Jan
	9) Betera Nallah			Up to Jan
	10)Kusumakhol Nallah			Up to Jan
			Comp No 3	Up to Jan
Nuagaon RF	Lenkeda chhida Nallah	Ridge of Talipathar RF	Taleipathar RF & Nuagaon	Up to Dec.
	Goripaka Nallah		Comp No. 2 &3	Up to Nov
	Laxmanpur Nallah		Comp No 2	Up to Nov
	Sukhakani Nallah		Comp No 1	Up to Nov
	Chandrapur Nallah		Comp No.1	Up to Nov
Kuturukani DPF	Kakarapani Nallah		Kuturukani DPF	Perennial
Patrapada KF	Patrapada Nallah		Patrapada KF	Up to Nov
Manarbeda KF	Manarbeda Nallah		Manarbeda KF	Up to Nov

13.7 Water level in the wells in the vicinity (up to 5Km) of forest area

In this division no periodic monitoring of water level with respect to annual rain fall has been conducted in the past. However the up-to-date ground water level data from the Central Ground Water Board, Bhubaneswar and the Metrological data on annual rainfall from district has been collected from which status of ground water has been assessed.

13.8 Ground Water: The ground water level increases in rainy season and the depth of water goes down to the maximum in April. The ground water level is recorded at 5 different places in the division; Athamallik, Thakurgarh, Boinda, Bamur ,Handapa and Tileswar. It is interesting to note that in Boinda and Thakurgarh the ground water level goes down to 6-7 mt in April whereas in Athmallik, Bamur , Handapa and Tileswar it goes down to 4-5 mt.

The information collected from the Central Ground Water Board, Bhubaneswar and depth of water level (In Mtr.) during summer is furnished in the following **Table No. 13.2.**

TABLE NO- 13.2 DEPTH OF GROUND WATER TABLE IN METERS

Sl .No	Block Headqurter	2001				2002				2003		
		Jan	Apr	Aug	Nov	Jan	April	Aug	Nov	Jan	Apr	Aug
1	Thakurgarh	3.67	**5.09**	1.74	1.05	1.74	4.11	0.59	1.99	3.46	4.75	0.18
2	Bamur	1.97	**3.86**	1.36	2.35	2.88	3.19	1.71	5.8	6.07	3.02	1.15
3	Handapa	4.68	**6.62**	0.57	2.02	4.19	6.5	2.54	2.94	5.1	6.44	0.57
4	Boinda	5.55	**7.35**	0.81	3.9	5.57	7.27	1.3	3.07	5.93	7.06	0.38
		2004				2005				2006		
		Jan	April	Aug	Nov	Jan	Apr	Aug	Nov	Jan	Apr	Aug
1	Thakurgarh	3.42	4.59	NA	1.04	3.38	3.78	0.19	NA	3.67	NA	NA
2	Bamur	6.04	2.58	1.7	3.54	3.69	4.41	1.76	2.56	1.95	4.06	0.56
3	Handapa	5.4	6.8	0.99	2.12	4.27	5.67	0.82	2.22	4.68	5.62	0.62
4	Boinda	5.97	7.27	1.91	4.01	5.6	7.12	0.65	3.85	5.55	6.35	0.55
		2007				2008				2009		
		Jan	April	Aug	Nov	Jan	April	Aug	Nov	Jan	April	Aug
1	Thakurgarh	NA	3.87	6.15	4.51	5.57	5.68	0.42	4.27	3.39	4.37	0.24
2	Bamur	3.76	5.62	1.86	4.98	5.52	NA	1.36	3.72	5.7	5.98	1.08
3	Handapa	3.52	5.5	2.99	1.85	3.48	NA	0.59	2.12	5.57	6.07	0.67
4	Boinda	5.35	7.07	1.45	3.73	5.31	6.55	1.03	3.93	6.13	7.4	0.76
		2010				2011				2012		
		Jan	April	Aug	Nov	Jan	Apr	Aug	Nov	Jan	Apr	Aug
1	Thakurgarh	2.34	5.4	2.65	2.47	3.78	5.57	0.97	3.07	3.35	5.29	1.4
2	Bamur	4.1	5.96	4.12	3	4.66	5.98	2.15	3.61	NA	4.86	0.81
3	Handapa	4.31	6.02	4.47	3.53	4.54	6.18	2.96	3.17	3.57	5.48	0.95
4	Boinda	5.43	7.74	5.28	3.84	6.17	8.21	0.85	4.3	4.75	6.75	1.1
	BLOCK	2013				2014				2015		
		Jan	April	Aug	Nov	Jan	Apr	Aug	Nov	Jan	Apr	Aug
1	Thakurgarh	2.72	5.44	2.32	3.09	4.65	5.9	2.37	2.7	3.83	**5.74**	3.1
2	Bamur	4.54	6.21	2.21	2.01	5.31	6.25	2.2	3.75	3.9	**4.8**	2.26
3	Handapa	4.54	5.62	1.05	1.98	2.72	4.82	0.81	2.05	3.59	**5.2**	3.3
4	Boinda	5.15	7	1.2	3.08	3.38	1.75	6.93	2.4	5.27	**6.83**	2.35
5	Athamallik									3.34	4.1	1.45
6	Tilcswar									3.56	4.87	2.55

On comparison of water table of the stations recorded during the Month of April in the year 2001 with the year 2015, it is revealed that the water table has gone up in Handapa and Boinda area while it has gone down in Thakurgarh & Bamur area.

During socio-economic survey of fringe villages; the depth of water level in dug wells during the month of May, September & January were assessed. It is opined that the depth during September remains at 0.5- 1mtr ,during January it remains at 3- 5mtrs. While in May it goes down to 8-10 mtrs. Villagers also opined that there is gradual decline in water levels annually.

13.9 Collection of water samples and analysis:

No analysis of water samples of the forest area has been taken up in the past. During the preparation of working plan preparation of Atkmallik Forest Division; water samples have been collected from three water points of different forest blocks and send to the Regional office of state pollution control board for analysis. Beside that sample study report carried out in Mahanadi River and Athmallik NAC area have also been collected and analysed as reflected below.

Date of sampling : 22.05.2017					
Sampling Points	pH	Suspended solids(mg/l)	Total dissolved Solids(mg/l)	Biochemical Oxygen Demand(mg/l)	Chemical Oxygen Demand(mg/l)
Anuli Jhor of Northern RF Near Gundurijharan Village.	6.5	82	255	6	16
Badajhar Nallah of Hatidhara RF near Korab Village.	6.8	18	153	4	8
Kukudajhar Nallah of Taleipathar RF near Dhandatopa Viullage.	7.1	22	375	2	8
Method followed.	Potentiometric	Gravimetric	Gravimetric after Filtration	3 days bottle incubation.	Closed Reflux Titrimetric
Standard	**5.5-9.0**	**100**		**30**	**250**

Date of sampling : 22.12.2015				
Sampling Points	pH	Suspended solids(mg/l)	Biochemical Oxygen Demand(mg/l)	Chemical Oxygen Demand(mg/l)
Waste water discharge to Badabandha of M/s. Athmallik NAC,Angul..	6.8	72	130	480
Method followed.	Potentiometric	Gravimetric	3 days bottle incubation.	Closed Reflux Titrimetric
Standard	**5.5-9.0**	**100**	**30**	**250**

Date of sampling : 30.08.2016				
Sampling Points	pH	Suspended solids(mg/l)	Biochemical Oxygen Demand(mg /l)	Chemical Oxygen Demand(mg/l)
(a)Overflow of Jhadabandha discharged to police Bandha of M/s. Athmallik NAC,Angul.	6.5	38	34	64
(b) Overflow of police bandha discharged to Jhadabandha of M/s. Athmallik NAC,Angul.	6.4	62	4	32
Method followed.	Potentiometric	Gravimetric	3 days bottle incubation.	Closed Reflux Titrimetric
Standard	**5.5-9.0**	**100**	**30**	**250**

River Mahanadi flows along the southern boundary of the Forest Division. Water samble analysis done at Tikarpada during the period from January to October, 2013 reflects the following result

No of obs.	Annual average value (Range of values)				Frequency of violation (Percent of violation) from designated criteria value		Designated class	Existing class	Parameters responsible for downgrading the water quality
	pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100ml)	BOD	TC			
10	8 (7.5-8.4)	7.6 (6.7-8.4)	0.8 (0.3-1.6)	1880 (490-7900)	0	1 -10	C	C	TC

Physical parameters		Organic pollution indicators				Bacteriological parameters
	Total alkalinity					
TSS		COD	NH4-N	Free	TKN	FC
				NH3-N		
(mg/l)		(mg/l)				(MPN/100ml)
73	85	8.3	0.332	0.020(0-0.046)	2.65(1.12-4.50)	802(230-2700)
(14-140)	(68-104)	(5.8-12.1)	(0.112-0.715)			

MINERAL CONSTITUENTS							
EC	SAR	B	TDS	TH	CL	SO4	F
215(181-250)	0.37(0.17-0.72)	0.088(0.003-0.340)	125(98-152)	78(64-88)	12.3(5.6-22.1)	6.50(2.23-9.07)	0.297(0.179-0.372)

On analysis; it is observed that river water of Mahanadi is free from pollution. Water of Forest floor as well as of NAC area is not free from pollution, the reason need to be ascertained.

13.10 PRESCRIPTION:

- Year wise assessment of flow level of the perennial water sources should be carried out.
- Year wise assessment of water sample analysis should be done at different locations.
- The reason of pollution should be ascertained and its impact on forest & wildlife should be found out.

CHAPTER-14

REDD+

14.1 Introduction: REDD(Reducing Emissions from Deforestation and Forest Degradation) is the global Endeavour to create an incentive for developing countries to protect, better manage and save their forest resources, thus contributing to the global fight against climate change. Deforestation happens when forests are cleared and such land is put to other than forest land use. Forest degradation implies a gradual depletion of forests driven by demand for biomass and disturbances like fire and soil erosion, which, result in dwindling carbon density and ultimately leading to complete loss of forests.

- REDD+ goes beyond merely checking deforestation and forest degradation, and includes incentives for positive elements of conservation, sustainable management of forests and enhancement of forest carbon stocks.
- REDD+ conceptualizes flow of positive incentives for demonstrated reduction in deforestation or for enhancing quality and expanse of forest cover.
- REDD+ approach incorporates important benefits of livelihoods improvement, biodiversity conservation and security services.

14.2 Benefits from REDD+: It is estimated that a REDD+ programme for India could provide capture of more than I billion tones of additional CO2 over the next 3 decades and provide more than USD 3 billion as carbon service incentives under REDD+.

REDD+ will benefit local communities as it explicitly safeguards their rights and those of indigenous people. Monetary benefits will flow from REDD+ to local, forest dependent, forest dwelling and tribal communities. This is ensured for three reasons:

- First, in the Indian context, the REDD+ is intended to be an additional co-benefit to the goods and services already accruing to and being enjoyed by the local community, and, therefore, it comes as a bonus without compromising on the existing benefits.
- Second, India's own acts, guidelines, executive instructions and orders at central and state level additionally ensure that REDD+ will not adversely impact on the traditional and legal rights of the local communities over forests, but on the other hand will ensure more monetary benefits flowing to them.

- Third, all international REDD+ deliberations and negotiations recognize and respect national legislations relating to safeguards for the rights of indigenous peoples and local communities, and aim to promote their participation in implementation and monitoring of REDD+

14.3 Impact of climate change:

Study on the impact of climate change on India's forests assigned to the Indian Network for Climate Change Assessment (INCCA), has been released in November 2010. In the year 2030, 8-56% of the forests are likely to experience a change in vegetation type with respect to those observed in 1970s. There is likely to be an increase in Net Primary Productivity (NPP) ranging from 20-57%.

+-+:

During the sample point enumeration; along with the nested quadrates of size 3 x3 m and 1x1m,one more quadrate of size 5x5m at NE and SW direction, has been laid out in the selected grid for the estimation of carbon stock. In 5x5m plot, all the dead wood above 5 cm diameter has been collected, weighed and recorded. In 3x3m, all the woody litter, that is all branches below 5cm diameter, has been collected, weighed and recorded. All shrubs and climbers in 3x3m plots have been up-rooted, weighed and recorded. In 1x1m plot, all the herbs/grasses including leaf litter has been collected, weighed and recorded. Dry biomass has been converted into carbon stock.

Calculation of dead wood mass:

Dead wood Mass = Amount of dead wood (In Kg)*(1/area of the plot in Ha).

Calculation of Litter layer mass:

Litter layer mass in the plot (g)

= Dry weight of the litter layer(in gram) *(1/area of the sampling in sq mt)

Conversion from biomass to carbon stock : To estimate carbon stock of dead wood mass per area (i.e Mg C /ha), "carbon fraction of dry matter(CF) " defined by IPCC 2006 GPG will be used. The CF has been calculated as 0.47.

Basing on the above estimation procedure; the carbon stock calculated in the assigned sample plots is furnished in **Table No. 14.1** as below.

TALEIPATHAR RF

Table No 14.1 Estimation of Carbon Stock of dead wood

UID No.	Forest Block with Compartment No.	Dry weight of dead wood (in Kg)/Sqmt	Dry Weight oody Litter of Kg)/sqmt	Weight of shurbs climbers (gm)/sqmt	Weight of herbs & grasses gm/sqmt	Dead wood mass Mg/ha	Carbon stock of dead wood. Mg C/ha
421	Teleipathar-1	110/50	5.5/18	1100/18	2700/02	110*(1/.005)	22.2*.47
						22.2	10.434
6	Teleipathar-1	92/50	4.2/18	4750/18	4600/02	92*(1/.005)	18.4*.47
						18.4	8.648
420	Teleipathar-1	202/50	7.9/18	2200/18	650/02	202*(1/.005)	40.4*.47
						40.4	18.988
419	Teleipathar-1	203/50	6.9/18	3800/18	3500/02	203*(1/.005)	40.6*.47
						40.6	19.082
406	Teleipathar-2	46*/50	19.3/18	1050/18	570/02	46*(1/.005)	9.2*.47
						9.2	4.324
407	Teleipathar-2	42.5*/50	13.5/18	9450/18	1300/02	42.5*(1/.005)	8.5*.47
						8.5	3.995
408	Teleipathar-2	31.5*/50	4.5/18	1100/18	1300/02	31.5*(1/.005)	6.3*.47
						6.3	2.961
390	Teleipathar-3	10*/25	2.0/18	6000/18	700/02	10*(1/.0025)	4.0*.47
						4	1.88
375	Teleipathar-4	10*/25	5.0/18	11000/18	500/02	10*(1/.0025)	4.0*.47
						4	1.88
376	Teleipathar-4	18*/25	7.0/18	7000/18	550/02	18*(1/.0025)	7.2*.47
						7.2	3.384
17	Teleipathar-4	12.0*/50	1.6/18	5500/18	300/02	12.0*(1/.005)	2.4*.47
						2.4	1.128
374	Teleipathar-4	28.0*/50	6.0/18	7000/18	600/02	28.0*(1/.005)	5.6*.47
						5.6	2.632
369	Teleipathar-5	51.5*/50	12.5/18	2250/18	600/02	51.5*(1/.005)	10.3*.47
						10.3	4.841
368	Teleipathar-5	3.0*/25	1.5/18	5500/18	800/02	03*(1/.0025)	1.2*.47
						1.2	0.564
369	Teleipathar-5	12*/25	5.0/18	6000/18	1500/02	12*(1/.0025)	4.8*.47
						4.8	2.256
367	Teleipathar-5	3.0*/50	2.5/18	6500/18	900/02	3.0*(1/.005)	0.6*.47
						0.6	0.282
13	Teleipathar-5	5.0*/25	7.0/18	4800/18	600/02	05*(1/.0025)	2.0*.47
						2	0.94
5	Teleipathar-6	34.6*/50	6.2/18	1500/18	700/02	34.6*(1/.005)	6.9*.47
						6.9	3.243
355	Teleipathar-6	Nil	2.2/18	5200/18	715/02	Nil	Nil
357	Teleipathar-6	275*/50	7.7/18	6700/18	2500/02	275*(1/.005)	55*.47
						55	25.85
359	Teleipathar-7	4.3*/50	2.6/18	4400/18	1030/02	4.3*(1/.005)	.860*.47
						0.86	0.4042
358	Teleipathar-7	6.4*/50	2.6/18	3000/18	2100/02	6.4*(1/.005)	1.28*.47
						1.28	0.601
9	Teleipathar-7	17.5*/25	1.0/09	2000/18	2000/02	17.5*	7.0*.47
						(1/.0025)	3.29
						7	

360	Teleipathar-7	1.5*/25	1.6/18	1950/18	600/02	1.5*(1/.0025)	0.6*.47
						0.6	0.282
362	Teleipathar-8	Nil	Nil	1700/18	550/02	Nil	Nil
363	Teleipathar-8	Nil	2.6/18	6700/18	4400/02	Nil	Nil
364	Teleipathar-8	3.0*/25	2.3/09	3100/18	2000/02	3.0*(1/.0025)	1.2*.47
						1.2	0.564
365	Teleipathar-8	11.0*/50	1.3/18	3700/18	1500/02	11.0*(1/.005)	2,2*.47
						2.2	1.034
395	Teleipathar-9	120*/50	11.4/18	13300/18	1750/02	120*(1/.005)	24*.47
						24	11.28
400	Teleipathar-9	115*/50	12.5/18	2000/18	1500/02	115*(1/.005)	23*.47
						23	10.81
401	Teleipathar-9	42.0*/50	7.0/18	1000/18	2500/02	42.0*(1/.005)	8.4*.47
						8.4	3.948
405	Teleipathar-9	125*/50	5.5/18	900/18	6450/02	125*(1/.005)	25*.47
						25	11.75
397	Teleipathar- 11	Nil	8.0/18	7000/18	500/01	Nil	Nil
399	Teleipathar-11	4.0*/25	3.0/18	9000/18	1600/02	4.0*(1/.0025)	1.6*.47
						1.6	0.752
423	Teleipathar-12	10.0*/25	Oct-18	7000/18	1000/01	10*(1/.0025)	4.0*.47
						4	1.88
410	Teleipathar-13	40.7*/50	4.3/18	4100/18	800/02	40.7*(1/.005)	8.14*.47
						8.14	3.826
411	Teleipathar-13	17.8*/50	5.8/18	1150/18	650/02	17.8*(1/.005)	3.56*.47
						3.56	1.673
412	Teleipathar-13	35.4*/50	5.6/18	1950/18	1200/02	35.4*(1/.005)	7.08*.47
						7.08	3.327
413	Teleipathar-13	48.0*/50	8.0/18	7500/18	700/02	48.0*(1/.005)	9.6*.47
						9.6	4.512
414	Teleipathar-13	13.5*/50	2.7/18	4000/18	950/02	13.5*(1/.005)	2.7*.47
						2.7	1.269
415	Teleipathar-13	13.7*/50	3.7/18	3500/18	1200/02	13.7*(1/.005)	2.74*.47
						2.74	1.288
432	Teleipathar-13	138*/50	27/18	3500/18	1820/02	138*(1/.005)	27.6*.47
						27.6	12.972
377	Teleipathar-14	12.7*/50	4.5/18	5400/18	9300/02	12.7*(1/.005)	2.54*.47
						2.54	1.194
378	Teleipathar-14	35.6*/50	5.3/18	2500/18	900/02	35.6*(1/.005)	7.12*.47
						7.12	3.346
379	Teleipathar-14	19*/50	5.0/18	6000/18	700/02	19*(1/.005)	3.8*.47
						3.8	1.786
380	Teleipathar-14	23*/50	3.0/18	10000/18	700/02	23*(1/.005)	4.6*.47
						4.6	2.162
381	Teleipathar-14	29*/50	Dec-18	2700/18	1500/02	29.0*(1/.005)	5.8*.47
						5.8	2.726
382	Teleipathar-14	17*/50	4.0/18	8000/18	750/02	17*(1/.005)	3.4*.47
						3.4	1.598
384	Teleipathar-15	4.0*/25	5.0/18	13000/18	2300/02	4.0*(1/.0025)	1.6*.47
						1.6	0.752

385	Teleipathar-15	55.4*/50	3.3/18	4300/18	950/02	55.4*(1/.005)	11.08*.47
						11.08	5.207
386	Teleipathar-15	17.0*/25	4.5/18	9000/18	500/02	17.*(1/.0025)	6.8*.47
						6.8	3.196
425	Teleipathar- 16	Nil	2.2/18	5000/18	200/01	Nil	Nil
426	Teleipathar- 16	14.0*/25	1.5/18	7000/18	Nil	14.*(1/.0025)	5.6*.47
						5.6	2.632
428	Teleipathar- 16	Nil	1.5/18	8000/18	100/01	Nil	Nil
429	Teleipathar- 17	3.0*/25	1.0/18	3000/18	500/01	3*(1/.0025)	1.2*.47
						1.2	0.564
430	Teleipathar- 17	5.0*/25	1.5/18	5000/18	100/01	5*(1/.0025)	2.0*.47
						2	0.94
444	Teleipathar- 18	Nil	6.5/18	5500/18	500/02	Nil	Nil
445	Teleipathar- 19	13.0*/25	2.3/18	10000/18	500/02	13*(1/.0025)	5.2*.47
						5.2	2.444
446	Teleipathar- 19	7.0*/25	3.5/18	5500/18	500/02	7*(1/.0025)	2.8*.47
						2.8	1.316
447	Teleipathar- 19	10.0*/25	3.5/18	11000/18	650/02	10*(1/.0025)	4.0*.47
						4	1.88
448	Teleipathar- 19	3.0*/25	1.0/18	1300/18	700/02	3*(1/.0025)	1.2*.47
						1.2	0.564
449	Teleipathar- 19	6.0*/25	2.5/18	550/18	Nil	6*(1/.0025)	2.4*.47
						2.4	1.128
450	Teleipathar-19	16.0*/50	3.0/18	8000/18	700/02	16.0*(1/.005)	3.2*.47
						3.2	1.504
456	Teleipathar- 20	2.5*/25	1.7/18	5000/18	200/02	2.5*(1/.0025)	1.0*.47
						1	0.47
457	Teleipathar-20	4.5*/50	1.0/18	2500/09	125/02	4.5*(1/.005)	0.9*.47
						0.9	0.423
458	Teleipathar-20	5.9*/50	5.7/18	7200/18	3500/02	5.9*(1/.005)	1.18*.47
						1.18	0.555
431	Teleipathar- 21	19.0*/25	5.0/18	7000/18	600/02	19*(1/.0025)	7.6*.47
						7.6	3.572
416	Teleipathar- 22	15.0*/25	5.0/18	9000/18	550/02	15*(1/.0025)	6.0*.47
						6	2.82
418	Teleipathar- 22	Nil	5.0/18	8000/18	1500/02	Nil	Nil
434	Teleipathar-23	17.0*/50	3.5/18	2900/18	600/02	17*(1/.005)	3.4*.47
						3.4	1.598
435	Teleipathar-23	75*/50	12.2/18	10000/18	2000/02	75*(1/.005)	15*.47
						15	7.05
436	Teleipathar-23	28*/50	4.3/18	3000/18	500/02	28*(1/.005)	5.6*.47
						5.6	2.632
440	Teleipathar-24	450.4*/50	30/18	17500/18	6000/02	450.4*(1/.005)	90.08*.47
						90.08	42.337
		2861.8*/2495				9.32	4.38

NORTHERN RF:							
UID No.	Forest Block with Compartment No.	Dry weight of dead wood (in Kg)/ Sqmt	Dry Weight of wood Litter (Kg)/ sqmt	Weight of shrubs & climbers (gm)/sqmt	Weight of herbs & grasses gm/sqmt	Dead wood mass Mg/ha	Carbon stock of dead wood MgC/ha
68	Northern-1	7.0*/25	3.3/18	6000/18	620/02	7*(1/.0025)	2.8*.47
						28	1.316
69	Northern-1	4.0*/25	2.3/18	4500/18	1150/02	4*(1/.0025)	1.6*.47
						1.6	0.752
70	Northern-1	10.0*/25	1.5/18	8000/18	1600/02	10*(1/.0025)	4.0*.47
						4	1.88
71	Northern-1	28.0/50	3.0/09	6900/18	480/02	28*(1/.005)	5.6*.47
						5.6	2.632
72	Northern-1	20.0/25	3.2/18	7000/18	450/02	20*(1/.0025)	8.0*.47
						8	3.76
106	Northern-2	7.0*/25	3.0/18	3500/18	250/02	7*(1/.0025)	2.8*.47
						2.8	1.316
22	Northern-3	7.0*/25	3.0/18	3500/18	250/02	7*(1/.0025)	2.8*.47
						2.8	1.316
75	Northern-3	Nil	2.5/18	7000/18	400/01	Nil	Nil
76	Northern-3	Nil	2.5/18	5000/18	200/02	Nil	Nil
77	Northern-3	7.0*/25	3.0/18	6000/18	700/02	7*(1/.0025)	2.8*.47
						2.8	1.316
42	Northern-4	Nil	3.0/18	6000/18	150/01	Nil	Nil
43	Northern-4	Nil	2.5/18	2500/18	050/01	Nil	Nil
44	Northern-4	Nil	2.0/18	3000/18	150/02	Nil	Nil
45	Northern-4	3.0/25	2.0/18	3000/18	050/01	3*(1/.0025)	1.2*.47
						1.2	0.564
46	Northern-4	12.0/25	2.5/18	7000/18	2000/02	12*(1/.0025)	4.8*.47
						4.8	2.256
53	Northern-5	Nil	2.5/18	1500/18	100/01	Nil	Nil
54	Northern-5	7.0*/25	3.0/18	5000/18	1300/02	7*(1/.0025)	2.8*.47
						2.8	1.316
55	Northern-5	Nil	4.0/18	8000/18	400/02	Nil	Nil
56	Northern-5	Nil	2.5/18	3500/18	1200/02	Nil	Nil
57	Northern-5	Nil	2.5/18	6000/18	150/02	Nil	Nil
58	Northern-5	7.0*/25	1.5/18	7000/18	300/02	7*(1/.0025)	2.8*.47
						2.8	1.316
59	Northern-5	Nil	2.5/18	6500/18	1500/02	Nil	Nil
48	Northern-6	5.0/25	1.8/18	7000/18	500/01	5*(1/.0025)	2.0*.47
						2	0.94
49	Northern-6	Nil	2.5/18	6500/18	080/01	Nil	Nil
50	Northern-6	Nil	2.5/18	6500/18	050/01	Nil	Nil
51	Northern-6	6.0/25	2.8/18	5200/18	150/01	6*(1/.0025)	2.4*.47
						2.4	1.128
52	Northern-6	3.0/25	2.0/18	5300/18	110/02	3*(1/.0025)	1.2*.47
						1.2	0.564

1	Northern-7	15.0/25	2.0/18	7000/18	100/01	15*(1/.0025)	6.0*.47
						6	2.82
41	Northern-7	Nil	2.0/18	4500/18	1500/01	Nil	Nil
25	Northern-8	202.6/50	1.5/18	2200/18	500/02	202.6*(1/.005)	40.52*.47
						40.52	19.044
78	Northern-8	13.0/25	1.2/18	4000/18	500/02	13*(1/.0025)	5.2*.47
						5.2	2.444
79	Northern-8	Nil	2.5/18	5000/18	900/02	Nil	Nil
155	Northern-9	5.0/25	3.0/18	9000/18	1000/01	5*(1/.0025)	2.*.47
						2	0.94
156	Northern-9	Nil	2.5/18	8000/18	1100/02	Nil	Nil
157	Northern-9	Nil	3.0/18	5500/18	1100/02	Nil	Nil
158	Northern-9	Nil	3.5/18	7000/18	150/02	Nil	Nil
101	Northern-10	Nil	4.0/18	7000/18	100/01	Nil	Nil
102	Northern-10	10.0/25	2.5/18	8000/18	100/02	10*(1/.0025)	4.0*.47
						4	1.88
103	Northern-10	7.0/25	2.5/18	11000/18	100/01	7*(1/.0025)	2.8*.47
						2.8	1.316
104	Northern-10	11.0/25	3.0/18	7000/18	250/02	11*(1/.0025)	4.4*.47
						4.4	2.068
105	Northern-10	Nil	4.0/18	8000/18	100/01	Nil	Nil
168	Northern-11	Nil	2.5/18	8000/18	Nil	Nil	Nil
169	Northern-11	5.0/25	1.5/18	11000/18	50/01	5*(1/.0025)	2.0*.47
						2	0.94
170	Northern-11	Nil	2.5/18	13000/18	50/01	Nil	Nil
172	Northern-11	Nil	2.0/18	7000/18	200/02	Nil	Nil
173	Northern-11	Nil	2.5/18	6000/18	130/02	Nil	Nil
191	Northern-12	Nil	2.5/18	7000/18	100/01	Nil	Nil
192	Northern-12	40.0/25	0.7/18	7400/18	1000/02	40*(1/.0025)	16.0*.47
						16	7.52
193	Northern-12	10.0/50	2.2/18	7200/18	400/02	10*(1/.005)	2.0*.47
						2	0.94
194	Northern-12	Nil	3.5/18	2000/09	2500/02	Nil	Nil
195	Northern-12	Nil	3.0/18	4000/18	1100/02	Nil	Nil
31	Northern-13	Nil	2.2/18	8000/18	030/01	Nil	Nil
33	Northern-13	Nil	1.5/18	5500/18	150/02	Nil	Nil
214	Northern-13	11.0/25	3.5/18	4500/18	100/01	11*(1/.0025)	4.4*.47
						4.4	2.068
215	Northern-13	8.2/25	4.5/18	4600/18	350/02	8.2*(1/.0025)	3.28*.47
						3.28	1.542
216	Northern-13	Nil	2.0/18	4800/18	1600/02	Nil	Nil
217	Northern-13	12.5/25	0.6/18	3400/18	800/02	12.5*(1/.0025)	5.0*.47
						5	2.35

238	Northern-14	1.3/25	.750/18	700/18	120/02	1.3*(1/.0025)	0.52*.47
						0.52	0.244
240	Northern-14	30.0/25	1.5/18	650/18	220/02	30*(1/.0025)	12*.47
						12	5.64
241	Northern-14	Nil	0.65/18	500/18	190/02	Nil	Nil
232	Northern-15	14.0/25	2.65/18	700/18	180/02	14*(1/.0025)	5.6*.47
						5.6	2.632
233	Northern-15	Nil	0.75/18	1250/18	025/02	Nil	Nil
234	Northern-15	22.0/25	1.05/18	1030/18	025/02	22*(1/.0025)	8.8*.47
						8.8	4.136
235	Northern-15	Nil	0.65/18	850/18	033/02	Nil	Nil
236	Northern-15	7.0/25	1.00/18	650/18	180/02	7*(1/.0025)	2.8*.47
						2.8	1.316
237	Northern-15	Nil	0.80/18	1250/18	033/02	Nil	Nil
201	Northern-16	5.0/25	2.30/18	4500/18	100/01	5*(1/.0025)	2.0*.47
						2	0.94
203	Northern-16	Nil	2.80/18	6000/18	080/01	Nil	Nil
204	Northern-16	7.0/25	2.00/18	6500/18	220/02	7*(1/.0025)	2.8*.47
						2.8	1.316
205	Northern-16	Nil	1.50/18	4500/18	050/01	Nil	Nil
148	Northern-17	Nil	2.00/18	3000/18	220/02	Nil	Nil
149	Northern-17	6.0/25	3.5/18	3300/18	100/01	6*(1/.0025)	2.4*.47
						2.4	1.128
150	Northern-17	9.0/25	3.0/18	5500/18	1600/02	9*(1/.0025)	3.6*.47
						3.6	1.692
151	Northern-17	29.0/25	3.1/18	5200/18	100/02	29*(1/.0025)	11.6*.47
						11.6	5.452
152	Northern-17	Nil	3.00/18	5500/18	230/02	Nil	Nil
8	Northern-18	Nil	2.30/18	4000/18	050/01	Nil	Nil
109	Northern-18	Nil	1.80/18	2000/18	750/02	Nil	Nil
110	Northern-18	Nil	3.00/18	2500/18	50/01	Nil	Nil
111	Northern-18	1.3/25	1.2/18	800/18	300/02	1.3*(1/.0025)=0.5	0.52*.47
						2	0.244
179	Northern-19	Nil	2.90/18	1300/09	2840/02	Nil	Nil
180	Northern-19	16.0/50	6.5/18	3800/18	3700/02	16*(1/.005)	3.2*.47
						3.2	1.504
181	Northern-19	13.6/50	1.7/18	400/09	3100/02	13.6*(1/.005)=2.7	2.72*.47
						2	1.278
182	Northern-19	7.7/50	4.3/18	1800/09	1800/02	7.7*(1/.005)	1.54*.47
						1.54	0.724
183	Northern-19	13.0/25	2.2/18	1100/09	3800/02	13*(1/.0025)=5.2	5.2*.47
							2.444
184	Northern-20	Nil	3.6/18	450/18	170/02	Nil	Nil
185	Northern-20	2.7/25	0.6/18	300/18	030/02	2.7*(1/.0025)=1.0	1.08*.47
						8	0.508
187	Northern-20	12.0/25	0.7/18	570/18	220/02	12*(1/.0025)=4.8	4.8*.47
							2.256
188	Northern-20	Nil	0.6/18	600/18	60/02	Nil	Nil
190	Northern-20	Nil	0.3/18	790/18	90/02	Nil	Nil
267	Northern-20	60.0/25	1.05/18	770/18	135/02	60*(1/.0025)=24	24*.47
							11.28

268	Northern-20	Nil	3.5/18	5500/18	50/01	Nil	Nil
243	Northern-22	93/50	3.35/18	600/18	70/02	93*(1/.005)	18.6*.47
						18.6	8.742
244	Northern-22	Nil	2.1/18	600/18	50/02	Nil	Nil
245	Northern-22	15.0/25	0.65/18	550/18	45/02	15*(1/.0025)=6	6*.47
							2.82
246	Northern-22	Nil	0.45/18	470/18	60/02	Nil	Nil
247	Northern-22	Nil	2.1/18	1500/18	85/02	Nil	Nil
248	Northern-22	55.0/25	0.85/18	780/18	40/02	55*(1/.0025)=22	22*.47
							10.34
270	Northern-23	14.5/50	6.0/18	1800/18	1500/02	14.5*(1/.005)=2.9	2.9*.47
							1.363
271	Northern-23	82/50	3.7/18	3300/18	960/02	82*(1/.005)	16.4*.47
						16.4	7.708
272	Northern-23	Jun-50	5.0/18	2700/18	1000/02	06*(1/.005)	1.2*.47
						1.2	0.564
273	Northern-23	10.2/25	5.0/18	4200/18	2180/02	10.2*(1/.0025)	4.08*.47
						4.08	1.918
274	Northern-23	2.2/25	3.1/18	3200/18	1800/02	2.2*(1/.0025)	.88*.47
						0.88	0.414
276	Northern-23	20.1/50	3.3/18	3800/18	900/02	20.1*(1/.005)	4.02*.47
						4.02	1.889
278	Northern-23	16/50	Jul-18	1200/18	2000/02	16*(1/.005)	3.2*.47
						3.2	1.504
26	Northern-24	Nil	3.9/18	6000/18	1550/02	Nil	Nil
206	Northern-24	4.0/25	3.3/18	Nil	3010/02	4.0*(1/.0025)=1.6	1.6*.47
							0.752
207	Northern-24	13.5/50	6.1/18	6900/18	2500/02	13.5*(1/.005)=2.7	2.7*.47
							1.269
208	Northern-24	3.4/50	2.9/18	2000/18	1185/02	3.4*(1/.005)	.68*.47
						0.68	0.319
209	Northern-24	Aug-50	1.8/09	2500/18	2000/02	8*(1/.005)	1.6*.47
						1.6	0.752
210	Northern-24	1.5/25	2.0/18	1700/09	1100/02	1.5*(1/.0025)=600	.6*.47
							0.282
211	Northern-24	3.7/50	2.1/18	2800/18	2300/02	3.7*(1/.005)	.74*.47
						0.74	0.348
212	Northern-24	Nil	3.4/18	2900/18	1500/02	Nil	Nil
133	Northern-25	Nil	2.1/18	1100/09	3500/02	Nil	Nil
135	Northern-25	75/50	2.2/18	Nil	2500/02	75*(1/.005)	15*.47
						15	7.05
136	Northern-25	1.2/25	3.0/18	2500/09	1400/02	1.2*(1/.0025)=.480	.48*.47
							0.225
80	Northern-26	4.0/25	2.2/18	6500/18	200/02	4.0*(1/.0025)=1.6	1.6*.47
							0.752
81	Northern-26	15.0/25	1.8/18	4000/18	150/02	15.0*(1/.0025)=6.000	6*.47
							2.82

82	Northern-26	Nil	2.6/18	480/18	45/02	Nil	Nil
83	Northern-26	42/50	3.1/18	620/18	35/02	42*(1/.005)	8.4*.47
						8.4	3.948
84	Northern-26	Nil	0.4/18	260/18	40/02	Nil	Nil
85	Northern-26	Nil	1.8/18	6300/18	050/01	Nil	Nil
65	Northern-27	13.2/50	8.2/18	4500/18	1050/02	13.2*(1/.005)	2.64*.47
						2.64	1.241
66	Northern-27	12.7/50	6.8/18	3500/18	1150/02	12.7*(1/.005)	2.54*.47
						2.54	1.194
67	Northern-27	16.5/50	7.7/18	1200/18	2100/02	16.5*(1/.005)	3.3*.47
						3.3	1.551
113	Northern-28	8.0/50	3.3/18	4000/18	1400/02	8.0*(1/.005)	1.6*.47
						1.6	0.752
114	Northern-28	100/50	2.1/18	400/09	800/02	100*(1/.005)	20*.47
						20	9.4
116	Northern-28	2.5/25	2.5/18	1400/09	1500/02	2.5*(1/.0025)	1*.47
						1	0.47
117	Northern-28	5.7/50	3.3/18	3800/18	2100/02	16.5*(1/.005)	3.3*.47
						3.3	1.551
119	Northern-28	16.5/50	7.7/18	1200/18	2100/02	16.5*(1/.005)	3.3*.47
						3.3	1.551
120	Northern-28	1.4/25	3.3/18	1900/18	4200/02	1.4*(1/.0025)	.56*.47
						0.56	0.263
128	Northern-29	Nil	1.4/18	800/18	300/02	Nil	Nil
129	Northern-29	15/25	2.5/18	1200/18	350/02	15*(1/.0025)	6*.47
						6	2.82
131	Northern-29	1.2/25	1.0/18	1500/18	350/02	1.2*(1/.0025)	.48*.47
						0.48	0.226
16	Northern-30	33.8/50	6.2/18	1700/18	1200/02	33.8*(1/.005)	6.76*.47
						6.76	3.177
60	Northern-30	33/50	Aug-18	12000/18	500/02	33*(1/.005)	6.6*.47
						6.6	3.102
61	Northern-30	22/50	11.5/18	8000/18	1700/02	22*(1/.005)	4.4*.47
						4.4	2.068
62	Northern-30	23/50	6.2/18	2500/18	1050/02	23*(1/.005)	4.6*.47
						4.6	2.162
63	Northern-30	27/50	7.0/18	12000/18	1500/02	27*(1/.005)	5.4*.47
						5.4	2.538
73	Northern-31	26/50	9.0/18	10000/18	1600/02	26*(1/.005)	5.2*.47
						5.2	2.444
74	Northern-31	22/50	4.5/18	11000/18	1000/02	22*(1/.005)	4.4*.47
						4.4	2.068
95	Northern-32	8.7/50	3.6/18	4000/18	800/02	8.7*(1/.005)	1.74*.47
						1.74	0.818
97	Northern-32	16/50	5.5/18	2500/18	1100/02	16*(1/.005)	3.2*.47
						3.2	1.504
98	Northern-32	15.7/50	5.2/18	2200/18	1000/02	15.7*(1/.005)	3.14*.47
						3.14	1.476

121	Northern-33	Nov-25	2.4/18	7000/18	050/01	11*(1/.0025)	4.4*.47
						4.4	2.068
122	Northern-33	Jul-25	4.5/18	3500/09	200/02	7*(1/.0025)	2.8*.47
						2.8	1.316
123	Northern-33	43/50	7.2/18	7200/18	5600/02	43*(1/.005)	8.60*.47
						8.6	4.042
126	Northern-33	Nil	2.5/18	3000/09	200/01	Nil	Nil
127	Northern-33	Nil	3.0/18	6700/18	150/01	Nil	Nil
196	Northern-34	Nil	3.6/18	1200/09	850/02	Nil	Nil
197	Northern-34	3.4/50	3.4/18	1535/18	2900/02	3.4*(1/.005)	0.68*.47
						0.68	0.319
198	Northern-34	Nil	0.7/18	200/09	350/02	Nil	Nil
199	Northern-34	2.1/25	2.2/18	300/09	1475/02	2.1*(1/.0025)	0.84*.47
						0.84	0.395
200	Northern-34	7.7/50	4.2/18	3800/18	1810/02	7.7*(1/.005)	1.54*.47
						1.54	0.724
258	Northern-35	Nov-25	0.5/09	1200/09	2200/02	11*(1/.0025)	4.4*.47
						4.4	2.068
259	Northern-35	0.9/25	0.5/18	290/18	160/02	0.9*(1/.0025)	0.36*.47
						0.36	0.169
260	Northern-35	40/25	1.15/18	400/18	150/02	40*(1/.0025)	16*.47
						16	7.52
261	Northern-35	24/50	0.8/18	3040/18	105/02	24*(1/.005)	4.8*.47
						4.8	2.256
252	Northern-36	55/50	4.25/18	2100/18	800/02	55*(1/.005)	11.0*.47
						11	5.17
253	Northern-36	35.2/50	6.1/18	8200/18	5100/02	35.2*(1/.005)	7.04*.47
						7.04	3.309
254	Northern-36	Nil	0.2/9	1500/18	100/01	Nil	Nil
255	Northern-36	15/25	2.5/09	4100/18	700/02	15*(1/.0025)	6.0*.47
						6	2.82
256	Northern-36	45/50	4.0/18	3000/18	600/02	45*(1/.005)	9.0*.47
						9	4.23
220	Northern-37	Jun-25	1.85/18	800/09	350/02	6*(1/.0025)	2.4*.47
						2.4	1.128
221	Northern-37	105/50	26/18	1000/09	460/02	105*(1/.005)	21.0*.47
						21	9.87
137	Northern-38	32/50	5.5/18	6000/18	1000/02	32*(1/.005)	6.4*.47
						6.4	3.008
138	Northern-38	19/50	Aug-18	15500/18	1500/02	19*(1/.005)	3.8*.47
						3.8	1.786
139	Northern-38	57/50	Dec-18	9000/18	800/02	57*(1/.005)	11.4*.47
						11.4	5.358
164	Northern-39	14/50	Jun-18	1800/18	1050/02	14*(1/.005)	2.8*.47
						2.8	1.316
166	Northern-39	1.2/25	1.3/09	500/09	100/01	1.2*(1/.0025)	.48*.47
						0.48	0.226

141	Northern-40	14/50	5.5/18	2500/18	1200/02	14*(1/.005)	2.8*.47
						2.8	1.316
142	Northern-40	13.5/50	5.5/18	3000/18	1200/02	13.5*(1/.005)	2.7*.47
						2.7	1.269
143	Northern-40	21/50	May-18	17000/18	1500/02	21*(1/.005)	4.2*.47
						4.2	1.974
145	Northern-40	11.5/50	Jun-18	1650/18	1250/02	11.5*(1/.005)	2.3*.47
						2.3	1.081
147	Northern-40	42/50	May-18	5000/09	500/02	42*(1/.005)	8.4*.47
						8.4	3.948
250	Northern-41	27.3/50	7.6/18	2600/18	1100/02	27.3*(1/.005)	5.46*.47
						5.46	2.566
251	Northern-41	Nil	2.0/18	6000/18	450/02	Nil	Nil
262	Northern-42	2.0/25	1.8/18	3600/18	1250/02	2.0*(1/.0025)	.8*.47
						0.8	0.376
263	Northern-42	7.4/50	2.8/18	3600/18	250/02	7.4*(1/.005)	1.48*.47
						1.48	0.696
264	Northern-42	5.0/25	2.7/18	6500/18	120/02	5.0*(1/.0025)	2*.47
						2	0.94
265	Northern-42	23.2/50	5.2/18	1700/18	1800/02	23.2*(1/.005)	4.64*.47
						4.64	2.181
222	Northern-43	28.7/50	6.0/18	1700/18	1850/02	28.7*(1/.005)	5.74*.47
						5.74	2.698
223	Northern-43	21/50	7.5/18	11000/18	500/02	21*(1/.005)	4.2*.47
						4.2	1.974
224	Northern-43	28.7/50	9.2/18	2750/18	1050/02	28.7*(1/.005)	5.74*.47
						5.74	2.698
225	Northern-43	70.7/50	8.3/18	1700/18	1000/02	70.7*(1/.005)	14.14*.47
						14.14	6.646
174	Northern-44	25/50	3.0/18	12000/18	1700/02	25*(1/.005)	5*.47
						5	2.35
175	Northern-44	20/50	Aug-18	100/09	300/02	20*(1/.005)	4.00*.47
						4	1.88
176	Northern-44	43/50	Sep-18	8000/18	5700/02	43*(1/.005)	8.600*.47
						8.6	4.042
177	Northern-44	17/50	3.5/18	7000/18	1500/02	17*(1/.005)	3.40*.47
						3.4	1.598
159	Northern-44	44/50	1.5/18	6000/18	1500/02	44*(1/.005)	8.80*.47
						8.8	4.136

161	Northern-44	Aug-50	Jul-18	5500/18	2500/02	8*(1/.005)	1.6*.47
						1.6	0.752
162	Northern-44	24/50	Aug-18	1700/18	800/02	24*(1/.005)	4.8*.47
						4.8	2.256
37	Northern-46	14.7/50	3.6/18	2500/18	850/02	14.7*(1/.005)	2.94*.47
						2.94	1.382
88	Northern-46	20.7/50	5.1/18	1800/18	1000/02	20.7*(1/.005)	4.14*.47
						4.14	1.946
89	Northern-46	17/50	4.1/18	2500/18	1250/02	17*(1/.005)	3.4*.47
						3.4	1.598
90	Northern-46	22.5/50	5.2/18	1850/18	900/02	22.5*(1/.005)	4.5*.47
						4.5	2.115
91	Northern-46	23/50	518	7000/18	1500/02	23*(1/.005)	4.6*.47
						4.6	2.162
92	Northern-46	19/50	Jun-18	10000/18	1500/02	19*(1/.005)	3.8*.47
						3.8	1.786
93	Northern-46	16.8/50	4.5/18	2500/18	900/02	16.8*(1/.005)	3.36*.47
						3.36	1.579
160	Northern-46	18/50	Apr-18	10000/18	2000/02	18*(1/.005)	3.6*.47
						3.6	1.692
34	Northern-47	10.9/50	4.6/18	2500/18	1300/02	10.9*(1/.005)	2.18*.47
						2.18	1.025
86	Northern-47	17.5/50	5.5/18	3500/18	1100/02	17.5*(1/.005)	3.5*.47
						3.5	1.645
87	Northern-47	9.7/50	4.5/18	3500/18	1050/02	9.7*(1/.005)	1.94*.47
						1.94	0.912
						4.99	2.35

HANDAPARF:							
UIDNo.	Forest Block with Compartment No.	Dry weight of dead wood (in Kg/Sqmt	Dry Weight of woody Litter (Kg/sqmt)	Weight of shrubs &climbers	Weight of herbs &grasses gm/sqmt	Dead wood mass Mg/ha.	Carbon stock of dead wood. MgC/ha
279	Handapa-1	6.0/25	1.7/18	650.0/9	02.0/01	6*(1/.0025)	2.4*.47
						2.4	1.128
278	Handapa-1	12.0/50	3.0/18	700/18	9.00/02	12*(1/.005)	2.4*.47
						2.4	1.128
30	Handapa-1	7.0/50	9.0/18	1200.0/18	4.00/02	7*(1/.005)	1.4*.47
						1.4	0.658
276	Handapa-2	25.0/50	1.1/18	300/18	1.00/02	25*(1/.005)	5.0*.47
						5	2.35
277	Handapa-2	30.0/25	0.7/18	160.0/18	1.00/02	30*(1/.0025)	12*.47
						12	5.64
35	Handapa-3	Nil	2.1/18	250.0/9	07.0/02	Nil	Nil
36	Handapa-3	Nil	2.1/18	800/18	07.0/02	Nil	Nil
281	Handapa-3	Nil	2.3/18	200.0/9	Nil	Nil	Nil
283	Handapa-4	Nil	0.2/18	120.0/18	20.0/01	Nil	Nil
284	Handapa-4	28.0/50	2.4/18	600/18	1.00/02	28*(1/.005)	5.6*.47
						5.6	2.632
285	Handapa-4	Nil	2.2/18	250.0/9	Nil	Nil	Nil
286	Handapa-4	4.0/25	2.1/18	200.0/9	05.0/01	4*(1/.0025)	1.6*.47
						1.6	0.752
292	Handapa-5	9.0/50	0.2/18	110.0/18	1.00/02	9*(1/.005)	1.8*.47
						1.8	0.846
293	Handapa-5	Nil	2.0/18	500.0/9	05.0/01	Nil	Nil
295	Handapa-5	Nil	2.4/18	330.0/18	Nil	Nil	Nil
296	Handapa-6	14.0/50	5.6/18	265.0/18	17.00/02	14*(1/.005)	2.8*.47
						2.8	1.316
297	Handapa-6	Nil	2.5/18	220.0/18	05.0/01	Nil	Nil
298	Handapa-6	8.0/50	3.5/18	250.0/18	8.00/02	8*(1/.005)	1.6*.47
						1.6	0.752
288	Handapa-7	Nil	2.2/18	300.0/18	Nil	Nil	Nil
289	Handapa-7	7.0/25	1.6/18	250.0/18	08.0/02	7*(1/.0025)	2.8*.47
						2.8	1.316
290	Handapa-7	7.0*/25	1.5/18	350.0/18	05.0/01	7*(1/.0025)	2.8*.47
						2.8	1.316
291	Handapa-7	Nil	1.7/18	700.0/18	Nil	Nil	Nil
						3.25	1.53

BANKIMUNDI RF:							
UID No.	**Forest Block with Compartment No.**	**Dry weight of dead wood (in Kg)/Sqmt**	**Dry Weight of woody litter Kg/sqmt**	**Weight of shrubs & climber (gm)/sqmt**	**Weight of herbs & grasses gm/sqmt**	**Dead wood mass Mg/ha**	**Carbon stock of dead wood MgC/ha**
327	Bankimundi-1	8.0/50	2.5/18	800/18	500/02	8*(1/.005)	1.6*.47
						1.6	0.752
19	Bankimundi-2	Nil	1.4/18	2000/09	030/01	Nil	Nil
342	Bankimundi-3	Nil	1.8/18	2500/18	Nil	Nil	Nil

BIJAMALIHA RF:							
UID No.	**Forest Block with Compartment No.**	**Dry weight of dead wood (in Kg)/Sqmt**	**Dry Weight of woody Litter (Kg)/sqmt**	**Weight of shurb& climbers (gm)/sqmt**	**Weight of herbs & grasses gm/sqmt**	**Dead wood mass Mg/ha**	**Carbon stock of dead wood Mg C/ha**
308	Bijamaliha	Nil	1.2/18	80/18	30/02	Nil	Nil
309	Bijamaliha	Nil	0.5/18	30/18	20/02	Nil	Nil
310	Bijamaliha	Nil	2.3/18	750/18	22/02	Nil	Nil

WEST BARUNI RF:							
UID No.	**Forest Block with Compartment No.**	**Dry weight of dead wood (in Kg)/ Sqmt**	**Dry Weight of woody Litter (kg/sqmt)**	**Weight of shrubs & climbers (gm)/sqmt**	**Weight of herbs & grasses gm/sqmt**	**Dead wood mass Mg/ha**	**Carbon stock of dead wood Mg C/ha**
311	West Baruni-1	20.0/25	1.2/18	1630/18	35/02	20*(1/.0025)	8.0*.47
						8	3.76
312	West Baruni-2	Nil	1.03/18	1130/18	38/02	Nil	Nil
313	West Baruni-2	3.0/25	1.35/18	2050/18	30/02	3*(1/.0025)	1.2*.47
						1.2	0.564
314	West Baruni-2	20.0/25	1.45/18	1100/18	40/02	20*(1/.0025)	8.0*.47
						8	3.76
319	West Baruni-3	50.0/50	1.58/18	970/18	38/02	50*(1/.005)	10.0*.47
						10	4.7
320	West Baruni-3	30.0/25	1.23/18	1080/18	38/02	30*(1/.0025)	12.0*.47
						12	5.64
						9.8	4.61

EAST BARUNI RF:							
UID No.	Forest Block with Compartment No.	Dry weight of dead wood (in Kg) / Sqmt	Dry Weight of woody Litter (Kg/sqmt)	Weight of herbs & grasses gm/sqmt	Weight of herbs & grasses gm/sqmt	Dead wood mass Mg/ha	Carbon stock of dead wood MgC/ha
347	East Baruni-1	24.0/25	2.05/18	1130/18	38/02	24*(1/.0025)	9.6*.47
						9.6	4.512
348	East Baruni-1	Nil	1.4/18	1350/18	38/02	Nil	Nil
349	East Baruni-1	10.0/25	1.45/18	1100/18	36/02	10*(1/.0025)	4.0*.47
						4	1.88
351	East Baruni-1	35.0/25	2.53/18	1230/18	32/02	35*(1/.0025)	14.0*.47
						14	6.58
2	East Baruni-2	30.0/50	2.5/18	1200/18	30/02	30*(1/.005)	6.0*.47
						6	2.82
40	East Baruni-2	22.0/25	2.20/18	1300/18	40/02	22*(1/.0025)	8.8*.47
						8.8	4.136
352	East Baruni-2	Nil	1.15/18	1650/18	34/02	Nil	Nil
335	East Baruni-3	20.0/25	1.4/18	1200/18	40/02	20*(1/.0025)	8.0*.47
						8	3.76
336	East Baruni-3	32.5/50	3.2/18	1470/18	38/02	32.5*(1/.005)	6.5*.47
						6.5	3.055
337	East Baruni-3	14.0/25	4.45/18	1700/18	50/02	14*(1/.0025)	5.6*.47
						5.6	2.632
339	East Baruni-3	20.0/25	1.7/18	1200/18	33/02	20*(1/.0025)	8.0*.47
						8	3.76
29	East Baruni-4	20.0/25	1.7/18	980/18	38/02	20*(1/.0025)	8.0*.47
						8	3.76
332	East Baruni-4	Nil	0.93/18	1030/18	33/02	Nil	Nil
322	East Baruni-5	12.0/25	2.20/18	1150/18	38/02	12*(1/.0025)	4.8*.47
						4.8	2.115
21	East Baruni-6	Nil	0.55/09	600/09	18/01	Nil	Nil
326	East Baruni-6	21.0/50	2.0/18	1150/18	38/02	21*(1/.005)	4.2*.47
						4.2	1.974
316	East Baruni-7	13.0/25	2.0/18	1470/18	33/02	13*(1/.0025)	5.2*.47
						5.2	2.444
317	East Baruni-7	33.0/50	2.05/18	2050/18	47/02	33*(1/.005)	6.6*.47
						6.6	3.102
						7.09	3.32

KHOLADANGIANI RF:							
UID No.	**Forest Block with Compartment No.**	**Dry weight of dead wood (in Kg/ Sqmt)**	**Dry Weight of woody Litter Kg/sqmt**	**Weight of shrub & climbers (gm)/sqmt**	**Weight of herbs & grasses gm/sqmt**	**Dead wood mass Mg/ha**	**Carbon stock of dead wood Mg C /ha**
						mass	**Mg C/ha**
						Mg/ha.	
299	Kholadangiani-1	10.0/50	6.5/18	10000/18	700/02	10*(1/.005)	2.0*.47
						2	0.94

KADALIMUNDA RF:							
UID No.	**Forest Block with Compartment No.**	**Dry weight of dead wood (in Kg)/Sqmt**	**Dry Weight of woody Litter Kg)/sqmt**	**Weight of shrubs & climbers (gm)/sqmt**	**Weight of herbs & grasses gm/sqmt**	**Dead wood mass Mg/ha**	**Carbon stock of dead wood Mg C / ha**
11	Kadalimunda	13.0/50	2.5/18	4000/18	800/02	13*(1/.005)	2.6*.47
						2.6	1.222
306	Kadalimunda	10.0/50	3.5/18	1300/18	1150/02	10*(1/.005)	2.0*.47
						2	0.94
						2.3	1.08

MAHENDRAPUR RF:							
UID No.	**Forest Block with Compartment No.**	**Dry weight of dead wood (in Kg)/Sqmt**	**Dry Weight Sqmt of woody Litter Kg)/sqmt**	**Weight of shrubs & climbers (gm)/sqmt**	**Weight of herbs & grasses gm/sqmt**	**Dead wood mas Mg/ha**	**Carbon stock of dead wood Mg C/ha**
479	Mahendrapur-1	5.0/25	1.6/18	26300/18	2000/02	5*(1/.0025)	2.0*.47
						2	0.94
481	Mahendrapur--1	Nil	0.8/18	6000/18	600/02	Nil	Nil
483	Mahendrapur	65.0/50	6.7/18	30500/18	1900/02	65*(1/.005)	13.0*.47
						13	6.11
						5	2.35

KUSUMKHURI RF:							
UID No.	Forest Block with Compartment No.	Dry weight of dead wood (in Kg)/Sqmt	Dry Weight of woody Litter Kg)/sqmt	Weight of shrubs & climbers (gm)/sqmt	Weight of herbs & herbs & grasses gm/sqmt	Dead wood mass Mg/ha.	Carbon stock of dead wood Mg C/ha
639	Kusumkhuri-2	11.0/25	6.0/18	1600/18	Nil	11*(1/.0025)	2.0*.47
						4.4	2.068
640	Kusumkhuri-2	16.0/50	6.0/18	700/09	1100/02	16*(1/.005)	3.2*.47
						3.2	1.504
						3.8	1.79

KUTULSINGHA RF:							
UID No.	Forest Block with Compartment No.	Dry weight of dead wood (in Kg)/Sqmt	Dry Weight of woody Litter Kg)/sqmt	Weight of shurbs & climber (gm)/sqmt	Weight of herbs & grasses gm/sqmt	Dead wood mass Mg/ha	Carbon stock of dead wood Mg C/ ha
511	Kutulsingha-1	18.0/50	6.5/18	3000/18	20-Jan	18*(1/.005)	3.6*.47
						3.6	1.692
12	Kutulsingha-2	28.0/50	1.1/18	3000/18	10-Jan	28*(1/.005)	5.6*.47
						5.6	2.632
24	Kutulsingha-3	5.0/50	2.7/18	1200/18	800/02	5*(1/.005)	1.0*.47
						1	0.47
451	Kutulsingha-3	8.0/50	3.4/18	1700/18	500/02	8*(1/.005)	1.6*.47
						1.6	0.752
468	Kutulsingha-3	Nil	1.5/18	1700/18	600/02	Nil	Nil
27	Kutulsingha-4	25.0/50	3.0/18	4000/18	70/01	25*(1/.005)	5.0*.47
						5	2.35
28	Kutulsingha-4	30.0/50	0.95/18	3000/18	55/02	30*(1/.005)	6.0*.47
						6	2.82
452	Kutulsingha-4	5.5/25	2.4/18	1600/18	700/02	5.5*(1/.0025)	2.2*.47
						2.2	1.034
454	Kutulsingha-4	2.5/25	2.8/18	1400/18	800/02	2.5*(1/.0025)	1.0*.47
						1	0.47
438	Kutulsingha-6	32.0/50	1.15/18	3000/18	30/02	32*(1/.005)	6.4*.47
						6.4	3.008
439	Kutulsingha-6	1.2/25	1.4/18	1100/18	400/02	1.2*(1/.0025)	.48*.47
						0.48	0.226
38	Kutulsingha-7	2.5/25	2.2/18	1300/18	500/02	2.5*(1/.0025)	1.0*.47
						1	0.47
						2.82	1.33

GUJA RF:							
UID No.	**Forest Block with Compartment No.**	**Dry weight of dead wood (in Kg) Sqmt**	**Dry Weight of woody Litter (Kg/sqmt**	**Weight of shrubs & climbers (gm)/sqmt**	**Weight of herbs & grasses gm/sqmt**	**Dead wood mass Mg/ha.**	**Carbon stock of dead wood Mg C/ha**
10	Guja	Nil	1.65/18	1600/18	35/02	Nil	Nil
302	Guja	Nil	1.63/18	1030/18	38/02	Nil	Nil
303	Guja	20.0/25	1.5/18	1000/18	33/02	20.0*(1/.0025)=8.0	8.0*.47 3.76
305	Guja	Nil	1.75/18	1190/18	37/02	Nil	Nil
						2	0.94

BINDHYABASINI RF:							
UID No.	**Forest Block with Compartment No.**	**Dry weight of dead wood (in Kg)/Sqmt**	**Dry Weight of woody Litter Kg)/sqmt**	**Weight of shrubs & climbers (gm)/sqmt**	**Weight of herbs & grasses gm/sqmt**	**Dead wood mass Mg/ha.**	**Carbon stock of dead wood Mg C/ha**
39	Bindhyabasini	Nil	1.05/18	75/18	30/02	Nil	Nil
227	Bindhyabasini	14.0/25	1.1/18	1350/18	38/02	14.0*(1/.0025)	5.6*.47
						5.6	2.632
228	Bindhyabasini	13.0/25	1.5/18	1700/18	50/02	13.0*(1/.0025)	5.2*.47
						5.2	2.444
229	Bindhyabasini	24.0/25	1.5/18	1200/18	38/02	24.0*(1/.0025)=9.6	9.6*.47
							4.512
230	Bindhyabasini	Nil	1.40/18	1300/18	40/02	Nil	Nil
	Total	51/75	Jul-90	5625/90	158/10	20.4	9.588
						6.8	3.2

NUAGAON RF:							
UID No.	Forest Block with Compartment No.	Dry weight of dead wood (in Kg)/Sqmt	Dry Weight of woody Litter Kg)/sqmt	Weight of shrubs & climbers (gm)/sqmt	Weight of herbs & grasses gm/sqmt	Dead wood mass Mg/ha.	Carbon stock of dead wood Mg C/ha
32	Nuagaon-1	Nil	1.45/18	1450/18	38/02	Nil	Nil
392	Nuagaon-1	Nil	1.15/18	1670/18	22-Feb	Nil	Nil
393	Nuagaon-1	5.4/50	0.8/18	2350/18	30/02	5.4*(1/.005)	1.08*.47
						1.08	0.497
394	Nuagaon-1	18/25	1.1/18	1350/18	35/02	18*(1/.0025)	7.2*.47
						7.2	3.384
395	Nuagaon-1	Nil	1.5/18	1700/18	40/02	Nil	Nil
402	Nuagaon-2	Nil	1.1/18	2050/18	35/02	Nil	Nil
403	Nuagaon-2	Nil	0.95/18	1400/18	32/02	Nil	Nil
404	Nuagaon-2	Nil	0.95/18	1370/18	33/02	Nil	Nil
378	Nuagaon-3	Nil	1.15/18	1350/18	45/02	Nil	Nil
388	Nuagaon-3	Nil	1.05/18	1150/18	42/02	Nil	Nil
389	Nuagaon-3	Nil	Nil	250/18	200/02	Nil	Nil
390	Nuagaon-4	Nil	1.2/18	1150/18	33/02	Nil	Nil
371	Nuagaon-4	Nil	1.15/18	1500/18	40/02	Nil	Nil
372	Nuagaon-4	Nil	0.06/09	850/09	14-Jan	Nil	Nil
366	Nuagaon-5	8.0/25	1.5/18	1150/18	44/02	8.0*(1/.0025)	3.2*.47
						3.2	1.504
						0.77	0.36

DANTARIKHOL RF:							
UID No.	Forest Block with Compartment No.	Dry weight of dead wood (in Kg)/Sqmt	Dry Weight of woody Litter Kg)/sqmt	Weight of shrubs & climbers (gm)/sqmt	Weight of herbs & grasses gm/sqmt	Dead wood mass Mg/ha.	Carbon stock of dead wood Mg C/ha
343	Dantarikhol-2	25/50	1.1/18	3000/18	50/02	25*(1/.005)	5.0*.47
						5	2.35
344	Dantarikhol-2	21.2/50	5.0/18	3600/18	1600/02	21.2*(1/.005)	4.24*.47
						4.24	1.993
345	Dantarikhol-2	22.0/50	6.6/18	6000/18	1650/02	22.0*(1/.005)	4.4*.47
						4.4	2.068
348	Dantarikhol-2	24.3/50	6.6/18	5600/18	2050/02	24.3*(1/.005)	4.86*.47
						4.86	2.284
334	Dantarikhol-3	25/50	1.0/18	4000/18	25-Feb	25*(1/.005)	5.00*.47
						5	2.35
333	Dantarikhol-3	34/50	0.9/18	2000/18	35/02	34*(1/.005)	6.8*.47
						6.8	3.196
23	Dantarikhol-4	14.7/50	4.0/18	3000/09	1800/02	14.7*(1/.005)	2.94*.47
						2.94	1.382
346	Dantarikhol-5	8.8/50	2.0/18	1100/18	550/02	8.8*(1/.005)	1.76*.47
						1.76	0.827
329	Dantarikhol-6	16.5/50	3.6/18	4000/18	2300/02	16.5*(1/.005)	3.30*.47
						3.3	1.551
330	Dantarikhol-6	18.5/50	5.4/18	4000/18	1700/02	18.5*(1/.005)	3.70*.47
						3.7	1.739
323	Dantarikhol-7	19/50	9.0/18	5000/18	1500/02	19*(1/.005)	3.80*.47
						3.8	1.786
324	Dantarikhol-7	21/50	7.0/18	14000/18	1700/02	21*(1/.005)	4.20*.47
						4.2	1.974
325	Dantarikhol-7	22.3/50	6.4/18	11200/18	1900/02	22.3*(1/.005)	4.46*.47
						4.46	2.096
328	Dantarikhol-8	21/50	5.0/18	5000/18	2500/02	21*(1/.005)	4.20*.47
						4.2	1.974
						4.19	1.97

14.4 Prescribed activity:

The study of carbon stock should be done every year in the earmarked sample points to ascertain the change.

CHAPTER-15

SOCIO-ECONOMIC SURVEY AND ASSESSMENT

15.1 Introduction: It is felt necessary to assess the dependence of villagers on the forests for their livelihood needs especially in the perspective of lifestyle change. It is also important in the context of micro-plans for Joint Forest Management and forest fringe management. Information on socio-economic status of the people living in forest fringe villages need to be assessed to bring forth the role of forest products and ecosystem services in their lifestyle. This is necessary to formulate suitable management strategies to improve their socio-economic status particularly that of tribal and economically backward communities living in fringe villages and partially or wholly dependent on forests for their livelihood.

Athmallik Forest Division boundary is co-terminus with Athmallik civil sub-division boundary. Athmallik civil sub-division covers Athmallik N.A.C, two revenue blocks namely Athmallik & Kishorenagar, two Tahasils also at Athmallik & Kishorenagar.

Demographic features:

Sl. No	Name of CD Blocks	No. of Gram Panchayats	No.of villages
1	Kishorenagar	21	251
2	Athmallik	24	337

NAME	AREA IN SQ.KMs	NO OF HOUSEHOLDS	TOTAL POPULATION (in Nos)		
			NO OF MALES	NO OF FEMALES	TOTAL
Athmallik Block	674.75	25,382	55,236	55,316	1,10,552
Kishorenagar Block	602.09	25,081	54,338	53,483	1,07,821
Athmallik NAC	29.01	2899	6290	6008	12,298

NAME	SC POPULATION(in Nos)			ST POPULATION(in Nos)			LITERATES(in Nos)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Athmallik Block	8947	9094	18,041	13,128	13,324	26,452	40,968	31,591	72,559
Kishorenagar Block	8149	7937	16,086	10,656	10,982	21,638	40,886	32,940	73,826
Athmallik NAC	1770	1736	3506	468	448	916	4780	3757	8537

NAME	TOTAL WORKERS(in Nos)			MAIN WORKERS(in Nos)			CULTIVATORS	
	Male	Female	Total	Male	Female	Total	Female	Total
Athmallik Block	32,205	26,850	59,055	20,927	8593	29,520	1085	8782
Kishorenagar Block	31,193	23,036	54,229	18,409	6097	24,506	2230	11,819
Athmallik NAC	3297	1610	4907	2422	599	3021	40	461

NAME	AGRICULTURAL LABOURER (in Nos)		HOUSEHOLD INDUSTRY WORKERS (in Nos)		OTHERWORKERS (in Nos)	
	Male	Female	Male	Total	Female	Total
Athmallik Block	5446	3924	845	1801	1483	6530
Kishorenagar Block	3755	2015	1159	2657	1499	7297
Athmallik NAC	126	50	163	222	450	2162

NAME	MARGINAL WORKERS (in Nos)		CULTIVATORS (in Nos)		AGRICULTURAL LABOURERS (in Nos)	
	Male	Female	Male	Total	Female	Total
Athmallik Block	11,278	18,257	1515	3667	12,002	19,326
Kishorenagar Block	12,784	16,939	1988	3451	10,929	18,209
Athmallik NAC	875	1011	52	117	554	995

NAME	HOUSE HOLD INDUSTRY WORKERS (in Nos)		OTHERWORKERS (in Nos)		NON-WORKERS (in Nos)	
	Male	Female	Male	Total	Female	Total
Athmallik Block	597	2361	1842	3584	28,466	51,497
Kishorenagar Block	725	2224	2791	5114	30,447	53,592
Athmallik NAC	42	47	340	685	4398	7391

ASSESTS:

Households having permanent, semi permanent and temporary houses						
NAME OF THE SUB-STATION	TOTAL (in Nos)		RURAL(in Nos)		URBAN (in Nos)	
	permanent	Semi permanent	permanent	temporary	Semi permanent	temporary
Handapa	4011	1061	4011	6908	0	0
	-33.42	-8.84%	-33.42	-57.56%		
Kishorenagar	4971	1126	4971	7200	0	0
	-37.31	-8.45%	-37.31	-54.03%		
Athmallik	3764	1072	2664	7095	199	1589
	-27.80%	-7.92%	(25.03%	-66.65%	-6.87%	-54.89%
Kiakata	983	218	983	2531	0	0
	(26.33%	-5.84%	(26.33%	-67.78%		
Thakurgarh	2553	485	2553	7909	0	0
	(23.29%	-4.42%	(23.29%	-72.14%		

Number and Percentage of Households by main source of drinking water:					
Name of Sub-centre	Total/ Rural/Urban	Total Number of Householder	Tap water from untreated source	Covered well	Un-covered well
Handapa	Total/	12,001	158(1.32%)	164(1.37%)	5525(46.04%)
	Rural/	12,001	158(1.32%)	164(1.37%)	5525(46.04%)
	Urban	0	0	0	0
Kishorenagar	Total/	13,325	747(5.61%)	83(0.62%)	5.038(37.81%)
	Rural/	13325	747(5.61%)	83(0.62%)	5.038(37.81%)
	Urban	0	0	0	0
Athmallik	Total/	13,540	738(5.45%)	149(1.1%)	3,459(25.55%)
	Rural/	10,645	499(4.69%)	110(1.03)	2,848(26.75%)
	Urban	2,895	239(8.26%)	39(1.35%)	611(21.11%)
Kiakata	Total/	3734	3(0.08%)	97(2.6%)	1136(30.42%)
	Rural/	3734	3(0.08%)	97(2.6%)	1136(30.42%)
	Urban	0	0	0	0
Thakurgarh	Total/	10,963	148(1.35%)	192(1.75%)	3,682(33.59%)
	Rural/	10,963	148(1.35%)	192(1.75%)	3,682(33.59%)
	Urban	0	0	0	0

Name of Sub-centre	Total/ Rural/Urban	Handpump	Tubewell/	Spring	River/ Canal	Tank/Pond	Other sources
Handapa	Total/	1881(15.67%)	3456(28.8%)	292(2.43%)	12(0.1%)	79(0.66%)	240(2%
	Rural/	1881(15.67%)	3456(28.8%)	292(2.43%)	12(0.1%)	79(0.66%)	240(2%
	Urban	0	0	0	0	0	0
Kishorenagar	Total/	4172(31.31%)	2508(18.82%)	193(1.45%)	101(0.76%	72(0.54%)	62(0.47
	Rural/	4172(31.31%)	2508(18.82%)	193(1.45%)	101(0.76%	72(0.54%)	62(0.47
	Urban	0	0	0	0	0	0
Athmallik	Total/	3880(28.66%)	3953(29.19%)	115(0.85%)	261(1.93%	151(1.12	26(0.19
	Rural/	2744(25.78%)	3484(32.73%)	100(0.94%)	246(2.31%	139(1.31	18(0.17
	Urban	1136(39.24%)	469(16.2%)	15(0.52%)	15(0.52%	12(0.41%	8(0.28)
Kiakata	Total/	1115(29.86%)	1038(27.8%)	19(0.51%)	302(8.09%	16(0.43%)	1(0.03%
	Rural/	1115(29.86%)	1038(27.8%)	19(0.51%)	302(8.09%	16(0.43%)	1(0.03%
	Urban	0	0	0	0	0	0
Thakurgarh	Total/	2816(25.69%)	3263(29.76%)	276(2.52%)	11(0.1%)	175(1.6%)	147(1.34
	Rural/	2816(25.69%)	3263(29.76%)	276(2.52%)	11(0.1%)	175(1.6%)	147(1.34
	Urban	0	0	0	0	0	0

Number and percentage of Households having kitchen facility:

Name of Sub-centre	Total/Rural/ Urban	Total of Householder	Cooking inside house		Cooking outside house		No cooking
			Has kitchn	Does not Have kitchn	Has kitchn	Does not Have kitchen	
Handapa	Total/	12,001	7,626(63.54%)	2,088(17.4%)	1,330(11.08%)	910(7.58%)	47(0.39%
	Rural/	12,001	7,626(63.54%)	2,088(17.4%)	1,330(11.08%)	910(7.58%)	47(0.39%
	Urban	0	0	0	0	0	0
Kishorenagar	Total/	13,325	9,594(72%)	2,175(16.32%)	774(5.81%)	733(5.5%)	49(0.37%
	Rural/	13325	9,594(72%)	2,175(16.32%)	774(5.81%)	733(5.5%)	49(0.37%
	Urban	0	0	0	0	0	0
Athmallik	Total/	13,540	8,937(66%)	3,474(25.66%)	659(4.87%)	442(3.26%)	28(0.21%
	Rural/	10,645	7,070(66.42%)	2,759(25.92%)	478(4.49%)	324(3.04%)	14(0.13%
	Urban	2,895	1,867(64.49%)	715(24.7%)	181(6.25%)	118(4.08%)	14(0.48%
Kiakata	Total/	3734	2,923(78.28%)	497(13.31%)	100(2.68%)	210(5.62%)	4(0.11%
	Rural/	3734	2,923(78.28%)	497(13.31%)	100(2.68%)	210(5.62%)	4(0.11%
	Urban	0	0	0	0	0	0
Thakurgarh	Total/	10,963	8,133(74.19%)	1,406(12.82%)	773(7.05%)	618(5.64%)	33(0.3%)
	Rural/	10,963	8,133(74.19%)	1,406(12.82%)	773(7.05%)	618(5.64%)	33(0.3%)
	Urban	0	0	0	0	0	0

Number and Percentage of Households having various sources of Lighting:								
Name of Sub-centre	Total/ Rural/Urban	Total Number of Households	Electricity	Kerosene	Solar	Other oil	Any other	No Lighting
Handapa	Total/	12,001	4,754(39.61%)	6,926(57.71%)	131(1.09%)	10(0.08%)	62(0.52%	118(0.98%)
	Rural/	12,001	4,754(39.61%)	6,926(57.71%)	131(1.09%)	10(0.08%)	62(0.52%	118(0.98%)
	Urban	0	0	0	0	0	0	0
Kishorenagar	Total/	13,325	4,678(35.11%)	8,515(63.9%)	36(0.27%)	54(0.41%)	31(0.23%)	11(0.08%)
	Rural/	13325	4,678(35.11%)	8,515(63.9%)	36(0.27%)	54(0.41%)	31(0.23%)	11(0.08%)
	Urban	0	0	0	0	0	0	0
Athmallik	Total/	13,540	3,345(24.7%)	10,034(74.11%)	41(0.3%)	0	7(0.05%)	113(0.83%)
	Rural/	10,645	1,867(17.54%)	8,640(81.16%)	37(0.35%)	0	5(0.05%)	96(0.9%)
	Urban	2,895	1,478(51.05%)	1,394(48.15%)	4(0.14%)	0	2(0.07%)	17(0.59%)
Kiakata	Total/	3734	611(16.36%)	3,074(82.32%)	11(0.29%)	3(0.08%)	0	35(0.94%)
	Rural/	3734	611(16.36%)	3,074(82.32%)	11(0.29%)	3(0.08%)	0	35(0.94%)
	Urban	0	0	0	0	0	0	0
Thakurgarh	Total/	10,963	1,850(16.87%)	8,949(81.63%)	33(0.3%)	6(0.05%)	98(0.89%)	27(0.25%)
	Rural/	10,963	1,850(16.87%)	8,949(81.63%)	33(0.3%)	6(0.05%)	98(0.89%)	27(0.25%)
	Urban	0	0	0	0	0	0	0

Number and Percentage of Households using various types fuels for cooking:						
Name of Sub-centre	Total/ Rural/Urban	Total Number of Households	Firewood	Crop residue	Cow dung cake	Coal/lignite/ Charcoal
Handapa	Total/	12,001	11,431(95.25%)	82(0.68%)	11(0.09%)	10(0.08%)
	Rural/	12,001	11,431(95.25%)	82(0.68%)	11(0.09%)	10(0.08%)
	Urban	0	0	0	0	0
Kishorenagar	Total/	13,325	12,905(96.85%)	96(0.72%)	17(0.13%)	4(0.03%)
	Rural/	13325	12,905(96.85%)	96(0.72%)	17(0.13%)	4(0.03%)
	Urban	0	0	0	0	0
Athmallik	Total/	13,540	12,660(93.5%)		60(0.44%)	6(0.04%)
	Rural/	10,645	10,326(97%)		52(0.49%)	2(0.02%)
	Urban	2,895	2,334(80.62%)	26(0.9%)	8(0.28%)	4(0.14%)
Kiakata	Total/	3734	3,684(98.66%)		2(0,05%)	1(0.03%)
	Rural/	3734	3,684(98.66%)		2(0.05%)	1(0.03%)
	Urban	0	0	0	0	0
Thakurgarh	Total/	10,963	10,706(97.66%)	144(1.31%)	7(0.06%)	4(0.04%)
	Rural/	10,963	10,706(97.66%)	144(1.31%)	7(0.06%)	4(0.04%)
	Urban	0	0	0	0	0

Name of Sub-centre	Total/ Rural/Urban	Total Number of Households	Kerosene	LPG/PNG	Electricity	Bio-gas	Any other	No cooking
Handapa	Total/	12,001	17(0.14%)	373(3.11%)	5(0.04%)	15(0.12%)	10(0.08%)	47(0.39%)
	Rural/	12,001	17(0.14%)	373(3.11%)	5(0.04%)	15(0.12%)	10(0.08%)	47(0.39%)
	Urban	0	0	0	0	0	0	0
Kishorenagar	Total/	13,325	28(0.21%)	186(1.4%)	14(0.11%)	22(0.17%)	4(0.03%)	49(0.37%)
	Rural/	13325	28(0.21%)	186(1.4%)	14(0.11%)	22(0.17%)	4(0.03%)	49(0.37%)
	Urban	0	0	0	0	0	0	0
Athmallik	Total/	13,540	17(0.13%)	578(4.27%)	21(0.16%)	8(0.06%)	5(0.04%)	28(0.21%)
	Rural/	10,645	8(0.08%)	89(0.84%)	15(0.14%)	4(0.04%)	4(0.04%)	14(0.13%)
	Urban	2,895	9(0.31%)	489(16.89%	6(0.21%)	4(0.14%)	1(0.03%)	14(0.48%)
Kiakata	Total/	3,734	4(0.11%)	10(0.27%)	4(0.11%)	1(0.03%)	1(0.03%)	4(0.11%)
	Rural/	3,734	4(0.11%)	10(0.27%)	4(0.11%)	1(0.03%)	1(0.03%)	4(0.11%)
	Urban	0	0	0	0	0	0	0
Thakurgarh	Total/	10,963	9(0.08%)	47(0.43%)	7(0.06%)	4(0.04%)	2(0.02%)	33(0.3%)
	Rural/	10,963	9(0.08%)	47(0.43%)	7(0.06%)	4(0.04%)	2(0.02%)	33(0.3%)
	Urban	0	0	0	0	0	0	0

15.2 Socio-economic survey and assessment in forest fringe villages:

National working Plan code-2014 has stressed the need on collecting information on socio-economic status of the people living in and around the forest and their dependence on the forests for their livelihood needs. The villages situated within the limit of 3Kms from the forests has to be considered as forest fringe villages for the assessment. Representative fringe villages will be randomly selected from each stratum of the Division. Basing on the above stipulation; 17 fringe villages from 16 sections of 5 Ranges has been selected for conducting Socio-economic survey & assessment. The name of the fringe villages selected are furnished as below:

Name of the Range	Name of the Section	Name of the village selected
Athmallik	Athmallik	Jadupur
	Pataka	Kendupati
	Manitri	Rajing
Dhandatopa	Dhandatopa	Basudevpur
	Paiksahi	Kenchuanali
	Amsarmunda	Hinjagola
Handapa	Handapa	Chakundamunda
	Urukula	Takaba
	Charkhaman	Charkhaman
	Pedipathar	Batrakhol
Bamur	Bamur	Susaba
		Bhangamunda
	Kishorenagar	Tentulikhandahata
	Sargipalli	Batipurunapani
	Kadalimunda	
Madhapur	Madhapur	Manarbeda
	Kiakata	Kadopada
	Dekrudu	Raibahal

15.3 Proposed activities:

(i) Collection of firewood:

Collection of firewood from the forests are mostly done for cooking purposes. The LPG connection under Ujjla Scheme of the Government of India has been initiated in the area. Forest Department should play the key role in its speedy implementation. Till successful implementation of the scheme, the household should be supplied with smokeless chullahs.

(ii) Grazing by livestocks :

The total livestock of Athmallik civil sub-Division is as follows.

No of indigenous Cows/bullocks	No of Buffaloes	No of Goats	No of sheeps
1,16,509	6,777	60,421	30,161

Considering each cattle as one cow unit, buffalo as two cow unit, goat as 1/2 cow unit and sheep as 1/2 cow unit, the total cow units comes to 1,75,354. It is presumed that each cow unit feeds 5kg of fodder daily. Accordingly the total consumption per day comes to 8768 Quintal.

As observed, the livestocks of the villagers are mostly grazing in the forests. To reduce the impact of Grazing; the following activities are proposed.

(a) Pasture development in the village area.

(b) Promoting fodder crops in agriculture.

(c) Reducing livestock population.

(d) Promoting stall feeding.

(e) Improving livestock breeds, and

(f) Promoting dairy

For effective implementation of the above activities, ongoing and proposed activities of the Veterinary Department should be monitored. District administration should be properly briefed for the implementation of the alternatives in the interest of the forests.

(iii) Timber & Small wood:

The demand of timber is mostly to meet the requirement of furniture and in construction of doors and windows of the houses. In fact, alternatives have already been evolved and used in most of the Urban areas. The villagers should be made aware of the same to adopt the alternatives.

The demand for small timber and bamboos are mostly to meet the requirements in construction/repair of the houses. In fact, alternatives such as concrete roof, asbestos roof have already been evolved and used in most of the Urban areas. Villagers should be made aware of the same to adopt the alternatives. Government schemes in this regard may be explored.

(iv) Collection of NTFPs:

NTFPs such as kendu leaf, Mahua flower, Mahua fruit, Char seed, Chakunda seed, Harida, Bahada, Amla, Mango kernel, Kusum seed are mostly collected from the forests. Among them, collection of kendu leaf and Mahua Flower affect the forest most as it is presumed that for collection of kendu leaf, forest is put under fire. Similarly, for better collection of Mahua flower from the floor, the ground is put under fire which is left as such. For collection of Harida, Bahada and Amla, destructive practices of harvesting is followed. In the collection of Medicinal & aromatic plants; destructive methods are adopted. As an effective solution, it is proposed to train the villagers on sustainable harvesting as well as made them aware so as not to resort the fire for collection of NTFPs i.e Kendu leaf and Mahua flower.

The NTFPs collected are not registered in the panchayat offices properly because of which the exact collection figure, name of the traders as well as the items which are trade are not known. The procurement price for individual NTFP items are neither fixed on year wise basis nor made wide publicity for which the primary gatherers are unable to know the exact price and go for distress sale. Wide publicity should be made in the Sub-Division office, Block headquarters, Panchayt offices as well as in the local markets so as to avoid distress sale. The Forest Department should ensure the same. Any discrepancies noticed should be brought to the knowledge of the District Collector for appropriate action.

There is no market linkage for the NTFP items. Value addition need to be ensured. It is proposed to create Marketing Federation at each Block Headquarters by involving the concerned serpanch of the panchayat or their authorised representatives as the members of the Federation. There should be two marketing Federations i.e at Athmallik & Kishorenagar. The Federation should ensure that the raw materials are processed properly before they are despatched to the Federation Unit. The Federation should ensure fair payment to the primary gathers through traders. The raw materials so procured at the Federation Unit should be converted to value addition for which the unit should be equipped accordingly. Char decotinator should be installed to convert unprocessed seed to processed seed. Grinders should be installed to grind Harida, Bahada & Amla. Amla Juice can be prepared rom pulp by removing seed. Sal plates can be made by sal plate making machines. Machines can be installed to prepare oil of Neem, Karanja, Kusum etc. Necessary technical know how can be obtained for other NTFP items from various processing units established in Chattishgarh State and implemented accordingly. The marketing Federation so constituted should be funded accordingly at the initial stage after which the funds so generated through sale of value added products be revolved.

15.4 Implementation of the proposed activities:

At each village level, micro plans should be prepared and approved by a committee headed by the Collector, Angul as the chairman and Divisional Forest Officer, Athmallik as the member secretary. The CDVO of the District, the District Panchayt Officer, the District Welfare Officer, the Block Development Officer, Athmallik & Kishorenagar should be the members of the committee. The committee should meet twice in a year and monitor the programmes implemented and its success. The report should also find a place during discussion in the Zilla Parishad meeting and District Vigilance & Monitoring Committee Meetings.

CHAPTER-16

16.1 MISCELLANEOUS REGULATION

16.1.1 General consideration

Miscellaneous regulations, spelt out in this chapter, fall in two categories. First, this chapter includes prescriptions with regard to those important activities that have not been discussed before (i.e. Roads, Buildings, and Boundaries of forest blocks). Second, this chapter also re-literates some regulations, already prescribed in the main working circles, for the sake of emphasis.

16.1.2 Forest Roads

This Division has a network of 101 Km. Forest Roads. These roads are maintined during the out going plan with construction of culverts to some extent. The situation of forest roads has been improved. If the expenditure pattern is closely examined, the amount spent per Km. is very low. As a result every year the maintenance has become necessary with the emphasis on runoff, drain cutting, light murrum turfing, construction of causeways, etc. These roads are major communication network for transportation of forest produce, for effective supervision and to check illicity felling and poaching. Local people also use these roads for transportation. The roads should be repaired during November and December.

The concerned Range officer will prepare a plan and estimate for annual repair/ special repair after physical verification of forest roads, kilometer-wise. Approval of the competent authority should be obtained prior to execution of the work.

16.1.3 Systems of Sale/Disposal of Forest Produce

All the timber coupes shall be worked by OFDC Ltd. in the Division. However, timber and firewood from dead dry and wind fallen trees and materials of illicity felled trees shall be salvaged departmentally. Salvaged materials shall be handed over to OFDC Ltd. for sale. Similarly, Confiscated and Undetected Case (UD Case) timbers shall be disposed of through OFDC Ltd. or through local auctions, as the circumstances may dictate. Saleable thining materials may, be disposed of through local auctions or in accordance with the Government policy of JFM depending upon the local circumstances.

16.1.4 Irregular Exploitation

In normal course, irregular felling of trees will not be permitted. However, in emergenicies or extraordinary circumstances (i.e. natural calamities like fires, floods, cyclones, urgent departmental requirements and socio-religious functions like car festival), it can be re-sorted to in manner and extent as provided in writing by competent authority.

16.1.5 Buildings

There is a shortage of residential accommodations, particularly for the Forest Guards and Foresters of the Division.Gradually the construction of new buildings has picked up momentum. However the DFO, Athmallik Forest Division must make every possible effort for securing required funds for construction of new Buildings and maintenance of existing old buildings of this Division. The residential building for Divisional Forest Officer should be constructed during the revised plan period alongwith construction of residential building of Forester and Forest Guards.

Electrification of all the buildings in remote Beats and Sections, where such facilities are available, should be taken up. Wherever electrification is not possible provision for solar lights should be made. In this regard the services of OREDA, Bhubaneswar should be utilized. There should be a separate room for the court of the Authorized Officer in the Divisional office.

16.1.6 Forest Consolidation

Consolidation of forest blocks shall be given due attention on priority basis. A phased programme is required to be drawn and resolutely pursued by DFO, Athmallik Division for constitution of proposed reserve forest, identified UDPFs, DPFs and other forest lands into Reserve Forests under the Orissa Forest Act, 1972. The DFO shall take steps to finalize the proposals of PRF and DPFs. New forest blocks, having good forest crop, shall be demarcated and proposed for reservation.

16.1.7 Maintenance of Boundary

The boundaries of forest blocks are in poor shape due to a variety of reasons including paucity of funds. During field verification most of boundary pillars were found missing. Hence boundary pillars are required to be repaired and numbered. Boundary lines are also required to be cleared and properly maintained. The total length of the boundary line of RFs is 390.88 Km. which need to be cleared every year. The details of block boundaries i.e. length of forest boundaries no. of pillars, pillar to pillar bearing and distance and record of maintenance of boundaries to be meticulously maintained in Division Office. Efforts have been made to determine the geo-reference of boundary pillars in respect of all forest blocks during preparation of revised working plan. It will be easier to locate the missing pillars for construction subsequently.

The condition of the boundaries has been described in the Chapter 2 of Part 1. The details of number of boundary pillars existing in each block are given in the same chapter. The boundary pillars that need to be constructed block wise in RF, are given in the **Table No: 2.12,2.13,2.14,2.15.** Even the existing pillars are mostly in damaged state and they need repair. The boundaries of various forest blocks are poorly maintained mainly due to lack of funds, though some clearance is done in the current year. The boundary maintenance is essential, especially in some of the bordering blocks like Bindhyabasini, where it is very difficult to know the boundary between the Rairakhol and Athamallik Divisions. The programme of five year of cycle of maintenance of boundary pillars is given in **Annexure XIX**. In Protected Forests, it is highly essential to demarcate the boundaries properly with bearings and pillar to pillar distance and correct maps should be made. In four PF blocks the maps are not available, in these blocks the entire boundary clearance and pillar postings should be done on priority basis.

16.1.7.1Construction of Boundary Pillars: The following types are proposed for various category of Forest Blocks based on the instruction of the PCCF vide Memo No. 15931 dated 3rd August,2007.

16.1.7.1.1 RFs:

For stone pillars:

(i) The ground shall be leveled before construction of pillar.

(ii)The diameter at the base of the pillar shall be kept 120 cm and at the top 80 cm so that the diameter at the centre will be 100 cm.Height of pillar shall be 130 cm. Locally available stones and boulders shall be fixed using mud mortar.

(iii)The pole of 160 cm length(duly painted with coal tar) to be fixed in the centre with 130 cm inside pillar and 30 cm above,i.e. one end of pole shall be embedded in ground.

(iv)The visible portion of pole shall be flattened with face towards outside and the pillar number written on it. The pillar number shall also be written at the base of the pillar.

The voids on the outer surface of the pillar should invariably be cemented.

For masonary pillars:

Masonary pillars may also be constructed in the RF boundary line where adecuate curing is possible. The foundation of such pillar shall be 60cmx60cmx60cm. The size of the pillar above foundation (ground) shall be 60cmx60cmx90cm(height) on back side and 60cm x60 cm(height) on front side with face slanting outside. This will have a volume of 18cft.

The details of pillars found damaged & missing has already been mentioned in Table No. 2.12 & 2.13 of chapter 2. Basing on the same; a total of 502 pillars are proposed for new construction as per the above instruction. Beside that, 1053 pillars are partially damaged and proposed for minor repair.

16.1.7.1.2 DPFs:

For stone cairn:

(i) The ground shall be leveled before construction of pillar.

(ii)The diameter at the base of the pillar shall be kept 90 cm and at the top 60 cm so that the diameter at the centre will be 75 cm.Height of pillar shall be 100 cm. Locally available stones and boulders shall be used before filling up voids with mud mortar.

(iii)The pole of 130 cm length(duly painted with coal tar) to be fixed in the centre with 100 cm inside pillar and 30 cm above,i.e. one end of pole shall be embedded in ground.

(iv)The visible portion of pole shall be flattened with face towards outside and the pillar number written on it. The pillar number shall also be written at the base of the pillar.

For masonary pillars:

Masonary pillars may also be constructed in the DPF boundary line where adecuate curing is possible. The foundation of such pillar shall be 60cmx60cmx60cm. The size of the pillar above foundation (ground) shall be 60cmx60cmx60cm(height) on back side and 60cm x30 cm(height) on front side with face slanting outside. The pillars shall be plastered and duly numbered with name of the DPF written on the slanting portion. This will have a volume of 14cft.

The details of pillars found damaged & missing has already been mentioned in Table No. 2.15 & 2.16 of chapter 2. Basing on the same; a total of 435 pillars are proposed for new construction as per the above instruction. Beside that, 379 pillars are partially damaged and proposed for minor repair.

16.1.7.1.3 PFs: As reflected in chapter 2 of Part-I, there are no pillars in all the 06 PFs. The PF area should be demarcated using concrete/cut stone pillar of 15 cmx15cm cross-section and of 60 cm length of which 40 cm shall be below the ground and 20 cm above the ground. The name of the PF on the side & pillar number on the top shall be written. GPS reading has been taken & the traverse is closed. Accordingly, 167 nos of new pillars will be posted as per the above dimension & hence suggested.

16.1.7.1.4 VFs: As reflected in chapter 2 of Part-I, there are no pillars in all the 24 VFs. The VF area should be demarcated using concrete/cut stone pillar of 15 cmx15cm cross-section and of 60 cm length of which 40 cm shall be below the ground and 20 cm above the ground. The name of the VF on the side & pillar number on the top shall be written. GPS reading has been taken & the traverse is closed. Accordingly, 204 nos of new pillars will be posted as per the above dimension & hence suggested.

16.1.7.2 The inter divisional boundaries shall be cleared to the width of **10 meters**, block boundaries to **8 meters** and interior village ring line to **5 meters**. Compartment lines, where they do not follow natural features like nallah, etc. should be cut to the width of 6 meters. All the boundary pillars should be repaired at the time of boundary maintenance. In case of replacement, the old pillars should be replaced by masonry pillars or stone Cairns depending on the site. Forest Guard, Forester and Range Officer shall inspect the boundaries regularly as per Codal provisions. The Divisional Forest Officer and the Assistant Conservator of Forests should annually inspect 10 % of boundary lines of the division.

16.1.7.2.1 *Borassus flabellifer* (Tal) or *Phoenix sylvestris* (Khajuri) shall be planted along the block boundary in between boundary pillars. This type of plantation along the block boundary helps to prevent encroachment. If at all there are encroachments, the same can be detected easily during inspection of boundaries. Secondly, there is no chance of shifting the boundaries by any means. Thirdly, it will be easier to locate the position of missing pillars. Since the local people have got some attachment for those trees, they never cut / damage them. After all this method of maintenance of block boundaries is cost effective and one time affair.As already suggested, the forest blocks susceptible to heavy encroachments & VSS protected forest blocks, the boundary will be raised with Sisal & Jatropa species for multifarious purposes.

16.1.8: Encroachment:

16.1.8.1 Factors responsible for encouraging encroachment:

*Absence of clear demarcation of Forest Boundary.

* Lack of proper boundary inspection.

* Absence of alternative employment for the landless or the people with very little land.

* Delay in detection of cases of encroachment.

* Legal difficulties.

Following **Preventive measures** are proposed for reducing chances of and tendency for encroachments.

(a) Keeping the boundary distinct and clear and its record complete

(b) Proper and regular inspection of boundary

A Forest Guard should inspect his entire beat boundary twice a year and submit a report on the condition of boundary in the following proforma:

From Pillar No.	To Pillar No.	Remarks

Certified that I have walked over the entire boundary and inspect it in detail and that there is no encroachment.

Sd/- Forest Guard

If there is encroachment, it should be clearly mentioned between which pillars it has been detected. In addition to mentioning in the boundary inspection report, action should be immediately initiated to bring the offender to book. In the plains, this inspection may be done in July and January each year and in the hills it may be carried out in May and November each year. In order to compel inspection of boundary and submission of report in proper time, drastic action may be initiated for negligence.

The Forester should cross check the report submitted by the Forest Guards on random basis to ascertain the genuineness of the report submitted. At least 50% checking should be ensured in a year.

Each Range Officer must annually inspect one fifth of the boundary of his Range. The Range Officer should on the basis of his inspection and the inspection reports of his subordinates submit a consolidated report about the condition of the boundary and the cases of encroachments to the DFO by the end of February.

The DFO and the ACF should,as far as possible, also inspect the boundary.

(c) Increasing employment opportunities:

In forestry works, efforts should be made to engage the landless or the person having less land.

REMEDIAL MEASURES:

(a) Prompt detection of offence and action against offenders

(b) Order to stay away from the land in dispute:

The accused should not continue to draw benefit from his encroachment during the pendency of trial.Necessary order to stay out the encroacher from the land in question may be obtained from the Court. The Magistrate may also order any Forest Officer not below the rank of a Ranger or a Police Officer to get the order executed.

16.1.9 Maintenance of Maps and Records

16.1.9.1 Control Forms:

As per the prescription under National Working Plan code,2014, the WPO should prepare a draft set of control forms to monitor all the important operations prescribed and suggested in his working plan such as different types of felling, thinning, plantation works,subsidiary silvicultural operations, rotational loppings, soil & water conservation works, controlled/regulated grazing, fire protection, NTFP harvesting practices, bamboo harvesting, boundary pillars, spring recharge, lantana/weed eradication, reducing degradation, removal of firewood etc. Accordingly the following set of control forms are prespribed.Separate set of control forms for each working circles are prescribed for each working circles.

Form No. 1: Creation of new artificial waterholes

Sl. No.	Category	Year	Location	Cost	Performance

Note:Category- Masonary anicut, earthen bund,lined depression,borewell & pump,reservoir,spring fed,tanker fed,guzzler,aquifer: permanent or temporary

Location— By compartment or by a named feature and name given if any

Preformance-—Successful, partially successful,failure(give reasons for the latter two)

Form No. 2:Maintenance of waterholes : artificial

Sl. No.	Category	Perennial or seasonal	Location	Year	Nature of work	Cost	Performance

Nature of work—— Desilting,grouting,repairing leaks,repair to mechanical parts,closing anicut openings, any other work.

Form No.3: weed control, initial operation

Sl. No	Location & Name of the site.	Year	Extent of area(ha)	Species of weed	Operation	Total cost	Cost per Ha.	Remarks

Operation: Uprooting, cutting,burning,ploughing,manual or by using animals or machinery.

Remarks : Measure of success and or problem faced

Form No 4: weed control,subsequent operations

Sl. No.	Location & name of site.	Year	Extent of area(Ha)	Complete or Partial Coverage	Species of weed	Operation	Total cost	Cost per Ha	Remarks

Remarks: Percentage cover of weeds before operation, problems,if any.

Form No. 5: soil conservation measures- initial operations and subsequent maintenance

Sl. No	Location & Name of site	Year	Extent of area(Ha)	Area treated	Operations	Total cost	Cost per ha.	Remarks

Extent of area: Total area identified for such treatment. In case of streams or gullies,the length involved.

Area Treated: If linear feature then quote length; otherwise area

Operation: Structures involved, quote quantity nos and cmt of earthwork.

Remarks: Mention if initial work or maintenance

Form No. 6: planting, sowing-initial operation

Location	Year	Extent of area(ha)	Species	Planting stock	Spacing	Operations	Total cost	Cost per ha	Remarks

Planting Stock— Kind and condition, e.g. root shoot, naked root seedlings,seedlings in polythene bags,average size.

Operation—Mention site preparation

Remarks—- Mention operational problems if any.

Form No. 7: Response of plantings, sowings and subsequent operations:

Location	Year	Extent of area(ha)	Species	Survival (%)	Casuality replacement	Operations	Total cost	Cost per ha	Remarks

Form No. 8: Area under protection/closure:

Sl. No	Location	Year	Extent of area(ha)	Description of site	Regulations or protection measures	Response	Remarks

Description of site: % of trees, shrubs, ground cover, main species,impact of factors causing perturbations

Regulations & protection measures: Social fencing, power or other kind of fencing, enforced protection by patrolling, fire protection etc.

Response: To be recorded annually. Consider trend of regeneration, vegetation cover,change in structure and composition,wildlife use index.

Remarks: State problems or any other useful information,including alternatives if area being used by people for specific purposes.

Form No.9: Animals: measuring trends in populations

Species	Population estimation methodology	Adult		Sub-adults		Yearlings	Fawns	Cubs	Total
		Male	Female	Male	Female				

Form No 10: Animals: new records							
Sl. No	Species	Location	Year	How discovered	Details of number, age,sex	Habitat description	Remarks

Note: Animals will include vertebrates and invertebrates.

How discovered: Sighting, dead specimen, reliability of sighting, captured specimen, other evidence.

Habitat description: Broad habitat description such as vegetation,and element such as water,large old trees, den trees, snags,down log material. Use microhabitat descriptions only if relevant.

Form No.11: Animals: Mortality other than that attributable to an offence								
Sl. No.	Species	Location	Year	Sex & Age	Number	How discovered	Cause of mortality	Remarks

How discovered: Caecass, Complete or partial. Skull or any other recognizable remains collected.

Cause of mortality: territorial fight, accident, possible disease(following postmortem results),old age,difficult to determine the cause, predation etc.

Form No. 12: Animals: Mortality attributed to poaching or an act of vandalism:				
Sl. No	Species	Location	Cause of mortality, Number, Sex,Age class.	Remarks

Cause of mortality: Animal shot or poisoned.

Remarks : matters of illegal trade.

Form No 13: Animals: Predation on domestic livestock by wild carnivores								
Range	Month	Category of livestock killed	Location	Numbers	Compensation paid(Rs)	Carnivore involved	No of cases undecided	Remarks

Remarks: killed in forest or outside.

Form No.14 Animals: killing of a human by wildlife or injury caused

Sl. No	Range	Month	No. of incidents	No. of people killed,age & sex	Location,	No. of people injured,	Location,	Compensation
					circumstances &species	age &sex	circumstances & species	(Rs)

Form No. 15 Animals: wildlife damage to private or public property

Sl.No.	Range	Month	Category of property	Extent of damage	Species involved and number	Remarks

Extent of damage— Crop damage by area, estimated loss of produce and monetary loss.

Form No 16 Plants : New Records							
Sl. No.	Family	Species	Year	Location	Habitat	Status	Remarks

Habitat : vegetation associates at various levels,% canopy closure.

Status: frequency,national status e.g. endangered,rare,endemic etc

Form No. 17 Plants: disease and mortality						
Sl. No.	Species	Location	Year	Particulars of disease,morbidity & mortality	Area affected	Remarks

Form No. 18 Plants: illegal and legal collection							
Sl. No	Year	Species	Location	Details of material	Quantity	Trade particulars	Remarks

Form No. 21 Extraction of bamboo and disposal: Year							
Range	Species	Quantity extracted		Disposal		Revenue realized(Rs)	
		Commercial	Non-commercial	Locality	Other areas	Commercial	Non-commercial

Form No. 22 Distribution of forest produce under nistar and other concessions including free grant

Range	Produce category	Species	Quantity	Village	No. of families	Revenue(Rs)	Free of charge qty

Produce category: Small timber, poles, bamboo, firewood etc.

Form No 23: NTFP collection : plants and other produce : Year								
Sl. No	Range	Kind of produce	Species	Quantity	Revenue realised (Rs)	Free of charge quantity	Agency involved	
							Local people	Outsider

Form No24: Inter-agency programmes: agencies and schemes(Government) : Year							
Sl. No.	Name of the agency	Central or State	Number & Name of scheme operated.	Physical & financial targets		Area & Location	Remarks
				Given	Achieved		

Form No 25: Programme of NGOs; Year							
Sl. No.	Name of the agency	Hq location	Nature of the scheme operated.	Physical & financial targets		Area & Location	Remarks
				Given	Achieved		

Form No 26: Construction*/maintenance* of infrastructure: roads & bridges(*existing/new) : Year						
Sl. No.	Range	Surface	Name or number	Length covered(Km)	Cross drainage works,bridges with types	Total cost and status

Form No 27: Construction*/maintenance* of infrastructure: buildings(*existing/new): Year							
Sl. No.	Range	Nature of the building	Location	Type of construction	Numbers	Total cost	Status

Form No 28: Development*/maintenance* of infrastructure:communication(*existing/new)

Sl. No.	Range	Type of facility	Location	Number	Cost	Advantage gained	Remarks

Form No 29: Development*/maintenance* of infrastructure:vehicles(*existing/new) Year						
Sl.No	Kind of vehicle	Number	Hq if any	Intended use	Cost	Remarks

Form No 30 :Development of infrastructure: manpower recruitment*/existing manpower*:

Sl.No.	Category of post	Number	Status		Scale of Pay	Intended deployment/deployed	Remarks
			Recruited	Vacant			

Intended deployment: State Purpose e.g. Anti smuggling squad, Fire watcher, Elephant tracker

Form No 31: Developing infrastructure: construction of boundaries,fences							
Sl.No.	Category of construction	Range	Location	Length(meters)	Numbers	Specifications	Remarks

Form No 32: Developing infrastructure: firelines(*existing/new)						
Sl.No.	Range	Fireline category& width	Name of points connected	Length(meters)	Cost	Remarks

Category : Main or subsidiary

Form No 33: Ecotourism				
Sl. No.	Month	Adult	Children	No of days visited by the tourists in a month.

Form No. 34 : Outbreak of Fires: Yearwise							
Sl.No	Range	Location	Extent (Ha)	Dates	Reasons	Estimated Loss	Remarks

Reasons—Established or suspected.

Estimated Loss — No of trees damaged, stacked firewood/timber/bamboo destroyed/damaged by volume & cost,wild animals dead,particulars of sensitive sites affected,other property or life destroyed.

Remarks—State whether the extent of fire has been mapped.

Form No. 35 : Forest Offence Cases: Yearwise								
Name of the Range.	No of offence cases booked.		Total	OR cases		No of cases sent to court	No of cases finalized in the Court	
	U.D.	O.R.		No of cases compounded	No. of P.R. cases		No of cases convicted.	No. of cases acquitted

No. of persons involved.	No. of persons arrested.	Offence cases booked U/S- 56 of OFA, 1972.				
		No. of cases booked.	No. of cases finalized.	No of cases pending.	No. of persons arrested.	Reason for pending of csses

No. of vehicles seized.	No of vehicles confiscated to Govt.	Qty. Of Timber (in Cum), F.w(in qtl) & other forest produces (specify the qty item-wise)seized.	Value of seized produce(in Rs)				Amount of compounding fees collected (in Rs)
			Vehicles	Timber(Cum), F.W(in qtl)	Poles	Others	

Form No. 36: Incentives and awards: Yearwise					
Sl. No.	Range	No. of recipients of incentives for detecting offences	Amount paid(Rs)	Kind of award	Remarks

Form. No. 37: Research projects under implementation by other agencies: Yearwise							
Title	Completed	Ongoing	New	Status	Financial Outlay(Rs)	Expenditure Incurred(Rs)	Remarks

Form No. 38: Ecodevelopment programme : Targets and implements: Yearwise								
Sl.No	Nature of the programme.	Sector	Target set		Achievements		Village	Remarks
			Physical	Financial	Physical	Financial		

Nature of the programme : eg. Pasture development, fodder plantations,establishing biogas units, livestock improvement,revival of local skills such as handicraft

Form No. 39: A summary of allotment of funds, revenue and expenditure : Yearwise							
Plan/non-plan/any other grant.	Sector Central/State /other	Allotment received		Expenditure incurred		Revenue realised	Remarks
		Non-recurrent	Recurrent	Non-recurrent	Recurrent		

Form No. 40: The monitoring programme: Yearwise						
Sl. No.	Title of the programme	Date of initiation	Responsible agency	Technique	Analysis of data	Remarks

16.1.9.2 Deviation Statement

Any large and unusual operation, variation from yield and target for plantation/ regeneration and or other activities provided in control forms constitute a deviation.These also should be spelt out. The check is through control forms and reporting is through deviation statements. Deviation beyond 20% of target is considered to constitute a major deviation. Statement showing deviations from working plan prescriptions should be reflected in Table as follows

Year----------				
Statement showing deviations from working plan prescriptions				
Serial no of deviation.	Control book name, form no, page.	Reference to working plan		Nature of deviation requiring sanction.
		Paragraph	Nature of prescription.	

The DFO will forward through the RCCF, typed copies of this form in triplicate yearly with his copy of control forms. No explanatory remarks are required on this form, but these should be given in the forwarding letter. All minor deviations,which do not permanently alter the basis of management, may be approved and sanctioned by the RCCF on behalf of the PCCF(HoFF) provided he agrees with the necessity of these deviations. One copy of the statement will be returned to the DFO through the RCCF after the deviations have been sanctioned by him and the other copy will be sent to WPO for record. All major deviations without altering the basis of management, the prior sanction of the PCCF(HoFF) should have been obtained in advance, the sanction number and date should be quoted in the last column.

For all major deviations with respect to prescriptions where sanction of the MoEF is mandatory, an explanatory note along with request for regularization has to be sent by PCCF(HoFF) to RAPCCF(MoEF&CC). In case where there is difference in opinion between the PCCF(HoFF) and RAPCCF(MoEF&CC), the former will refer the matter to DGF&SS(MoEF&CC),whose decision shall be final. The PCCF(HoFF) will countersign the deviation statement for reporting to the MoEF&CC.

16.1.9.3 Registers and Records:

The following registers and records should be maintained and updated till last financial year.

1. Compartment histories

2. Divisional notebook. (It should have record of water table at various places in the Division)

3. Fire records and registers.

4. Register of boundary pillars.

5. Plantation journals.

6. Nursery register

7. Register of reserves.

8. Register of rights and concessions.

9. Record of forest produces harvested.

10. Free grants.

11. Register of leases.

12. Register of land transferred to other departments or under FC Act and FRA.

13. Register of soil and water conservation works.

14. Grassland management.

15. Wildlife management. (It should include detailed record of human-wildlife conflicts that includes data on human casualities and injuries,loss of domestic animals, crop damage and compensation paid)

16. Register of invasive species eradiction.

17. Register of government buildings that includes log of the repairs and addition(if any) undertaken in the building.

18. Register of licensed gun holder(s) in the Division.

Annual inspection of DFO office by the RCCF and Range office by DFO is mandatory within three months of completion of financial year to have checks on annual statements in control forms, deviation statements and maintenance of registers and records.

The Divisional Forest Officer shall fill up the Coupe Control Form and Felling Control Form, the format for these forms are mentioned in the National Working Plan Code. DFO will annually make entries in the Control Forms and send them in triplicate to the Conservator of Forests (Working Plan) through Territorial Conservator. After the entries are checked and approved, the Conservator of Forests (Working Plan) will send them back to the DFO through the Territorial Conservator. The procedure for this is laid down clearly in the National Working Plan Code. The control forms should be submitted by the DFO before the month of December of each year. The deviation statement will be send by the DFO in the prescribed format, mentioned in the National Working Plan Code. All the deviations which do not alter the basis of management permanently would be approved by the Conservator of Forests (Working Plan) on the behalf of the PCCF. All the deviations which permanently alter the basis of management laid down in the Working Plan would require prior sanction of the PCCF. This procedure is also clearly elaborated in the National Working Plan Code.

Activities like VSS, JFM, micro planning, AR, ANR work crop condition, regeneration status and other prescribed details should be entered regularly in compartment histories. Maps and other records including a register of reserve forests and other legally constituted forests shall be maintained and kept in safe custody.

16.1.10 Fire protection

In spite of the Orissa Forest (fire protection) Rules 1979, fire continues to be the major threat to forest regeneration and establishment. Without exceptions all blocks are burnt every year. The DFO should try to involve the local officers like BDO and OIC of Police Station to provide information on forest fire to the local staff. The district administration should be convinced on the harmful effects of fire through a district level workshop and subsequently all the local officers also should be involved. This gives good results, and this has been experimented by few DFOs and has very good impact on fire protection.

16.1.10.1 Damage due to forest fire:

Forest fire cause enormous damage to the forest. The following damages are listed.

Damage to the trees
Damage to regeneration
Damage to soil
Damage to productive power of the forest
Damage to protective power of the forest
Damage to wild animals
Damage to the recreational and scenic value

16.1.10.2 Protection against damage by fire:

The methods has been broadly grouped into preventive and remedial measures

Preventive measures:

(a) Goodwill of the local people:

If a man living in the neighbourhood of forest decides to set fire to a forest,no amount of policing can protect it.With goodwill of the local people,not only will the cause of deliberate incendiarism stop but the spontaneous help of the local people in extinguishing fires when they occur accidentally will also be available.

(b) Education of public opinion;

While goodwill of the local people will effectively stop causes of deliberate fires, it can not put an end to accidental fires caused by carelessness of men. Therefore it is necessary to educate public opinion. They should also be explained that forest is national property and any serious damage to this property will jeopardize not only the forests confer on them but also those they will confer on their posterity.Once the villagers get convinced that the management of the forests is being done for their benefit, the cases of accidental fires will get reduced considerably and the help of the local people at the time of fire will be always available.

(c) Forbidding collection of certain items of minor forest produce during summer:

The collection of certain items of minor forest produce during summer often results in fire. For instance, collection of honey, which requires smoking the bees away. If certain items of minor forest produce are not allowed to be collected during summer, chances of accidental or deliberate fire are greatly reduced.

(d) Denial of benefits which accure from forest fires:

During summer the grass in the forest, as else where, dries up and the village cattle do not have any green grass to graze. Therefore villagers, sometimes, deliberately burn the forest so that new flush of green grass may appear on the forest floor for their cattle to graze. The easiest way to prevent such fires is to deny the benefit of grazing to villagers in the forest area.

(a) Action against dereliction of duty and reward for concentious work in preventing fires:

During the fire season, the action taken by staff and other people should be properly supervised and reviewed so that those found guilty of dereliction of duty could be punished and those found working concentiously should be rewarded.This should not be confined to staff alone but extended to panchayats,VSS and other voluntary agencies.Efforts should be made to involve local people in fire protection work. If such voluntary workers,VSS and panchayats are given cash rewards for fruitful cooperation and assistance in organizing preventive measures or carrying out the work themselves, more and more people would take interest in preventing fires and it would become a popular public movement.

(f) Putting up notices prohibiting kindling, keeping and carrying of fire in forest areas in fire season:

Before the beginning of fire season,the Divisional Forest Officer should make arrangement to put up notices in all conspicuous places in every town and village in the neighbourhood of forests and also on all roads passing through or leading to the forest that kindling, keeping and carrying of fire in forest areas in fire season is prohibited.

(g) Organization for forecasting dangerous burning days:

Prevention of fire can be reasonably ensured if there is some organization to predict accurately dangerous burning days. Such prediction can only be made from studies of temperature, wind, humidity,etc. This should be made available to all Ranges. Besides this, satellites based informations can also be used for viewing continental cloud system.All these measures enable the weather forecasting organization to predict precisely, dangerous burning days so that necessary precautions can be taken to prevent start of a fire.

(h) **Organization,training and detailing of staff for fire control activity:**

The important key to effective prevention of fire is organization for fire control activity. The greater the initial attack capability of the organization, the lesser are the chances of fire starting and even when it has started,of its spreading. With the advent of the fire season,fire control organization should be set up and posted in various parts of the forest crew of sufficient strength to deal with the expected fire load of their charge. The crew should be equipped with all the tools and equipment required by them. Frequent drills and competitions should be arranged between parties to test and maintain their fitness to fight any fire.If new or specialized equipment is supplied, they should be given thorough training in its use. At present, fire fighting squad consisting of 10 persons are engaged in each range for the period from 15th of feb to 15th of july every year from CAMPA head. Beside that a unit consisting of 10 persons are stationed in Division Office as an additional support when situation so demands. All the units are provided with a vehicle for mobility and also fire fighting equipments. The facility should continue.

(i) Clearance of firelines:

Inspite of all the precautions and measures taken,fire does occur in the forests and in that case the best way to localize the damage in a limited place is to clear burn the firelines before the commencement of hot weather. Firelines up to 3 to 4m wide are sufficient and they do not affect the production from forests. Even though firelines are permanently clear-felled strips, yet they are infested with grass and shrubs every year. During the summer, they dry up and become highly inflammable. In order that the firelines may serve their purpose, it is necessary that the should be maintained every year before the commencement of hot season. The fixed fire lines proposed are mentioned in **Table.No.16.1** as follows.

Table.No.16.1 List of proposed permanent firelines

Sl.No.	Range	Section	Beat	Location	Length(Km)	Width(3mtr)
1	Athmallik	Pataka	Pataka	Kusumkhuri RF Comp. No. 1	7	3
2				Kusumkhuri RF Comp. No. 1(part) & 2.	8	3
3		Manitri	Rajing	Taleipathar RF Comp No 16,17,18 & 19.	16	3
4				Mahendrapur RF Comp. No. 1(part)	4	3
5				Kuber DPF	9	3
6			Gopalpur	Taleipathar RF Comp No 20,21	8	3
7				MahendrapurRF Comp. No. 1(part) & 2.	4	3
			TOTAL		**56**	
8	Dhandatopa	Maimura	Maimura	KutulsinghaRF Comp No.1,2	5	3
9		Ambasarmunda	Bhuasuninali	Taleipathar RF Comp No 22,23	10	3
10			Adeswar	Taleipathar RF Comp No 1,2	10	3
11		Paiksahi	Sisukata	Dantarikhol RF Comp. No.2,3	10	3
12			Pokanda	KutulsinghaRF Comp No.3,5.	5	3
			TOTAL		**40**	

13	Madhapur	Madhapur	Bijipur	Taleipathar Comp. No. 9	5	3
14				Taleipathar Comp. No. 10	5	3
15				Taleipathar Comp. No. 12	5	3
16				Nuagaon RF Comp. No. 1	10	3
17			Nuagaon	Nuagaon RF Comp. No. 2,3	10	3
18			Kandhapada	Patrapada KF	5	3
19		Kiakata	Kiakata	East Baruni RF Comp. No. 5,6,7	10	3
20			Naikpada	West Baruni RF Comp. No. 2.3	10	3
21			Ghodagadi	East Baruni RF Comp. No.2,3,4	15	3
22		Dekrud	Bharatapur	Nuagaon RF Comp. No.4,5 Taleipathar Comp. No.7,8 Purunapani DPF	25	3
23			Ghosarkhol	Taleipathar Comp. No.5,6	10	3
			TOTAL		**110**	

24	Bamur	Bamur	Bhagamunda	Northern RF	15	3
				Comp No. 1		
25			Bamur	Northern RF	15	3
				Comp No. 3		
26				Northern RF	10	3
				Comp No. 5		
27			Rangamatia	Northern RF	15	3
				Comp No. 12		
28		Sargipalli	Gadghumura	Northern RF	10	3
				Comp No. 13		
29			Sargipalli	Northern RF	10	3
				Comp No. 14		
30		Kadalimunda	Bajpur	Guja RF	5	3
31				Bijamaliha RF	5	3
32				Digi DPF	5	3
33			Tentalapani	East Baruni RF	10	3
				Comp No. 4		
34		Kishorenagar	Himitira	Ghosar RF	10	3
			TOTAL		**110**	

35	Handapa	Handapa	Handapa	Handapa RF Comp. No.4,5,6	7	3
36				Kuturukani DPF	6	3
37				Solanda DPF	4	3
38				Kadalimunda RF	4	3
39			Ichhapur	Ichhapur KF	5	3
40		Urukula	Takaba	Northern RF Comp. No. 23	8	3
41				Northern RF Comp. No. 36	5	3
42				Northern RF Comp. No. 24	5	3
43				Northern RF Comp. No.19,20	8	3
44				Northern RF Comp. No. 34	4	3
45				Northern RF Comp. No. 35	3	3
46				Batipurunapani DPF	4	3
47			Nakchi	Dandarugudi RF	4	3
48			Tileswar	Bankimundi RF	4	3
49	Handapa	Charkhaman	Gundurijharan	Northern RF Comp. No. 44	3	3
50				Northern RF Comp. No.46,47	5	3
51			Khola	Northern RF Comp. No.40,41	6	3
52			Hinjirida	Handapa RF Comp. No.2,3	4	3
53				Northern RF Comp. No.42,43	5	3
54			Baliamba	Gundurijharan DPF	3	3
55		Pedipathar	Laxmipur	Dantarikhol RF Comp No 1 &2.	3	3
56			Dhundi	Dantarikhol RF Comp No 5 &6.	4	3
57				Dantarikhol RF Comp No 4	3	3
58			Pedipathar	Berham DPF	3	3
			TOTAL		**110**	

Remedial measures:

Remedial measures refer to those measures which are taken to extinguish fires when they break out inspite of the preventive measures. The greater the delay in starting control measures after its occurrence, the greater are the difficulties because of large area, and fierceness of fire and the greater are the losses. The delay can be avoided by quick detection, quick communication of occurrence of fire to Range, Section and Beat for quick action to suppress fire.

(a) Detection:

For quick detection of forest fires, local fire watchers should be engaged during the fire season for ground patrolling. Watch towers at strategic points within Northern RF, Taleipathar RF,Handapa RF and Dantarikhol RF should be erected. Satellite based informations transmitted by FSI using MODIS sensor fire alerts on forest hot-spots should be transmitted to the field officials on regular basis during fire season.

(b) Quick communication:

Quick detection of the occurrence of fire is of no use if it is not followed by quick communication of its occurrence to Range head quarters or any other sub-head quarter where fire-fighting squad have stationed. This can be achieved through the use of walkitalkies, Fixed VHF stations at range headquarters,VHF in the vehicles and also by the use of Mobile phones.

(c) Quick action for suppression of fire:

On receipt of the report of the occurrence of fire, the range officer has to take quick action to arrange for the suppression of fire.

POST SUPPRESSION OPERATIONS:

After the fire is completely extinguished, burnt area has to be surveyed, a map of the same has to be prepared and area computed. The cause of the fire has to be investigated and the damage assessed.Then, a final report of the fire together with the map of the burnt area is to be submitted to the Divisional Forest Officer incorporating block and compartment in which fire occurred, approximate area mentioned in the preliminary report, corrected final area of fire, cause of fire, attempts made to trace offender, if any, and estimated damage. The Divisional Forest Officer should get a special fire map prepared on 1:50,000 known as fire map. This map has to be used for 10 years at a time with different kinds of shading for areas burnt in different years. A study of the map will be useful in identifying fire-prone areas. Real time monitoring of forest fires should be ensured to curtail fire severity and sensitize staff at operational level to prevent normal fires in getting converted into wild fires. The online feedbacks on forest fires which are a part of this system should be used to estimate the actual loss of forest strata as well as the loss caused to top-soil.

16.1.11 Grazing:

With the increase in cattle population, grazing has become a problem. Without involvement of the local community this particular problem just cannot be solved. The longer the cattle are ignored as a menace to the forests, the sooner will be the disappearance of the forest. The Orissa Forest (Grazing of cattle) rules, 1980 and grazing prescription of the concerned Working Circle should be strictly enforced. The following preventive measures are proposed to reduce the incidence of Grazing in the Forest area.

(a) Grazing within the Forest Area should be treated as illegal.

(b) Education of public regarding the disadvantages of keeping large number of cattle

The villagers keep large herds of cattle because they require bullocks for ploughing fields and for other agricultural works and dung partly for manuring and partly for burning. So far the first object is concerned,the villagers should be explained that the efficiency of cattle depends upon their health and breed. Since a large number of cattle cannot be fed properly at home,they are just turned out to graze in the wastelands and/or forests. Due to the absence of grass in these areas for most of the year they serve as exercise grounds for cattle and not feeding grounds with the result that the cattle remain semi-starved and ill-fed. Even a large number of such emaciated cattle can not do agricultural work as efficiently as a few wel-fed, healthy and robust cattle can. Similarly production of dung cannot be augmented by keeping large number of semi-starved cattle. A much lesser number of cattle, who are properly fed,produce more dung than a herd of emaciated semi-starved cattle. Thus, the solution of the problem of cattle requirement in agriculture lies not in keeping large number of ill-fed cattle but in keeping small number of well-fed cattle. This can be achieved by castrating inferior and surplus bulls and keeping bulls and cows separately.

(c) Improvement of grass lands and development of mixed forestry:

All grass lands and open forests suitable for management as grass reserves and fodder should be improved and developed into good grass/fodder production areas.

16.1.12 Science & Research:

The Silvicultural Division has a research garden in Talaipathar RF, Compartment No.1C over an area of 20 ha. This was constituted in the year 1982.In this garden the progeny trails of Teak and Gambhar are being done. The teak seeds brought from Berbera, Raigada, Purnakote and Malkangiri are grown for progeny trails. The measurements like number of plants, average diameter, and survival percentage for each year plantation are recorded in the month of January to March. Progeny trails of Gambhar, the seeds of which are brought from Bolangir are also done in the garden. Clonal Seed Orchards of Teak are also grown here. The main problem in this garden is that the comparative studies of the different experiments done in different years are not analyzed to draw specific inferences and the average height measurements are also not taken and hence it is difficult to determine the growth pattern of the species grown here. Another problem is that the matured teak trees in the garden are prone to illicit felling frequently and it is still further difficult to analyze the research observations.

16.1.12.1 Sample Plots:

Sample points are measured regularly over time. They provide forest managers and researchers with a pool of information to assist in monitoring tree growth and various other characteristics such as carbon, forest health and wood quality.Accordingly, it is proposed to lay sample plots of 1 Ha(100mtx100mt) in the locations coming under proposed selection working circle the details of which is furnished in **Table. No. 16.2** as below.

Table. No. 16.2 Proposed sample plots		
Sl.No	Name of the Forest Block	Compartment no.
1	Taleipathar RF	5
		7
		19
2	Northern RF	4
		9
		22
		46

16.1.12.2 Preservation Plots:

Preservation plots are ecological models of existing forest type and are important for studies of ecological succession, recording diversity in plant population with time. Intense biotic interference in forests has wiped out no. of plant species and many of them are listed as endangered and rare ones. Biotic interference in forests causes remarkable changes in vegetation diversity and species composition. A periodic survey would be able to monitor record and throw light on such change. Accordingly, it is proposed to lay preservation plots of 1 Ha(100mtx100mt) in the locations coming under proposed selection working circle the details of which is furnished in **Table. No. 16.3** as below.

Table. No. 16.3 Proposed preservation plots		
Sl.No	**Name of the Forest Block**	**Compartment no.**
1	Northern RF	24
		28
2	Handapa RF	7

16.1.12.3 Research Plots for regeneration study:

Basing on the status of regeneration, research plots for regeneration studies is proposed, the details of which is furnished in **Table. No. 16.4** as below.

Table. No. 16.4Proposed Research Plots for regeneration study		
Sl.No	**Name of the Forest Block**	**Compartment no.**
1	Northern RF	10
		15
		24
2	Handapa RF	7
3	Taleipathar RF	2

16.1.13 Office inspection: Divisional Forest Officer should inspect all Range offices under him at least once every year.

CHAPTER 17
ESTABLISHMENT ADMINISTRATIVE RE-ORGANISATION

17.1 ESTABLISHMENT:

The main objective of the territorial DFO is to protect the forest resources of the division including the wild life. There is a spurt in the forest crimes over the last two decades. The nature of offence is quite different from what it used to be twenty years back. There are often severe encounters while dealing with the criminals. In this process the staff gets assaulted. In Athamallik Division the number of assault and firing cases are increasing of late. The details of these assaults are discussed in the Chapter 3. To combat such a situation, the protection mechanism needs to be strengthened, by increasing the number of staff and equipping them with arms and ammunition. Also ranges should be of small size and there should be separate staff for conducting the raids and doing the general forest protection. Most of these objectives are taken into account while reorganizing the forest department. During reorganization the cadre strength has changed. The details of the previous and the changed cadre strengths are given in the **Table No: 17.1**. Now the protection activities are strengthened by allotting separate ACF, Range Officer, Forester and Forest Guards. These staff should be trained properly in using weapons, unarmed combat and tackling different kinds of situations.

Table 17.1 CHANGES IN THE ESTABLISHMENT STRUCTURE

	Cadre Strength		
Post	**Previous**	**Present**	**Remarks**
D.F.O	**1**	**1**	
A.C.F (Affn Farm Forestry & Comunication)	1	1	The duties of two ACFs are specified for Afforestation and Enforcement & Adimistration.
A.C.F (Enf & Crime Control)	1	1	
A.C.F Admn.Plan, Programme & Eco-Tourisim	0	1	
Total	**2**	**3**	
F.R. (Affn.)	1	0	
F.R. (Enf.)	1	0	
F.R (Range)	5	5	
Total	**7**	**5**	
Dy. R.O (Enf.)	**1**	**6**	
Forester (Affn.)	5	12	
Forester (Enf.)	1	1	The cadre strength is increased by seven.
Forester (check gate)	1	1	
Forester (Section)	18	18	
Total	**25**	**32**	
F.G. (Beat)	56	56	
F.G. (check gate)	6	6	
F.G. (Affn & Enf)	6	6	
Total	**68**	**68**	
Head Clerk	1	1	
Jr. Accountant	1	7	
Sr. Clerk	6	0	
Jr. Steno	1	1	
Jr. Clerk	9	9	
F.E.S	2	1	
Driver (L.V)	2	2	
Dak Runner	2	2	
O.Choukidar	2	2	
Total	**26**	**25**	
G. Total	**119**	**121**	

17.2 ADMINISTRATIVE RE-ORGANISATION

Since the re-organization has come into effect from 1st October 2003, the administrative set up is changed now. The division of labour is made distinct, the enforcement staff is different from afforestation, Hence in this Working Plan no suggestions are made for changing the establishment. Since the Forest Guard is the backbone of the Forest Department, their strength should be increased. Even in the existing cadre strength also there are many vacancies. The number of vacancies is increasing day by day with the retirement of the old staff. Due to recruitment in the cadre of Forester & Forest Guard the young mass is now included in the Departtment with high motivational level for doing the protection job and extension works. The staff position of the Division as on 30.06.2020 is furnished in **Table No.17.2** only.

TABLE NO 17.2	**Sanctioned Strength of Athmallik Forest Division**			
Post Name	**Sanctioned Strength**	**Men in Position**	**Vacancy**	**Remarks**
Dy.C.F(DFO)	**1**	**1**	**0**	
A.C.F.(Affn.)	**1**	**1**	**0**	
A.C.F.(Enf.)	**1**	**1**	**1**	
A.C.F.(Admn.& Eco Tourisim)	**1**	**0**	**1**	
TOTAL	**3**	**2**	**1**	
F.R(Affn.)	1	0	1	
F.R.(Enf.)	1	2	0	
F.R.(Range)	5	3	1	
Total	**5**	**4**	**1**	
Dy,Ranger(Enf)	6	2	4	
Forester(Affn.)	12	2	10	
Forester(Enf.)	1	1	0	
Forester(Check Gate)	1	0	1	
Forester(Section)				
	18	18	0	
Total	**32**	**21**	**11**	
Forest Guard(Beat)	56	38	18	
Forest Guard(C.G)	6	0	6	
Forest Guard(Enf & Affn)	6	0	6	
Total	68	38	30	
Head Clerk	1	0	1	
Junior Accountant	7	7	0	
Junior Clerk	9	4	5	
Jr. Stenographer	1	0	1	
F.E.S	1	0	1	Abolished
Jeep Driver	2	1	1	
Dak Runner	2	1	1	
Office Chowkidar	2	2	0	
GRAND TOTAL	**140**	**81**	**59**	

The present staff strength is quite inadequate. It is suggested that the vacancy of the staff position should be filled up quickly with a view for smooth management of different schemes being implemented in Athmallik Forest Division and to strengthen the protection activities.

17.3 Staff amenities: Staff amenities has been described in chapter-11 of part-I. Basing on the status, the following are proposed.

17.3.1 Housing:

The status of houses of staff has already been reflected in Chapter 11.3. Basing on the need; the following new construction/repair are proposed.

17.3.1.1 New construction:

The proposal for new construction are furnished in **Table No. 17.3** as below.

Table No. 17.3 Proposed construction of New Buildings

Sl. No.	Name of the Buildings
1	DFO Residence
2	Section Forester Quarter, Maimura.
3	Beat Guard quarter, Manitri.
4	Beat Guard quarter, Baliamba
5	Beat Guard quarter, Pedipathar.
6	Beat Guard quarter, Laxmipur.
7	Beat Guard quarter, Gobindapur.

17.3.1.2 Major repair:

The proposal for major repair are furnished in **Table No. 17.4** as below.

Table No. 17.4 Proposed major repair.	
Sl. No.	**Name of the Buildings**
1	DFO Office.
2	ACF Residence.
3	Ministerial Staff Quarter-12 Nos.
4	Forest Rest House, Kiakata.
5	Section Forester Quarter,Handapa.
6	Section Forester Quarter,Madhapur.
7	Section Forester Quarter, Kiakata.
8	Beat Guard quarter, Kadalimunda.
9	Beat Guard quarter, Nakchi.
10	Beat Guard quarter.Bhangamunda.
11	Beat Guard quarter,Phuljhari.
12	Beat Guard quarter.Madhapur.
13	Beat Guard quarter.Nuagaon.
14	Beat Guard quarter.Bijipur.
15	Beat Guard quarter.Raniakata.
16	Beat Guard quarter.Ghodagadi.
17	Beat Guard quarter,Kutugaon.
18	Beat Guard quarter,Rathipur.
19	Beat Guard quarter,Gopalpur.

17.3.2 Communication:

The status of Vehicles of the Division Office & Ranges has already been reflected in Chapter 11.3. At least all the Section Foresters should be equipped with a two wheeler. Out of 18 section forester, only 4 section foresters are provided with two wheelers. Basing on the need; the following additional two wheeler vehicles are proposed, the details of which are furnished in **Table No. 17.5** as follows.

Table No. 17.5 Proposal for two wheelers.	
Sl. No.	**Name of the Ranges**
1	Athmallik Range- 02 Nos.
2	Dhandatopa Range-04 Nos
3	Handapa Range-03 Nos.
4	Bamur Range-03 Nos.
5	Madhapur Range-02 Nos.

Each Forest Guard should be provided with a moped. Until and unless the field staff is given adequate facility, it is difficult to expect the qualitative output from them.

17.3.3 Uniform & supply of field equipments:

There is provision for supply of uniforms to the field staff. Beside that the following field equipments are proposed to be supplied to the field staff.

(i) Measuring Tape (30 mtrs): 74 Nos.

(ii) Measuring caliper: 74 Nos.

(iii) Compass: 74 Nos.

(iv) Ranging Rod: 72 Nos (04 nos to each section).

(v) GPS: 40 Nos.

(vi) GPS PDA: 10 Nos. (02 to each range)

(vii) Mobile Phones: 50 Nos.

(viii) Computer laptop: 18 nos (01 to each section)

(ix) Sufficient Field Monitoring Forms

Proper training should be given on operation and utilization of GPS & GPS PDA. This helps them to locate the points precisely on the ground, boundary survey, plantation survey, area calculations etc.

17.3.4 Rewards:

It is proposed to felicitate the best staff of the Division for outstanding work done by forest field staff and to encourage and promoting competence and dedication among forest personnel. Accordingly, a cash award of Rs 5000/ each is proposed for the best Forester & the best Forest Guard annually. The selection will be done for meritorious services and achievements in any of the following areas.

- Forest protection and anti-smuggling work.
- Promotion of Joint Forest Management.
- Afforestation and plantation work.
- Forest and wildlife management.
- Forest research and experiments.

17.3.5 Personal grievances:

Personal grievances must be met by the DFO to enhance the moral of the staff. During field tour, the DFO must ascertain the personal problems and dispose the matter immediately

CHAPTER-18

TREE OUTSIDE FOREST

18.1 Introduction:

The Forest cover assessment carried out by FSI using satellite data includes all lands comprising of area of one hectare or more, with a tree canopy density of more than 10%, irrespective of their land use and ownership. However, there are many small patches of trees which are less than 1.0 ha in extent, such as trees in village woodlots, homestead, urban areas, scattered trees, trees along roads, canals, railway lines and trees in block and linear formation with area less than 1.0 ha, that are excluded from forest cover due to technological limitations. The contribution of such trees/patches to overall cover is estimated statistically using a sampling based methodology and is termed as tree cover.

Thus, tree cover comprises tree patches outside the recorded forest area which are not captured by remote sensing satellite during forest cover assessment having area less than the minimum mappable area of one hectare. They comprise block and linear patches having area between 0.1 ha and 1.0 ha as also the scattered trees.

18.2 Tree Cover in Odisha:

Tree cover of Odisha has been estimated using sample data of TOF inventory collected over a period of six years, i.e. 2004-10. The estimated tree cover in the state is 4,301 sq km which is 2.76% of the geographical area of the state. Five districts of the state (Boudh, Bhadrak, Gajapati, Nawarangpur and Sambalpur) have been inventorised.

18.3 Status of forest cover in Athmallik Forest Division:

As per India State of Forest Report published in the year 2015, the Forest Cover under various category is furnished as below.

Sl. No.	Category of Forest Cover	Area as per report, 2015. (Ha)
1	Very Dense Forest	9270.959
2	Moderately DensForest	46397.687
3	Open Forest	24036.604
	TOTAL	**79,705.25**
4	Scrub	6059.385
Source: FITGC, ARANYA BHAWAN, Bhubaneswar.		

The total geographical area of Athmallik Forest Division is 1841 sq km. Thus Forest cover constitutes 46.60 % of the geographical area.

The land details excluding the Forest Cover of Athmallik Forest Division stand as follows.

Sl. No.	Category of Land	Area as per report,2015.(Ha)
1	Non Forest	95,764.76
2	Water	3273.856
Source: FITGC, ARANYA BHAWAN, Bhubaneswar.		

18.4 Status of trees outside Forest (TOF) in Athmallik Forest Division:

No information is available as regards to status of trees outside forest of Athmallik Forest Division. For assessing TOF, geometrically rectified IRS p-6-LISS IV (5,8m) or any higher version imageries may be procured from NRSC, Hyderabad. However, the land utilization pattern of Athmallik civil sub-division is furnished in **Table No. 18.1** as below.

Table:18.1 LAND UTILISATION PATTERN (Ha.)			
Category	Athamallik	Kishorenagar	Total
Forest	21190	22699	43889
Misc. Tree Crops	331	524	855
Pasture & Grazing Lands	4922	2160	7082
Cultivable Waste	3382	2295	5677
Non-Agricultural Use	6136	2583	8719
Barren& Uncultivable Land	3180	5582	8762
Current Fallow	7883	6659	14542
Old Fallows	4918	3773	8691
Net Sown Area	15983	13769	29752
Source: District Statistical Handbook, 2011			

NB: The estimate excludes Urban areas, Reserve Forests, Protected Forest areas, Project area, Hill Blocks, Villages submerged under river.

Thus areas coming under barren & uncultivable land can be made available for development of production forestry and Pasture & grazing lands can be made available for development of pasture.

18.5 Activities undertaken for development of TOF:

During previous working plan period; the following activities are taken up for development of tree cover.

18.5.1 Distribution of seedlings: To increase tree cover outside forest areas, the deptt. has been distributing seedling of tree species free of cost to local people under 13th F.C Grant, CAMPA, MGNREGS, Increasing green cover (Agro Forestry and Farm Forestry). Details of seedlings distributed under various schemes from **2010-11 to 2015-16** is furnished in **Table No.18.2**

TABLE NO. 18.2 AGROFORESTRY

Sl No.	Year	Name of the Scheme	No. of seedlings distributed
1	2010-11		100000
2		CAMPA	100000
3	2011-12	Increasing tree cover outside the Forest Area.	500000
4		Agro Forestry	0
5	2012-13	Farm Forestry	500000
6	2013-14	Farm Forestry	740000
7		Agro Forestry	500000
8	2014-15	Farm Forestry	740000
9		Agro Forestry	500000
10	2015-16	Agro Forestry	500000

18.5.2 Road side avenue plantation:

Details of plantations raised on road side under various schemes is furnished in **Table. No 18.3** as follows

18.6 Status of other Govt. lands available for Production Forestry & Pasture development:

The category of land available for production forestry and pasture development is furnished in **Table No. 18.4** as follows.

Table. No. 18.4

Category of land	Athmallik Block	Kishorenagar Block	Total area
Barren & Uncultivable Land	3180 Ha	5582Ha	8762Ha
Pasture & Grazing Lands	4922Ha	2160Ha	7082Ha

18.7 PWD Roads:

The total of PWD roads available in Athmallik civil sub-division is furnished in **Table No. 18.5** as follows.

Table. No. 18.5 List of PWD Roads

Sl. No	Name of the Road	Length IKm
1	Boinda- Athmallik-Kiakata Road.	68.447
2	Kaintragarh-Doruha Road	23.42
3	Athmallik Town Road	7.4
4	Nuaghar-Malipadar Road	9
5	Thagurgarh- Nakchi Road	17.5
6	Bamur-Dhaurapali-MadhapurRoad	32.2
7	Dohali-BareniRoad	17.25
8	Persumal-Kishorenagar Road	20.3
9	Handapa to pattapathar vis Bileinali Road	11.5
10	Handapa to Luhamunda Gunthapada via Bidising Road	7.07
11	Handapa to Patrapada Road	17
12	Sanhulla-Paiksahi-Kantapada Road.	17.6
13	Thagurgarh-Kantapada Road	16.8
14	Thagurgarh-TapdholRoad	20
15	Maimura-Korab Road	8.5
16	Sanhulla-Paiksahi-Mindol Road	10.5
TOTAL		304.487

18.8 RD roads:

The major RD Roads available in in Athmallik civil sub-division is furnished in **Table. No. 18.6** as follows

Table. No. 18.6	List of Major RD Roads	
Sl. No	Name of the Road	Length In Km
1	Hinjagola-Dandasingha-Kadaliberini	13
2	Thagurgarh-Ambasarmunda Road	10
3	Kaintragarh-Daruhan Road	25
4	Boinda-Makarmunda Road	10
5	Luhamunda-Jamunali Road	26
6	Batrakhol-Ramgarh Road	8.12
7	Arakhakata Rahuni chhak Mamunijharan Adeswar Bandhagaon Road	18.2
8	Urukula serenda khamar Angapada Road	8
9	Kadalimunda-Saleigotha Tapursingha Brahmanpali Road	8
10	Bamurchhak to Talpadar	11.03
11	Kaintragarh-Dharuan(Part-1)	13.16
12	Kaintragarh-Dharuan(Part-11)	10.8
13	NH 42 to Katrang Road	9.21
14	Handapa Chhak(NH-42) to Patrapada Road	13.37
15	Thagurgarh-Talmalia Road	18.5
16	PWD Road to Kusuni	10.36

18.9 Canal roads:

The canal road of Manjore irrigation project is furnished in **Table No. 18.7** as below.

Table No. 18.7 Canal road of manjore irrigation project			
Sl. No.	**Category**	**Site details**	**Length in Km**
1	Left canal	Damsite to Rajim	10.774
2	Right canal	Damsite to singarmuda	5.88

18.10 Prescription:

*** A total of 1000 Ha of barren & uncultivable land be covered under block plantation.**

*** A total of 1000 ha of pasture & grazing lands be covered with fodder and grass plantation.**

*** 200 Rkm of roads (PWD, RD, Canal) be covered under road side avenue plantation.**

*** Geometrically rectified IRS p-6-LISS IV (5,8m) or any higher version imageries may be procured from NRSC, Hyderabad.**

CHAPTER-19

GENERAL FINANCIAL FORECAST AND FINANCIAL PLAN OF OPERATION

19.1 GENERAL CONSTITUTION:

The prescriptions of this plan have aimed at maintaining the sustainability of the forest in perpetuity. Further, this plan has prescribed marking of trees on conservative manner in Selection Working Circle. Thus it is presumed that the prescription and the resources for its implementation will be within the reach as per the calendar of operations stipulated in this plan to achieve the set objectives.

The prescription of Selection Working Circle, salvage operations to wind fallen, uprooted trees, tending operation etc. though subordinated to forest conservation, yield of some timber and firewood are expected.

19.2 COST OF PREPARING THE PLAN:

19.2.1 The preparation of the plan started during the year 2016-17 and in progress. The expenditure incurred during 2016-17 to 2020-2021 under different Head/subead is furnished in Table No 19.1 as below.

Table No 19.1Name of the Scheme

Non Plan	2016-17	2017-18	2018-19	2019-20	Total
Establishment	5934051	8326309	6250077	6349808	26860245
Building Repair (Residential)	200000	250000	200000	270000	920000
Building Repair (Non-Residential)	100000	100000	200000	300000	700000
Minor Work	100000	180000	0	0	280000
Working Plan	0	211860	0	0	211860
Survey & Inv.	15000	0	0	0	15000
Maintenance of Boundary	0	8055	0	0	8055
					0
State Plan I.F.M.	1556347	0	0	0	1556347
					0
State Sector Scheme.					0
Working Plan	0	40000	287200	181753	508953
Survey		5000	3500	0	8500
Forest consolidation	0	33842	0	0	33842
Forest Conservation & Development	0	104044	0	500000	604044
Regeneration	0	29829	0	0	29829
Totaal					31736675

Out of the total expenditure, the cost of establishment is Rs.28760245/- which comes to 90.62% of the total expenditure and amount spent on actual working plan preparation is Rs. 2976430/-which comes to 9.38% of the total expenditure . The Working Plan area of the Division is 45521.9078 ha.The cost of revision of working plan area comes to Rs.632/- per hectare.

19.3 Financial Implications for Implementation of The Plan:

The Revised Working Plan of Athmallik Forest Division has been prepared for the period of ten years i.e. 2020-21 to 2029-30. The financial implications for implementation of this working plan has been calculated based on cost norm prevalent now. This can be modified as per requirements of this plan as well as ground realities. Thus these norms are subject to change as per changed field condition and instruction from the higher authorities.

19.4 Estimation of expenditure on different Working Circle.

19.4.1 Treatment of Selection-cum-improvement Working Circle – The total earmarked area under this Working Circle is **19969.72 ha.** The cost norm per ha to be followed in Selection Working Circle is furnished in **Table. No. 19.2** as under.

Table No.-19.2 Expenditure for coupe works per ha.

Sl. No.	Item of work	Mandays	Cost per Mandays	Total in Rs.
1	Demarcation of the coupe	0.1	298	29.8
2	Marking of coupe	0.2	298	59.6
3	Cleaning of the coupe	10	298	2980
4	Fire protection & grazing	3.3	298	983.4
	Total	13.6	298	4052.8

Coupe working over 19969.72 Ha.X 4052.80= Rs.80,933,281/-

19.4.2 Treatment of Rehabilitation Working Circle

The total area under rehabilitation working circle is 15,425.9026 ha . The cost norm that to be followed is given in **Table 19.4, 19.5 , 19.6, &19.7.** Gap plantation has been prescribed for rehabilitating the degraded forest within RF & DPF while block plantation is proposed for VF areas. Regeneration cleaning is proposed for maximum areas.

19.3 COST NORM FOR AIDED NATURAL REGENERATION (ANR with out gap) PER HECTARE, Wage rate Rs.298/- per day.

Sl.No.	Item of work	Preferable period of execution	Person days	Labour cost Rs.200/- per day.	Material cost (in Rs.)	Total (in Rs.)
1	2	3	4	5	6	7
			OTH YEAR			
1	Survey, demarcation and pillar posting, GPS reading with mapping	Nov./Dec.	2	596	0	596
2	Site preparation	Nov./Dec.	2	596	0	596
3	Cutting of high stumps		5	1490	0	1490
	SUB TOTOAL		**9**	**2682**	**0**	**2682**
			1ST YEAR OPERATION			
1	Silvicultural operation involving cleance of weeds, cutting of climbers, singling of shoots etc.	Sep/Oct.	**15**	**4470**	**0**	**4470**
2	Soil conservation measures (Staggered trenches of diamension (2 m x 0.5 m x o.5 m @ 60 nos per ha.) or its equavalent	Sep/Oct.	**20**	**5960**	**0**	**5960**
3	Fire line tracing & inspection path	Feb/Mar.	**3**	**894**	**0**	**894**
4	Watch & ward	Aug-Mar.	5	1490	0	1490
5	Contigency & Unforeseen expenditure.		**0**	**0**	**500**	**500**
	SUB TOTOAL		**43**	**12814**	**500**	**13314**
			2ND YEAR OPERATION			
1	Soil conservation measures (Renovation of staggered trenches etc).	Sep/Oct.	8	2384	0	2364
2	Fire line tracing & inspection path	Feb/Mar.	1	298	0	298
3	Watch & ward (Whole year.	Apr-Mar.	7	2086	0	2086
4	Contigency & Unforeseen expenditure.		0	0	300	300
	SUB TOTOAL		**16**	**4768**	**300**	**5068**
			3RD YEAR OPERATION			
1	Fire line tracing & inspection path	Feb/Mar.	1	298	0	298
2	Watch & ward (Whole year.	Apr-Mar.	7	2086	0	2086
3	Contigency & Unforeseen expenditure.		0	0	300	300
	SUB TOTOAL		**8**	**2384**	**300**	**2384**
			4th YEAR OPERATION			
1	Fire line tracing & inspection path	**Feb/Mar.**	**1**	**298**	**0**	**298**
3	Watch & ward & cultural operat.	Apr-Mar.	7	2086	0	2086
4	**Contigency & Unforeseen expenditure.**		**0**	**0**	**100**	**100**
	SUB TOTOAL		**3**	**894**	**100**	**994**

ABSTRACT					
SL.No.	**Year**	**No.person days**	**Labour cost @ Rs.298/- per day**	**Material**	**Total Cost**
1	**0^{th} Year**	**9**	**2682**	**0**	**2682**
2	**1^{st} year**	**43**	**12814**	**500**	**13314**
3	**2^{rd} year**	**16**	**4768**	**300**	**5068**
4	**3^{rd} year**	**8**	**2384**	**300**	**2684**
5	**4^{th} year**	**3**	**894**	**100**	**1594**
TOTAL		**79**	**23542**	**1200**	**24742**

19.4 COST NORM FOR AIDED NATURAL REGENERATION (ANR) @200 PLANTS PER HECTARE,						
Wage rate Rs.298/- PER DAY.						
Sl.No.	Item of work	Preferable period of execution	Person days	Labour cost Rs.298/- per day.	Material cost (in Rs.)	Total (in Rs.)
1	2	3	4	5	6	7
0^{TH} YEAR						
1	Survey, demarcation and pillar posting, GPS reading with mapping	Nov./Dec.	2	596	0	596
2	Site preparation	Nov./Dec.	2	596	0	596
3	Silvicultural operation including clearance of weed, climber cutting high stump cutting, singling of shoots etc.	Jan/feb.	5	1490	0	1490
4	Nursery cost (6 months old seedling) part @Rs.9.45/- seedling (Rs.6.67 in 0^{th} year + Rs.2.78 in 1^{st} year) for 220 seedlings ((200 + 20	Jan/Mar	5.5	1639	367	2006
5	Contigency & Unforeseen expenditure.		0	0	133	133
	SUB TOTOAL		**14.5**	**4321**	**500**	**4821**

1ST YEAR OPERATION						
1	Nursery cost (6 months old seedling) balance @Rs.2.78 for 220 seedlings.	Apr-Jul	2.5	745	112	857
2	Pitting 30 cm cube size	Feb/Mar.	6	1788	0	1788
3	Carriage and planting including casualty replacement.	Jul/Aug.	5	1490	0	1490
4	Complete weeding, soil working,& manuring.	Aug/Sep.	6	1788	0	1788
5	Cost of vermin compost @ 200 gms/plant @Rs.20/-per kg =Rs.800/- and Granular insecticide 5 gms/plant @ Rs.80/- per kg =Rs.80.00	Aug/Sep.	0	0	880	880
6	Cost of chemical fertilizer		0	0	324	324
	(a)Urea 70 gms/plant in two subsequent doses@ Rs.6/-per kg.= 84.00					
	(b) NPK 50 gms/plant @Rs.24/-per kg= Rs.240.00 as basal dose.					
7	Silvicultural operation involving clearance of weed, climber cutting of climbers , singling of shoots	Sep/Oct.	15	4470	0	4470
8	Soil conservation measures (Staggered trenches of diamension (2 m x 0.5 m x o.5 m @ 60 nos per ha.) or its equavalent	Sep/Oct.	**20**	**5960**	**0**	**5960**
9	Fire line tracing & inspection path	Feb/Mar.	**3**	**894**	**0**	**894**
10	Watch & ward	Aug-Mar.	7	2086	0	2086
11	Contigency & Unforeseen expenditure.		**0**	**0**	**304**	**304**
	SUB TOTOAL		**64.5**	**19221**	**1620**	**20841**
2ND YEAR OPERATION						
1	Casualty replacement including cost of seedling, carriage and planting	Jul/Aug.	1	298	189	787
2	Complete weeding and cultural operations.	Sep/Oct.	2	596	0	596
3	Soil working working & manuring	Sep/Oct	2	596	0	596
4	Cost of ferto;ozer insecticide (a) Vermicompost 200 gms/plant @Rs.20/-per kg =Rs.800.00.	Sep/Oct	0	0	808	808

3RD YEAR OPERATION						
1	Complete weeding & cultural operation	Aug/Sep.	1	298	0	298
2	Soil Working	Aug/Sep	1	298	0	298
3	Fire line tracing and inspection path.	Feb/Mar.	1	298	0	298
4	Watch &ward (Whole year.)	Apr-Mar.	7	2086	0	2086
5	Contigency & Unforeseen expenditure.		0	0	200	200
	SUB TOTOAL		**10**	**2980**	**200**	**3180**
4th YEAR OPERATION						
Fire line tracing & inspection path		**Feb/Mar.**	**1**	**298**	**0**	**298**
Watch &ward and cultural operation		Apr-Mar.	2	596	0	596
SUB TOTOAL			**3**	**894**	**0**	**894**

ABSTRACT					
SL.No.	**Year**	**Person days**	**Labour (Rs)**	**Material (Rs.)**	**Total Cost (Rs)**
1	**0th Year**	**14.5**	**4321**	**500**	**4821**
2	**1st year**	**64.5**	**19221**	**1620**	**20841**
3	**2rd year**	**21**	**6258**	**1178**	**7436**
4	**3rd year**	**10**	**2980**	**200**	**3180**
5	**4th year**	**3**	**894**	**0**	**894**
TOTAL		**113**	**33674**	**3498**	**37172**

19.5 COST NORMFOR AIDED NATURAL REGENERATION (ANR) @400 PLANTS PER HECTARE, wage rate Rs.298/- PER DAY.						
Sl.No.	Item of work	Preferable period of execution	Person days	Labour cost Rs.298/- per day.	Material cost (in Rs.)	Total (in Rs.)
1	2	3	4	5	6	7
			0TH YEAR			
1	Survey, demarcation and pillar posting, GPS reading with mapping	Nov./Dec.	2	596	0	596
2	Site preparation	Nov./Dec.	2	596	0	596
3	Silvicultural operation including clearance of weed, climber cutting, high stump cutting, singling of shoots etc.	Jan/feb.	5	1490	0	1490
4	Nursery cost (6 months old seedling) part @ Rs.9.45/-seedling (Rs.6.67 in 0th year + Rs.2.78 in 1ST year) for 440 seedlings ((400 + 40	Jan/Mar	11	3278	735	4013
5	Contigency & Unforeseen expenditure.		0	0	165	165
	SUB TOTOAL		**20**	**5960**	**900**	**6860**
			1ST YEAR OPERATION			
1	Nursery cost (6 months old seedling) balance @Rs.2.78 for 440 seedlings.	Apr-Jul	5	1490	223	1713
2	Pitting 30 cm cube size	Feb/Mar.	**12**	**3576**	**0**	**3576**
3	Carriage and planting including casualty replacement.	Jul/Aug	**10**	**2980**	**0**	**2980**
4	Complete weeding, soil working & manuring	Aug/Sep.	**12**	**2400**	**0**	**2400**

2ND YEAR OPERATION						
1	Casualty replacement including cost of seedling, carriage and palnting	Jul/Aug.	2	596	378	974
2	Complete weeding and cultural operation	Sep/Oct.	4	1192	0	1192
3	Soil working working & manuring	Sep/Oct	4	800	0	800
4	Cost of ferto;ozer insecticide (a) Vermicompost 200 gms/plant @Rs.20/-per kg =Rs.1600.00. (b)Granular insecticides 5 gms/plant for 40 plants 200 gms Rs.80/-per kg = Rs.16.00	Sep/Oct	0	0	1616	1616
5	Fire line tracing and inspection path.	Feb/Mar.	1	298	0	298
6	Soil conservation measures (Renovation of staggered trenches etc.)	Sep/Oct	8	2384	0	2384
7	Watch & ward (Whole year.	Apr-Mar.	7	2086	0	2086
8	Contigency & Unforeseen expenditure.		0	0	362	362
	SUB TOTOAL		**26**	**7748**	**2356**	**10104**
3RD YEAR OPERATION						
1	Complete weeding & cultural operation	Aug/Sep.	2	596	0	596
2	Soil Working	Aug/Sep	1	596	0	596
3	Fire line tracing and inspection path.	Feb/Mar.	1	298	0	298
4	Watch & ward (Whole year.	Apr-Mar.	7	2086	0	2086
	SUB TOTOAL		**12**	**3576**	**0**	**3576**

4th YEAR OPERATION						
3	Fire line tracing and inspection path.	Feb/Mar.	1	298	0	298
4	Watch &ward (Whole year.	Apr-Mar.	2	594	0	594
	SUB TOTOAL		**3**	**894**	**0**	**894**

ABSTRACT

SL.No	Item of work.	Person days	Labour (Rs)	Material (Rs)	Total Cost (Rs)
1	0th Year	20	5960	900	6860
2	1st year	84	25032	2950	27982
3	2rd year	26	7748	2356	10104
4	3rd year	12	3576	0	3576
5	4th year	3	894	0	894
	TOTAL	145	43210	6206	49416

Abstract of expenditure:

ANR with gap planting of 200 plants/Ha: 3,000 Ha X37172 = Rs.111,516,000/-
ANR with gap planting of 400 plants/Ha :2,000Ha X Rs. 49416 =Rs.98,832,000/-
Soil & Moisture Conservation: 5000 Ha X Rs.7450 = Rs.37,250,000/-

Grand Total : Rs 247,598,000/-

19.4.3 Treatment of Plantation Working Circle.

In this Working Circle only the gap plantation has been prescribed in the open patchs. The total area under plantation to be taken up is **1689.7952** ha. The cost norm that will be followed in gap plantation has already been given in **Table 19.5.** The old plantation will be maintained during the plan period where maintenance, cleaning and protection is prescribed. The cost norm that will be followed in maintenance of old existing plantations will be as under.

1. Tending @1.0 mandays/ha. 298= Rs.298.00
2. Protection @ 0.1 mandays / ha.= Rs. 29.80

= Rs.327.80

The expenditure as per the prevailing norm is furnished as below.

1553 ha. XRs. 327.80= Rs. 553,914/-

Soil & Moisture conservation 1689.7952 X 7450= Rs.509,073/-

ANR with gap planting in VF Areas 136ha.XRs.37172/-= Rs.5,055,392/-

Grand total = **Rs. 6,118,379/-**

19.4.4. Treatment of Protection Working Circle –The total area of the Working Circle is 8436.49 ha.The work prescribed are furnished as below.

Abstract of expenditure:

Soil & moisture conservation: 8436.4962 Ha x 7450 = Rs.62851897.00

Habitat improvement in Tiger corridor area: = Rs. 95,00,000.00

GRAND TOTAL : =Rs.72351897.00

19.4.5. Estimation for improvement of Bamboo (Overlapping) Working Circle - The total area under Bamboo (Over lapping) Working Circle is **7012.54** ha. The cost norm that will be followed for plantation under OBDP & NBM is furnished as follows.

Table No.19.6 PER HECTARE COST NORM FOR RAISING OF BAMBOO PLANTATION UNDER OBDP (STATEPLAN) SCHEME.				
Sl.No	Period of Activity	Mandays	Labour cost Rs.298/- per day.	Total cost (in Rs.)
1	3	4	5	7
A.0TH YEAR (ADVANCE WORK) PRE-PLANTING OPERATION.				
1	May-Mar.	11.5	3436	4163
2	Feb-Mar.	2	596	596
3	Feb-Mar.	2	596	596
4	Feb-Mar.	2	596	596
5	Feb-Mar	25	7450	7450
		42.5	**12665**	**13401**
B. FIRST YEAR/PLANTING YEAR				
1	Apr-Jul	4	1192	1514
2	July-Aug.	5	1490	1490
3	July-Aug	0	0	1077
4	Aug-Sept	2	596	596
5	Oct-Nov	2	596	596
6	Oct-Nov.	2	596	836
7	Jan-Feb	13	3874	3874
8	Jan-Feb	3	894	896
9	Oct-Mar.	7	2086	2086
10		0	0	211
		38	**11324**	**13174**

C.SECOND YEAR MAINTENANCE				
1	Mar-July	1	298	676
2	Aug-Sep	1	298	298
3	Aug-Sept	0	0	437
4	Aug-Sep	2	596	596
5	Oct-Nov.	2	596	596
6	Jan-Feb.	3	894	894
7	Apr-Mar	15	1788	3000
8		0	0	185
		24	**4470**	**6682**
D. THIRD YEAR MAINTENANCE				
1	Aug-Sep	2	596	596
2	Aug-Sept	0	0	437
3	Oct-Nov.	2	596	596
4	Jan-Feb.	3	894	894
5	Whole year	0	0	207
		22	**6556**	**7200**
ABSTRACT				
Sl No	Mandays		Labour cost Rs.200/- per day.	Total cost (in Rs.)
A.	**42.5**		**12665**	**13401**
B.	**38**		**11324**	**3174**
C.	**24**		**7152**	**5470**
D.	**22**		**6556**	**7200**
	126.5		**37697**	**41927**

Table.No.19.7 COST NORM FOR ODISHA BAMBOO DEVELOPMENT PROGRAM ME (NBM) Per hectare cost norm for Bamboo Plantation @ 333 Plants/Wage rate @ Rs.298/- per day.				
Sl.No.	Preferable period of execution	Person days	Labour cost Rs.298/- per day.	Total (in Rs.)
1	3	4	5	7
(ADVANCE WORK) PRE-PLANTING OPERATION- 0TH YEAR				
1	May-Mar	9.5	2831	3456
2	Feb-Mar.	2	596	596
3	Feb-Mar.	2	596	596
4	FebMar.	2	596	596
5	Feb./Mar.	21	6258	6258
		36.5	**10877**	**11502**
FIRST YEAR/PLANTING YEAR				
1	**Apr-Jul.**	**3.5**	**1043**	**12076**
2	**Jul-Aug.**	**5**	**1490**	**1490**
3	**Jul-Aug**	**0**	**0**	**897**
4	**Jul-Aug.**	**2**	**596**	**596**
5	**Oct-Nov**	**2**	**596**	**596**
6	**Oct-Nov**	**2**	**596**	**596**
7	**Jan-Feb**	**9**	**2682**	**2682**
8	**Jan-Feb**	**3**	**894**	**894**
9	**Oct-Mar**	**7**	**2086**	**2086**
10		**0**	**0**	**200**
		33.5	**9983**	**11513**
SECOND YEAR MAINTENANCE				
1	**Mar-Jyl**	**1**	**596**	**908**
2	**Aug-Sept**	**1**	**298**	**298**
3	**Aug-Sept**	**0**	**0**	**364**
4	**Jul-Aug.**	**2**	**596**	**596**
5	**Oct-Nov.**	**2**	**596**	**596**
6	**Mar-Jun**	**3**	**894**	**894**
7	**Whole year**	**15**	**4470**	**4470**
10		**0**	**0**	**204**
		24	**7152**	**8032**

THIRD YEAR MAINTENANCE				
1	Aug-Sept.	2	596	596
2	Aug-Sept.	0	0	364
3	Oct.Nov	2	596	596
4	Mar-Jun	3	894	894
5	Whole year	15	4470	4470
6		0	0	211
		24	6556	7131
FOURTH YEAR MAINTENANCE				
1	Feb-Mar.	4	1192	5192
2	Whole year	15	4470	4470
		0	0	500
		19	5662	10162
FIFTH YEAR MAINTENANCE				
1	Feb-Mar.	4	1192	4692
2	Whole year	15	4470	4470
3		0	0	500
		19	5662	4662

ABSTRACT

Sl.No.	Mandays	Labour cost Rs.298/- per day.	Material cost (in Rs.).	Total In(Rs.)
1	36.5	10877	625	11502
2	33.5	9983	1530	11513
3	24	7152	880	8032
4	22	6556	575	7131
5	19	5662	4500	10162
6	19	5662	4000	9662
	154	45892	12110	58002

The activitywise expenditure is as follows.

Abstract of expenditure:

Regeneration of degraded Bamboos: 2000 Ha x Rs.2980/- = Rs.59,60,000/- Bamboo plantation under OBDP scheme: 500 Ha x Rs.419 27/- =Rs.20,963,500/-

Bamboo plantation under NBM scheme:500Ha.x Rs.58002/- = Rs.29,001,000/-

GRAND TOTAL: = Rs.55,924,500/-

19.4.6 Treatment of N.T.F.P. (Overlapping) Working Circle - The total area under Non-Timber Forest Produce (Over lapping) Working Circle is **37085.4178** ha. The treatment includes the preference of Non-Timber Forest Produce and Medicinal species in planting operation, research on Non-Timber Forest Produce items, publicity, and marketing. The creation of awareness on proper scientific working of various NTFP items and its value addition among the villagers is to be taken up. The activitywise expenditure is furnished as follows.

Training, capacity building & value addition Scheme= Rs.1,00,00,000/-

Construction of drying yard 5nos @ 6,00,000 = Rs. 30,00,000/-

Total Expenditure : ***Rs 1,30,00,000/-***

19.4.7 Treatment of Wildlife (overlapping) Working Circle - The total area under this Working Circle is **45521.9078 ha**. The activitywise expenditure is furnished as follows.

Inoculation of village cattles = Rs.10,00,000/-

Engagement of elephant trackers, squads and payment of crop compensation.Purchase of crackers, search lights, spot light,
torches and, drums, mega phones etc. = Rs.13,000,00,00/-

Capacity building training, awareness activities. = Rs. 10,00,000/-

Development of salt-licks = Rs. 5,00,000/-

Construction of checkdams = Rs.1,000,00,00/-

Total Expenditure: = Rs.14,25,00,000/-

19.4.8 Treatment of J. F. M. (Overlapping) Working Circle - Prescription is made for strengthening of the existing VSS through different income generating programmes, resolution of intra and intra VSS dispute for proper co- ordination and motivation for protection of forests, creation of new VSS, incentive and rewards & exposure visit to the VSS etc. The activitywise expenditure is furnished as follows.

Strengthening of VSS, capacity building & preparation of micro plan = Rs.20,000,00/-
Implementation of other income generation activities such as apiculture, pisciculture, poultry, vermiculture, sericulture etc. = Rs.50,000,00/-
Entry point activities = Rs.50,000,00/-

Grand total = Rs.1,20,00,000/-

19.4.9 Estimate under general protection: The activity wise annual expenditure is furnished as follows.

Engagement of squad 10 nos. including cost of POL & Vehicle =Rs.14,00,00,000/-

Construction of 2 Nos. Mobile barrack at vunnarrble point = Rs.40,00,000/-

Grand total = Rs.14,40,000/-

19.4.10 Estimate under eco-tourism: The activity wise annual expenditure is furnished as follows.

Construction of nature camp house with all possible accessories at Takaba and Development of nature trail near watch tower of Madhapur Range = Rs.40,00,000/-

Total expenditure:= Rs.40,00,000/-

19.4.11 Estimate under climate change: The activity wise annual expenditure is furnished as follows.

Installation of instruments for recording of daily temperature, Rainfall and Humidity at Takaba & Dhandatopa = Rs.1,00,000/-

Total expenditure: = Rs.1,00,000/-

19.4.12 Estimate for socio-economic development of fringe villages (100 villages): The activity wise annual expenditure is furnished as follows.

Provision of smokeless chullahs -5000 nos. @Rs.2000/- = Rs.1,00,00,000/-

Total expenditure: = Rs.1,00,00,000/-

19.4.13 Estimate for miscellaneous activities : The activity wise annual expenditure is furnished as follows.

Repair and maintenance of 101 Kms each year @ Rs.15000/- per Kms.of forest roads.	=	Rs.1,51,50,000/-
Boundary clearance over 390 km of RFin each 5 yeyars @Rs.2980/- per Kms.	=	Rs. 23,24,400/-
New construction of Pillars of 125 nos. in RF@ Rs.3000/-	=	Rs. 3,75,000/-
Repair opf Old Pillars 900 nos. @ Rs.1000/-	=	Rs. 9,00,000/-
New construction of 1000 nos.Pillars of DPF & PF @Rs.500/-	=	Rs. 5,00,000/-
Maintenance of fireline over 500Kms. each year @ Rs.1490/- For 10 years	=	Rs. 74,50,000/-

Total expenditure: = Rs 2,66,99,400/-

19.4.14 Estimate for establishment and labour : The activity wise annual expenditure is furnished as follows.

Expenditures to be incurred under establishment and labour.		
Year	**Activities**	**Expenditure (Rs)**
1st	New construction of DFO Residence.	30,00,000.00
	Major repair of DFO Office, ACF Residence,Beat Guard quarter, Gopalpur.	10,00,000.00
	Measuring Tape(30 mtrs): 74 Nos Measuring caliper : 74 Nos.	07,00,000.00
		01,20,000.00
2nd	New construction of Section Forester Quarter,Maimura.	07,50,000.00
	Beat Guard quarter, Manitri.	05,30,000.00
	Major repair of Ministerial staff Qr-6nos,Forest Rest House, Kiakata,Beat Guard quarter, Nakchi.	10,00,000.00
	Compass: 74 Nos, Ranging Rod: 72 Nos	07,00,000.00
		01,00,000.00
3rd	New construction of Beat Guard quarter, Baliamba.	10,60,000.00
	Major repair of Ministerial staff Qr-6nos,Section Forester	10,00,000.00
	GPS PDA: 05 nos,GPS; 20nos,Mobile phone: 20nos	07,00,000.00
	Laptop: 08 nos	08,00,000.00
4th	New construction of Beat Guard quarter, Laxmipur.	10,60,000.00
	Major repair of Section Forester Quarter,Madhapur,	05,00,000.00
	GPS PDA: 05 nos,GPS; 20 nos,Mobile phone: 30nos	07,00,000.00
5th	Major repair of Beat Guard quarter,Phuljhari,	05,00,000.00
	Purchase of 02 motor cycles & 16 mopeds.	09,50,000.00
6th	Major repair of Beat Guard quarter.Madhapur,	03,00,000.00
	Beat Guard quarter.Bijipur,Beat Guard uarter.Ghodagadi.	

Total expenditure: Rs 01,63,50,000.00

19.4.15 Estimate for Tree outside Forest : The activity wise annual expenditure is furnished as follows.

Expenditures to be incurred under tree outside forest.		
YEAR	**Activities**	**Expenditure (Rs)**
1st	Procurement of Geometrically rectified IRS p-6-LISS IV(5,8m) or any higher version imageries.	5,00,000.00
	0th year Plantation of Production forestry-100ha.	22,13,900.00
	0^{th} year plantation of 20 Rkm avenue plantation.	01,17,180.00
2nd	0th year Plantation of Production forestry-100ha.	22,13,900.00
	0^{th} year plantation of 20 Rkm avenue plantation.	01,17,180.00
	1^{st} year Plantation of Production forestry-100ha.	21,12,500.00
	1^{st} year plantation of 20 Rkm avenue plantation.	06,64,800.00
	Development of pasture of over 100 Ha.	10,00,000.00
3rd	0th year Plantation of Production forestry-100ha.	22,13,900.00
	0^{th} year plantation of 20 Rkm avenue plantation.	01,17,180.00
	1^{st} year Plantation of Production forestry-100ha.	21,12,500.00
	1^{st} year plantation of 20 Rkm avenue plantation.	06,64,800.00
	2^{nd} year Plantation of Production forestry-100ha.	12,06,400.00
	2^{nd} year plantation of 20 Rkm avenue plantation	06,22,020.00
	Development of pasture of over 100 Ha.	10,00,000.00
4th	0th year Plantation of Production forestry-100ha.	22,13,900.00
	0^{th} year plantation of 20 Rkm avenue plantation	01,17,180.00
	1^{st} year Plantation of Production forestry-100ha.	21,12,500.00
	1^{st} year plantation of 20 Rkm avenue plantation.	06,64,800.00
	2^{nd} year Plantation of Production forestry-100ha.	12,06,400.00
	2^{nd} year plantation of 20 Rkm avenue plantation	06,22,020.00
	3^{rd} year Plantation of Production forestry-100ha.	08,32,000.00
	3^{rd} year plantation of 20 Rkm avenue plantation	03,60,000.00
	Development of pasture of over 100 Ha.	10,00,000.00
5th	0th year Plantation of Production forestry-100ha.	22,13,900.00
	0^{th} year plantation of 20 Rkm avenue plantation	01,17,180.00
	1^{st} year Plantation of Production forestry-100ha.	21,12,500.00
	1^{st} year plantation of 20 Rkm avenue plantation.	06,64,800.00
	2^{nd} year Plantation of Production forestry-100ha.	12,06,400.00
	2^{nd} year plantation of 20 Rkm avenue plantation	06,22,020.00
	3^{rd} year Plantation of Production forestry-100ha.	08,32,000.00
	3^{rd} year plantation of 20 Rkm avenue plantation.	03,60,000.00
	4th year Plantation of Production forestry-100ha.	03,60,000.00
	4^{th} year plantation of 20 Rkm avenue plantation.	03,20,000.00
	Development of pasture of over 100 Ha.	10,00,000.00

6th	0th year Plantation of Production forestry-100ha.	22,13,900.00
	0th year plantation of 20 Rkm avenue plantation	01,17,180.00
	1st year Plantation of Production forestry-100ha.	21,12,500.00
	1st year plantation of 20 Rkm avenue plantation.	06,64,800.00
	2nd year Plantation of Production forestry-100ha.	12,06,400.00
	2nd year plantation of 20 Rkm avenue plantation	06,22,020.00
	3rd year Plantation of Production forestry-100ha.	08,32,000.00
	3rd year plantation of 20 Rkm avenue plantation.	03,60,000.00
	4th year Plantation of Production forestry-100ha.	
	4th year plantation of 20 Rkm avenue plantation.	03,60,000.00
	Development of pasture of over 100 Ha.	03,20,000.00
		10,00,000.00
7th	0th year Plantation of Production forestry-100ha.	22,13,900.00
	0th year plantation of 20 Rkm avenue plantation	01,17,180.00
	1st year Plantation of Production forestry-100ha.	21,12,500.00
	1st year plantation of 20 Rkm avenue plantation.	06,64,800.00
	2nd year Plantation of Production forestry-100ha.	12,06,400.00
	2nd year plantation of 20 Rkm avenue plantation	06,22,020.00
	3rd year Plantation of Production forestry-100ha.	08,32,000.00
	3rd year plantation of 20 Rkm avenue plantation.	
		03,60,000.00
	4th year Plantation of Production forestry-100ha.	
	4th year plantation of 20 Rkm avenue plantation.	03,60,000.00
		03,20,000.00
	Development of pasture of over 100 Ha.	10,00,000.00
8th	0th year Plantation of Production forestry-100ha.	22,13,900.00
	0th year plantation of 20 Rkm avenue plantation	01,17,180.00
	1st year Plantation of Production forestry-100ha.	21,12,500.00
	1st year plantation of 20 Rkm avenue plantation.	06,64,800.00
	2nd year Plantation of Production forestry-100ha.	12,06,400.00
	2nd year plantation of 20 Rkm avenue plantation	06,22,020.00
	3rd year Plantation of Production forestry-100ha.	08,32,000.00
	3rd year plantation of 20 Rkm avenue plantation.	03,60,000.00
	4th year Plantation of Production forestry-100ha.	
	4th year plantation of 20 Rkm avenue plantation.	03,60,000.00
	Development of pasture of over 100 Ha.	03,20,000.00
		10,00,000.00

9th	0th year Plantation of Production forestry-100ha.	22,13,900.00
	0th year plantation of 20 Rkm avenue plantation	01,17,180.00
	1st year Plantation of Production forestry-100ha.	21,12,500.00
	1st year plantation of 20 Rkm avenue plantation.	06,64,800.00
	2nd year Plantation of Production forestry-100ha.	12,06,400.00
	2nd year plantation of 20 Rkm avenue plantation	06,22,020.00
	3rd year Plantation of Production forestry-100ha.	08,32,000.00
	3rd year plantation of 20 Rkm avenue plantation.	03,60,000.00
	4th year Plantation of Production forestry-100ha.	
	4th year plantation of 20 Rkm avenue plantation.	03,60,000.00
	Development of pasture of over 100 Ha.	03,20,000.00
		10,00,000.00
10th	0th year Plantation of Production forestry-100ha.	22,13,900.00
	0th year plantation of 20 Rkm avenue plantation	01,17,180.00
	1st year Plantation of Production forestry-100ha.	21,12,500.00
	1st year plantation of 20 Rkm avenue plantation.	06,64,800.00
	2nd year Plantation of Production forestry-100ha.	12,06,400.00
	2nd year plantation of 20 Rkm avenue plantation	06,22,020.00
	3rd year Plantation of Production forestry-100ha.	08,32,000.00
	3rd year plantation of 20 Rkm avenue plantation.	03,60,000.00
	4th year Plantation of Production forestry-100ha.	
	4th year plantation of 20 Rkm avenue plantation.	03,60,000.00
	Development of pasture of over 100 Ha.	03,20,000.00
		10,00,000.00
1st year of next working plan.	1st year Plantation of Production forestry-100ha.	21,12,500.00
	1st year plantation of 20 Rkm avenue plantation	06,64,800.00
	2nd year Plantation of Production forestry-100ha.	12,06,400.00
	2nd year plantation of 20 Rkm avenue plantation	06,22,020.00
	3rd year Plantation of Production forestry-100ha.	08,32,000.00
	3rd year plantation of 20 Rkm avenue plantation.	03,60,000.00
	4th year Plantation of Production forestry-100ha.	03,60,000.00
	4th year plantation of 20 Rkm avenue plantation	03,20,000.00

Total expenditure: Rs 8,91,43,580.00

19.5. **Projected Cost Analysis**: Basing on the above analysis, the component wise estimated cost to be required for implementation of the Plan during the period from 2020-21 to 2029-30 is given as follows.

Projected cost analysis		
Sl.Nos.	**Activities under different components.**	**Amount in Rs.**
1	SELECTION-CUM-IMPROVEMENT WC.	**8,09,33,281/-**
2	REHABILITATION WORKING CIRCLE.	**24,75,98,000/-**
3	PLANTATION WORKING CIRCLE.	**61,18,379/-**
4	PROTECTION WORKING CIRCLE	**7,23,51,897/-**
5	BAMBOO(OVERLAPPING) WORKING CIRCLE.	**5,59,24,500/-**
6	NTFP(OVERLAPPING) WORKING CIRCLE.	**1,30,00,000/-**
7	WILDLIFE(OVERLAPPING) WORKING CIRCLE.	**14,25,00,000/-**
8	J.F.M.(OVERLAPPING) WORKING CIRCLE.	**1,20,00,000/-**
9	GENERAL PROTECTION.	**14,40,00,000/-**
10	ECO-TOURISM	**40,00,000/-**
11	CLIMATE CHANGE	**1,00,000/-**
12	SOCIO-ECONOMIC ACTIVITIES.	**1,00,00,000/-**
13	MISCELLANEOUS REGULATIONS.	**2,66,99,400/-**
14	ESTABLISHMENT AND LABOUR	**1,63,50,000/-**
15	TREE OUTSIDE FOREST(TOF)	**8,91,43,580/-**
	TOTAL	**92,07,19,037/- or**
		92.07 crores

The projected cost analysis is based on the current market/wage rate which is subjected to change as per the prevailing rate correspond to that period.

The list of DFOs served in the Division right from the day of formation of the Division is furnished in **Annexure- XV**

CHAPTER-20

SUMMARY OF PRESCRIPTION

20. Introduction

This chapter provides a brief description of prescription and suggestion as per working circle. This would help as ready reference.

The plantation raised by Forest Department on revenue lands under the Social Forestry Project (SFD) have been declared as village forests. The plan includes village forests 24 nos, forests raised by compensatory plantations (P.F) 6 nos, 19 nos D.P.Fs and 19 RFs in the territorial jurisdiction of Athmallik Division. The total area in the proposed plan is 45,521.9078 Ha. It is proposed to create following circles in the new plan.

1. The Selection Working Circle (19969.72 Ha)

2. The Rehabilitation Working Circle (15288.9606 Ha)

3. The Plantation Working Circle(1826.7372 Ha)

4. The Protection Working Circle (8436.49 Ha)

5. The Bamboo improvement (Over Lapping) Working Circle (7012.54 Ha)

6. The NTFP (Over lapping) Working Circle (37085.4178)

7. The Wildlife (Over lapping) Working Circle

(Entire working plan area of the division)

8. The Joint Forest Management (Over lapping) Working Circle (3059.91 Ha)

There are Four stand alone Working Circles having independent area where as there is proposal to constitute four Working Circle with overlapping jurisdiction. TOF (Tree outside the Forest Area) is covered in separate chapter which does not include any RF/ PRF or VF, The period of this working Plan is from 1st April, 2021 to 31st March, 2031. The implementation and probable impact of various prescriptions may be reviewed after five years of working. If it is so required, revision of some chapters may be made.

20.1 Selection working circle

General constitution of working circle:

The total area included in this working circle is **19,969.72 Ha**. The objectives of the management of the Selection Working Circle are within the scope of general objectives of the management of the entire division. These are as follows: -

(i) To conserve and improve the forest cover by soil and water conservation method following the principles of watershed development.

(ii) To maintain and improve the biodiversity of the forest blocks.

(iii) To build up the growing stock and improve stand structure by silvicultural operations.

(iv) To establish natural regeneration of indigenous species.

(v) To obtain the yield on sustainable basis so as to cater the need of the people subject to environmental and silvicultural availability.

20.1.1 Subsidiary silvicultural operations cleaning and thinning

The crop and soil condition will be improved by selective opening of the canopy. Marking is very important exercise, requiring judicious application of skill. It should therefore be carried out by a Range Officer under proper supervision of the Assistant Conservator of Forests. The rotation period of 10 years has been fixed to synchronize with the current plan period.

20.1.2 Harvestable diameters:

The exploitable girth class fixed for various species is based on the silvicultural rotation. The other factors such as production capacity, growth, yield and market demand etc. have also been taken into account. The exploitable girth for Bandhan 90 cm, Simili 150 cm and for all other species 120 cm and above.

20.1.3 Marking Rules

All dead, dying, seriously diseased, uprooted and fallen trees shall be marked for felling. Then all the illicit felled stumps counted and balance trees as per prescribed will be marked for felling keeping the same nos as retaining trees as future crops which will be numbered serially having a white paint band at BH. The maximum nos. of trees is one form Sal and non Sal each per hector for Taleipathar and two each from Pathargarh FS.

20.1.4 Felling Series

The Taleipather Block is having one i.e.Taleipathar FS and Pathargarh Block having two Felling Series namely Udal and Pathargarh respectively.

20.1.5 Subsidiary silvicultural operations cleaning and thinning

Subsidiary Silvicultural Operation (SSO) after main felling in any coupe is essential to maintain the hygiene of any forest. It involves in cleaning of the debris and thinning in the advance growth if retained during marking. Soil and moisture conservation measures required shall be assessed. The cultural operations such as gully plugging, contour bunding, dry stone packing, construction of check dams etc. shall be carried out in subsequent years.

20.1 Prescription for Rehabilitation Working Circle: (Area-15425.9026 Ha)

The Silvicultural System to be adopted for this working Circle is "Silvicultural Cleaning, Tending followed by Aided Natural Regeneration supplemented with enrichment Plantation". The operations prescribed involve Silvicultural Cleaning, Silvicultural Tending (Thinning) and Aided Natural Regeneration including soil mature conservation.

20.2.1Aided Natural Regeneration:

Besides Silvicultural Cleaning the following activities are prescribed for the Aided Natural Regeneration (ANR).Regeneration from Seed Origin (Recruits, Seedlings and Saplings) to be aided with weeding, Soil Working and application of fertilizer to enhance growth & speedy establishment.

The forest blocks that are in various stages of degradation are allotted to this working circle. Degradation of these forests is due to unrelenting biotic interference such as illicit felling, repeated fire, grazing, encroachment and inadequacy of coppice regeneration. The top soil is washed away in some of the places resulting in the exposure of the rocks. On the other hand, these forests contain sufficient rootstock, which if tended and protected has the potentiality to convert to high forests. These blocks need immediate attention to arrest the process of degradation. The area allotted to this Working Circle is **15288.9606 Ha**. comprising of 16 Reserved Forests, 19 DPFs.

20.2.2 Rotation Period

As timber production is not the objective here, no rotation period is prescribed and hence not even any yield regulation is required. However, removal of dead and fallen trees besides thinning in congested crop is prescribed here. Since the areas allotted to this circle are to be treated within the plan period, the rehabilitation cycle of 10 years is fixed to coincide with the plan period.

20.2.3 Treatment operation

In order to execute the rehabilitation measures, each rehabilitation series has been divided into 10(ten) annual coupes to facilitate systematic operations. Care has been taken to delineate the annual coupes in such a manner that continuity of rehabilitation measures is ensured to have sustained efforts. There are five treatment series provided in this working circle.

20.2.4. Fire Protection:

The coupes shall be protected against fire. The Orissa Forest (Fire Protection) Rules 1979 shall be strictly followed. The coupe and plantations area should be rigidly protected from fire. Awareness regarding fire hazard and fire safety should be created in the villages adjacent to the forest area. Appointment of suitable temporary fire watchers from the village adjoining to the forest blocks should form a part of the subsidiary operations.

20.2.5 Removal of NTFP and MAPs :

The coupe shall be protected against unregulated removal of NTFP and MAPs by generating awareness among the primary gatherers.

20.1 Plantation Working Circle.

This working circle includes those areas where the plantations were raised earlier including 24 nos of Village Forest over an area 1826.7372 Ha. In Athamallik Division, the forests generally having a dense forest of Sal, Bandhan, Kendu, Kasi, Mahuala, Amla, Chara, Dhaura, etc. also have good growth. In the revised plan, no plantation is prescribed.

20.3.1 Felling series, cutting sections and JFM Areas.

Here are existing teak plantations in Mahendrapur RF, Taleipathar RF, Dandarugudi RF, Kholdangiani RF, Kadalimunda RF, Dantarikhol RF, Bankimundi RF, Kutulsingha RF, Kishorban RF, Ghosar RF and Bijamaliha RF.

20.3.2 Rotation period.

Basing on the digital enumeration carried out in the outgoing plan a scheme was prepared for its harvest which could not be worked out due to want of approval from the proper quarter. It is therefore prescribed for harvesting of the trees above 120 Cm. GBH of the said plantation during the revised plan period. In the current working plan period, enumeration of trees were carried out exclusively in the areas where trees of exploitable girth & pre exploitable girth exist and the rotation period is one year and further cutting will be made by the Divisional Forest Officer after taking permission from the C.F Working plan, office of the P.C.C.F & HoFF, Odisha. It have been proposed for Harvesting of mature trees in one felling series in Dandarugudi and Kadalimunda RF over an area 221.81 Ha.

20.3.3 Treatment operation:

In order to execute the treatment operations, 10 (ten) annual coupes are constituted to facilitate systematic operations 1604.9272 Ha. Care has been taken to delineate the annual coupes in such a manner that continuity of treatment measures is ensured to have sustained efforts.

20.3.4 Operations in Teak Tending Series:

Since the teak plantations are varying in age from 7 years to about 40 years, these are in need of appropriate silvicultural operations to further boost the growth. In fact, they require

- Pruning should be done in the plantations that are bushy and branchy.
- Loranthus attacked branches shall be lopped.
- Thinning shall be done in the congested crop.
- Soil and moisture conservation measures.
- Gap plantation of 200 plants/ Ha shall be done over 200 Ha.

20.3.5 Subsidiary silvicultural operations cleaning and thinning.

Since the exact age of these teak plantations could not be ascertained, the detail thinning regime has not been prescribed here. The DFO shall verify the old records to confirm the age of all such plantations and follow the below mentioned stipulations while carrying out the thinning in teak plantations. All thinning are to be done very sparingly with meticulous application of mind and extreme silvicultural restraints. This will therefore need prior approval of the DFO. The weeding and regular pruning shall be done till the 8th year of plantation and Gap plantation shall be done where ever permanent gap available.

20.4 Protection Working Circle

This Working circle cover over an area of 8436.49 Ha. All encroached areas including Tiger landscape included in this working circle. It is required to make free from encroachment and covered under plantations including free movement of Tiger to Satkosia gorge sanctuary.

20.4.1 Felling series, cutting sections and JFM areas:

Considering Protection working circle; No felling series is prescribed. However protection series are constituted by uniform distribution of area under the protection W.C. This has been done mainly for administrative convenience and better implementation of the prescriptions. Accordingly 3 Treatment series are proposed.

20.4.2 Silvicultural System:

There will be no exploitation except for removal of dead and uprooted trees. However 05 trees shall be retained per hectare from wildlife habitat point of view. No formal silvicultural system is prescribed. The silvicultural operations that are required are protection from grazing, theft, fire, tending, cleaning and reforestation coupled with soil and moisture conservation works.

20.4.3 Rotation period:

10 year rotation period is proposed to coincide with the working plan period.

20.4.4 Felling cycle:

Not applicable. However the treatment is prescribed for the plan period of 10 years.

20.3.5 Soil and moisture conservation measures.

The Soil and moisture has been provided for improvement of the soil and corridor management to be made by developing the natural corridor of tigers and elephants adjoining Satkosia Tiger reserve to Similpal Tiger Reserve and Kapilash landscape respectively in order to safeguard a viable tiger population, facilitating their migration and gene permeability.

20.4.6. Fire and Animal Protection.

The fire and elephant squad may be deployed.

20.4 Bamboo improvement (Overlapping) working circle

This Working Circle includes one block i.e Taleipathar only but Bamboo is present in many forest blocks of the division like Kutulsingha, Dantarikhol, Bankimundi, Kadalimunda etc, mostly the crop is in a degraded condition due to fire hazards and over felling over the years. The total area included in this working circle is **7012.54 Ha**. i.e. whole of Taleipathar block. The Bamboo occur in the Division as a part of second story and mainly are quality III and in few compartments where quality II. It is observed that the Bamboo coupe working is affected due to want of potentiality for commercial exploitation.

The coupe working is not provided however the area will be treated as Bamboo Improvement Working Circle with special emphasis on Bamboo regeneration and Silvicultural operation.

20.5.1 SPECIAL OBJECTIVES OF MANAGEMENT:

The special objectives of the management of the Bamboo improvement (Overlapping) Working Circle are within the scope of general objective of management of the entire division. These are as follow:

a. Systematic management of the bamboo forests to obtain sustained yield.
b. To ensure regular silvicultural operations to prevent deterioration of the growing stock.
c. Meeting the demand of the local people, artisans and bamboo based industry.
d. Employment to forest dwellers and local people.
e. To rehabilitate the exhausted bamboo bearing areas through appropriate measures like tending, soil working, plantation etc.

20.5.2 Silvicultural system :

The Silvicultural System prescribed is 'Clump improvement' combined with bamboo plantations for Salia bamboos and 'Clump improvement' for Daba Bamboos. As soil and moisture

20.5.3 Treatment period

The total area is divided in ten Bamboo Improvement Working Circle for the plan period.

20.5.4 Plantation of Bamboo:

It should be taken up in deficient areas especially where the density of bamboos is less than 20 clumps per hectare. 200 Ha should be covered under OBDP (State Plan) in each improvement series and 200 Ha should be covered under NBM in each improvement series.

20.6. NTFP (OVERLAPPING) WORKING CIRCLE

All the Forest Blocks, included in the plan other than that under the protection working circle, have been allotted to this Overlapping Working Circle. The total area included in this working circle is 37085.4178 hectares. Since this Working Circle overlaps the entire plan area(excluding 8436.49hectares of the Protection Working Circle where in only the area treatment is prescribed with no NTFP extraction), the details of area allotment to this Working Circle has not been furnished.

20.6.1 SPECIAL OBJECTIVES OF MANAGEMENT:

The special objectives of management are as follows:

To regulate the collection and extraction of various NTFPs with a view.

a. To sustain desired species compositions.
b. To encourage regeneration of the forests.
c. To promote sustainable management of forest
d. To protect the interests of the primary gatherers.
e. To promote the scientific extraction of the various NTFP items
f. To optimize collection and extraction of various NTFPs consistent with the first objective.

20.6.2 Measures to be taken for sustainable harvest or management of NTFPs

1. Collection of fixed NTFP item are going on in this division on a substantial scale. 69 NTFP items are dealt with Panchayat in Odisha. However no collection figure are available with the forest department. There is a view that the villagers have not been benefited to the desired extent due to transfer of above NTFP to the Panchyat. For sustainable harvest of NTFP's, prescription for closure areas for collection/extraction of particular forest produce for a specific period (closed area), banning collection for a certain period (close season) and limits on quantity to ensure sustainable harvests for future.

2. Training for sustainable collection and value addition.
3. Capacity building for VSS members.
4. Formation of S.H.G to work in marketing of NTFPs after value addition.
5. Protection of NTFP trees and promote their regeneration.

20.6.3 Methods of Execution:

The primary collectors should be properly guided to collect the NTFPs in non-destructive way. Latest techniques of collection, drying and storage should be imparted to them. Value addition to collected NTFPs will increase their earning. For value addition, it is essential to have the drying yard and storage godown before processing for value addition. Accordingly, it is proposed to construct 5 drying yard of size 40 feetx50feet each and a storage godown in each of the panchayat head quarters (45 nos). For value addition, a marketing federation unit should be constituted at the block headquarters i.e. Athmallik & Kishorenagar. The federation unit should be constituted by involving the Sarpanch and other PRI members or their authorized representatives. The unit should be equipped with the following machines for processing of NTFPs.

Sal leaf plate making.
Honey processing.
Oil extraction.
Char decortinator.
Grinder.
Adequate packing materials.

The concerned BDOs and Range Officers should monitor the progress made in this respect.

20.7 WILDLIFE (OVERLAPPING) WORKING CIRCLE

Entire Working plan area of the Division, i.e., **45,521.9078 hectares** have been allotted to this Overlapping Working Circle.

20.7.1 Special objectives of management:

The special objectives of the management of the Wildlife (Overlapping) Working Circle are within the scope of general objective of management of the entire division. These are as follow:

a. Conservation, protection and improvement of existing wildlife habitat.
b. Protection of wildlife in general and endangered species in particular.
c. Eco- tourism and People's participation to create awareness.
d. Increase in biodiversity and wildlife population.
e. Prevention of wildlife related crimes.

20.7.2 Method of treatment :

In order to achieve the special objectives of management set for this over lapping working circle, special objectives of management set for the working circles to which it overlaps must be kept in view. The method of treatment will vary depending on the habitat of wild life, status of the fauna in the Division, protection provided to them and their breeding capability for proliferation of population.

20.7.3 Development of Habitat:

Habitat need to be developed with the cooperation of local people using sound silvicultural techniques. The aim should be to provide more food, water and shelter to the wild life so as to even reduce the man-animal conflict.

20.7.4 Corridor:

The corridor, tenuous as it is, is vital in ensuring gene flow. Ensuring gene flow and population viability are two of the major functions of a corridor. It needs to be revitalized and maintained to avert threats to population viability of elephants**.** In Athamallik Division the elephants mainly move along two corridors, one route is from Baghmunda and Majhipara RF of Satkosia Wild Life Division to Hatidhara RF, Talaipathar, Nuagan, East and West Baruni, Muchhapur to Rairakhol Division. Another corridor is Northern, Handapa RF and forests of Rairakhol Division. Elephants are mainly concentrated in areas like Bipradihi, Taranda, Dhandatopa, Ketaki Jharan, Manjore, Naikpoda, Udol, etc. The wildlife management in these areas as well as in the corridors needs several steps like construction of waterholes, development of grass lands etc. These steps are required to content the animals within their habitat as well as in the corridors to ensure gene flow and population viability.

20.7.5 Infrastructure Development:-

To conserve and protect the wild lives infrastructure development is highly essential for the field functionaries such as

Construction of Staff Quarter and Anti-Poaching Barracks, Development of communication facilities ,Engagement of different squad like anti- poaching squad, anti depredation squad, protection squads in critically endangered area and elephant trackers Purchase of tranquilization Guns, cartridges, binoculars, cameras and light,

20.8 **Joint Forest Management (Overlapping) Working Circle.**

The working circle includes working plan area that are under the protection of Vana Samrakshana Samities. The total area allotted to this Working Circle is **3059.91 ha.** This is an Overlapping working Circle, overlapping with selection, Rehabilitation, protection and Plantation Working Circles. The Forest blocks included in this Working Circle are Kusumkhuri,Nuagaon,Bankimundi,Northern,Ghosar,kishoreban,Bindhyabasini, Dandarugudi,Handapa,Kadalimunda,Kholadangiani and Dantarikhol.

In Athamallik Division, there are 116 VSS assigned with 9762.51 Ha of Khesera Forest and 54 VSS assigned with 3358.68 Ha of Reserve Forest including 6 VSS assigned with 298.77 Ha. in Hatidhara RF i e Sadanadapur(11ha.), Basudevpur (29.64 Ha), Amasama(127.13 ha),Taranda (60 Ha), Bipradihi (41 Ha) and korab (30 ha). Since the Working Plan is written for Reserved Forests and DPFs, the JFM area excluding of Hatidhara RF under these forests is taken under the purview of this working circle of 48 VSS having an area 3059.91 Ha. However the prescription given can also be extended to the VSS areas in the Khesra forests. The prescriptions can also be extended to the other VSS areas formed in the course of the working plan period.

20.8.1 Execution under selection/improvement/rehabilitation Working Circles:

VSS is executing agency for successful implementation of Joint Forest Management (Overlapping) Working Circle. The technical guidance and support along with financial grant/ aid will be provided by the Forest Department. Though the management will be specifically done through micro plan of individual VSS by Strengthening of VSS, Capacity Building.

20.8.2 Market Linkage

It is the most vital component. The forest Dept. will provide necessary input for scientific harvest, processing, storage and sale of the forest produce particularly NTFP so that the VSS will get proper price.

20.8.3 Subsidiary Operation

It will vary from site to site due to different crop condition for which a general prescription will not be suitable. However it will be done as per micro plan on site to site basis.

20.8.4 Execution under protection working circle:

In view of proposed tiger landscape & rationalization of Satkosia Gorge Sanctuary; the area of Handapa RF, Northern RF (P) included under selection working circle in the previous working plan has been brought under protection working circle. Accordingly, the VSSs constituted in the above areas will stand cancelled and the status will be converted to EDC (Eco Development Committee).

20.8.5 General prescriptions:

It is observed that only 5% of the Forest area is covered under JFM. It is proposed to take up more villages under the purview of JFM considering large chunk of forest area under rehabilitation category. It is found that micro plans are prepared for 100 VSS only out of 170 VSSs. Emphasis should be given to prepare micro plan for rest of the VSS.

All the areas assigned to the VSS should be marked on the topo sheets of 1:25000. The works taken up in the VSS areas should be entered in the compartment histories. The checking of compartment histories should form a part of the office inspections by the Regional Chief Conservator of Forests and the DFO.

20.8.6 Scope of expanding JFM Working Circle.

There are many forested area under the administrative control of Revenue department. The JFM resolution 2011 has extended its purview to manage Revenue

Forests in a joint Forest management approach. Where PRI (Panchyat Raj Institutes) are interested in management of such forests, the same may be taken for management under VSS.

20.9 FOREST PROTECTION.

The main objective of scientific management of forests is to augment productivity as far as possible but sometimes, indiscreet and greedy persons damage the forests considerably. They fell trees illicitly and clandestinely remove forest produce. Thus it results not only in losing a few trees at present but also in damaging chances of a good future crop. This damage occurs mostly in forests in the neighborhood of villages and towns. It forms the greatest percentage of even the recorded offences committed in the forest. Including ten nos. of squad cost of POL and vehicle.

20.10 ECO-TOURISM

Trails, perhaps, are the best way to acquaint the visitor with the forest and its environs. They enable the person to see, hear and feel first-hand the flora, the micro-fauna and, hopefully, the larger wildlife. There is no better way to experience wilderness than while taking a trail on foot in a small group. Trails add variety to the visitor programme and bring visitors into closer contact with nature. If provided with interpretation they have considerable education value. Short (up to one hour) and easy trails in the vicinity of day use areas can be established as self-guided trails. The following points are proposed for Natural trails.

1. Near Jhimein Chuan.

The nature camp should be created at Binkei Pitha and Deuljhari.

20.11 CLIMATE CHANGE

Government harps on sustainable lifestyle to fight climate change.

Promising raising requisite funds and adopting new technology, more focus on agriculture, water resources, and health and disaster management, To have ambitious focus on energy efficiency and dramatic increase in renewable energy,

To enhance dependency on non-fossil fuel-based energy.

20.11.1 Prescriptions:

(a) A detailed analysis should be made regarding phonological characteristics of vegetations on year wise basis in each beat to ascertain the effect of climate change, on water resources available in Forest areas, should be made on year wise basis in different seasons to ascertain any change, study on wild animals should be made to ascertain their population and change in behavior pattern.

20.12 WATER RESOURCES MANAGEMENT

Living organisms need water to survive. All oxygen-dependent organisms need water to aid in the respiration process; some organisms, such as fish, cannot breathe outside its presence, while other organisms need water to help break down food molecules or generate energy during the respiration process. Water is also used to help regulate metabolism and dissolve compounds going into or out of the body.

20.12.1 Uses of Water:

There are four basic uses for water in living organisms: as a solvent, as a temperature buffer, as a metabolite, and as a living environment.

As a solvent, water dissolves molecules such as sugar; as a temperature buffer, it helps regulate body temperature; as a metabolite, it regulates important chemical reactions within the body and as a living environment, it enables organisms such as fish to breathe.

20.12.2 Prescription:

Year wise assessment of flow level of the perennial water sources, water sample analysis, and the reason of pollution should be ascertained and its impact on forest & wildlife should be found out.

20.13 REDD+

REDD(Reducing Emissions from Deforestation and Forest Degradation) is the global Endeavour to create an incentive for developing countries to protect, better manage and save their forest resources, thus contributing to the global fight against climate change. Deforestation happens when forests are cleared and such land is put to other than forest land use. Forest degradation implies a gradual depletion of forests driven by demand for biomass and disturbances like fire and soil erosion, which, result in dwindling carbon density and ultimately leading to complete loss of forests.

20.13.1 Prescribed activity:

The study of carbon stock should be done every year in the earmarked sample points to ascertain the change.

20.14 SOCIO-ECONOMIC SURVEY AND ASSESSMENT

It is felt necessary to assess the dependence of villagers on the forests for their livelihood needs especially in the perspective of lifestyle change. It is also important in the context of micro-plans for Joint Forest Management and forest fringe management. Information on socio-economic status of the people living in forest fringe villages need to be assessed to bring forth the role of forest products and ecosystem services in their lifestyle. This is necessary to formulate suitable management strategies to improve their socio-economic status particularly that of tribal and economically backward communities living in fringe villages and partially or wholly dependent on forests for their livelihood.

20.14.1 Implementation of the proposed activities:

At each village level, micro plans should be prepared and approved by a committee headed by the Collector, Angul as the chairman and Divisional Forest Officer, Athmallik as the member secretary. The CDVO of the District, the District Panchayt Officer, the District Welfare Officer, the Block Development Officer, Athmallik & Kishorenagar should be the members of the committee. The committee should meet twice in a year and monitor the programmes implemented and its success. The report should also find a place during discussion in the Zilla Parishad meeting and District Vigilance & Monitoring Committee Meetings.

20.15 MISCELLANEOUS REGULATION.

Miscellaneous regulations, spelt out in this chapter, fall in two categories. First, this chapter includes prescriptions with regard to those important activities that have not been discussed before (i.e. Roads, Buildings, and Boundaries of forest blocks). Second, this chapter also re-literates some regulations, already prescribed in the main working circles, for the sake of emphasis. Preservation plots are ecological models of existing forest type and are important for studies of ecological succession, recording diversity in plant population with time. Intense biotic interference in forests has wiped out no. of plant species and many of them are listed as endangered and rare ones.

20.16. ESTABLISHMENT AND LABOUR

The following activates will be carried out including minor and major repairs quarters and roads purchases of instruments.

20.17. TREE OUTSIDE FOREST

The tree outside forest cover working circle comprises the forest outside the RF/ PF. The plantation raised in VF/PRF, Avenue plantation frames forestry urban plantation and other plantations raised by social forestry projects. The plantation raised under National Afforest ration programme through FDA during the outgoing plan.

20.17.1 Prescription:

* A total of 1000 Ha of barren & uncultivable land be covered under block plantation.

* A total of 1000 ha of pasture & grazing lands be covered with fodder and grass plantation.

* 200 Rkm of roads (PWD, RD, Canal) be covered under road side avenue plantation.

* Geometrically rectified IRS p-6-LISS IV (5,8m) or any higher version imageries may be procured from NRSC, Hyderabad.

20.18. GENERAL FINANCIAL FORECAST AND FINANCIAL PLAN OF OPERATION

The financial requirement to implement the plan prescription is **Rs.92.07 Crores** at the present price level on a holistic approach over 10 years of plan period. Basing on Wages collation, the cost of implementation will be hiked by minimum 20% of the estimated cost.

20.19 Source of Funding:

The division receives funds from State Plan, Central Plan, CAMPA etc. The level of present resource allocation is to a tune of 2.00 Crores to 3.00 Crores.

20.20 Financial Forecast:

The financial forecast for the entire plan period of 10 years is 92.07 crores based on the present wage component which may increase to approximately 20% more depending on the hike in wage component.

Chapter No	Para/No sub-para no	Prescribed activity	Remarks
Part-II chapter-1	1.3	Constitution of Working Plan	
Part-II chapter-1	1.3.1	Allocation of area to existing and proposed plan	Comparison of area in outgoing and revised working plan
Part-II chapter-2	2.2	Allotment of area to Selection Working Circle	The total of Selection Working circle.
Part-II chapter-2	2.6.8	Calculation of Yield	Calculation of yield made by NRAC Hydrabad.
Part-II chapter-2	2.6.9	Table of felling	The table of Pathargarh, Ugal, Taleiptha feeling series 2021-22 to 2030-31
Part-II chapter-2	2.6.11	SSO and SMC	Suitable SSO and SMC to be under taken after removal marking trees.
Part-II chapter-2	2.6.13	Other regulation	Grazing, fire wood removals, protection from illicit felling, Unregulated removal of NTFP and MAPs, Encroachments, Restriction on felling along reveres high ways and hill slopes.
Part-II chapter-3	3.1 & 3.2	Allotment of area to Rehabilitation WC	The details of area of RF, DPF & VF area.
Part-II chapter-3	3.6.9	Table of treatment operation	The rehabilitation treatment series of Kusmkuhuri, Kutlsingha, Nuagaon, Dantarikhol, Ghosar form 2021-22 to 2030-31.
Part-II chapter-3	3.6.11	SSO	Sivilicultral Treatment, Thinning, & Regeneration
Part-II chapter-3	3.6.13	Other regulation	Grazing, fire wood removals, protection from illicit felling, Unregulated removal of NTFP and MAPs, Encroachments, Restriction on felling along reveres high ways and hill slopes.
Part-II chapter-4	4.1& 4.2	Allotment of area to Plantation WC	The details of area of RF and PF area.
Part-II chapter-4	4.6.9	Table of treatment operation	The Plantation treatment series form 2021-22 to 2030-31.
Part-II chapter-4	4.6.11	SSO	Sivilicultral Treatment, Thinning, & Regeneration.
Part-II chapter-4	4.6.13	Other regulation	Grazing, fire wood removals, protection from illicit felling, Unregulated removal of NTFP and MAPs, Encroachments, Restriction on felling along reveres high ways and hill slopes.

Part-II chapter-5	5.1	Allotment of area to Protection WC	The details of area of RF area.
Part-II chapter-5	5.6.9	Table of treatment operation	The Protection treatment series of Udal, Baruni, Hondpa form 2021-22 to 2030-31.
Part-II chapter-5	5.6.11	SSO	Sivilicultral Treatment, Thinning, & Regeneration
Part-II chapter-5	5.6.13	Other regulation	Grazing, fire wood removals, protection from illicit felling, Unregulated removal of NTFP and MAPs, Encroachments, Restriction on felling along reveres high ways and hill slopes.
Part-II chapter-5	5.6.14	Management of Proposed Tiger Corridor	The details of management for the proposed Tiger corridor provided.
Part-II chapter-6	6.1 & 6.2	Allotment of area to Bamboo Improvement (O)WC	The details of area of RF area.
Part-II chapter-6	6.6.9	Table of treatment operation	The Bamboo Improvement (OL) treatment series Taleipathar form 2021-22 to 2030-31.
Part-II chapter-6	6.6.13	Other regulation	Grazing, fire wood removals, protection from illicit felling, Unregulated removal of NTFP and MAPs, Encroachments, Restriction on felling along reveres high ways and hill slopes.
Part-II chapter-7	7.2	Allotment of area to NTFP (O) WC	The details of area of RF,PF, DPF & VF area.
Part-II chapter-7	7.11	Other regulation	Maintenance of NTFP and regulated harvesting of NTFP items.
Part-II chapter-8	8.2	Allotment of area to NTFP (O) WC	The details of area of RF,PF, DPF & VF area.
Part-II chapter-8	8.7.1.5	Corridor	The elephant corridor is mentioned.
Part-II chapter-8	8.7.1.7 to 8.7.1.17	Other regulation	The infrastructure developmnt wildlife depredation fire protection man elephant conflict monitoring etc.
Part-II chapter-9	9.2	Allotment of area to JFM (O) WC	The details of area of RF area.
Part-II chapter-9	9.6.4.2	Formation and EDC.	Formation of VSS to EDC in protection WC.
Part-II chapter-9	9.7	General Prescription	Preparation of Micro-plan.
Part-II chapter-10	10.1	Forest protection	Scientific management of forest.

Part-II chapter-10	10.3	Preventive measure	Installation of VHF, Walki-talkies, Arms & Ammunition, Check gates, Vehicles, Construction of Mobile Barracks
Part-II chapter-11	11.1	Eco-Touisim	Eco-Tourism site at Deuljhari and Binkei pitha.
Part-II chapter-12	12.1	Climate Change	Climate change affect adversely on hydrology.
Part-II chapter-13	13.1	Water Resources management	Details of Water resources management and prescription.
Part-II chapter-14	14.1	REED+	The carbon stock in the forest and its improvement with prescription.
Part-II chapter-15	15.1	Socio-Economic Survey and Assessment	Preparation of Micro-Plan and VSS.
Part-II chapter-16	16.1	Misslanious regulation	Forest rods, disposal of Forest prudes, Forest Consolidation, maintenance of Boundary Encroachment, maintenance of Maps and Records.
Part-II chapter-17	17.1	Establishment and Labour	Details of carder strength.
Part-II chapter-18	18.1	Tree Outside Forest	Plantation around Fram pond, institution plantation, Avenue plantation, Agro Forestry
Part-II chapter-19	19.1	General financial forecast and financial plan of operation	Cost preparation of Working Plan and financial forecast of the plan.

ANNEXURE-I

JURISDICTION OF BEATS, SECTIONS AND RANGES

Sl. No	Range	Section	Beat	Jurisdiction			
				R.F/P.F.	Compt.No.	Village	G.P.
1	ATHAMALLIK	1. Athamallik	1. Town	-	-	Athamalik N.A.C	Athamalik N.A.C
			2. Jadupur.	Hatidhara	48, 49	Jadupur, Sidhapur,	Nagaon,
				Jadupur		Tangianisha	Athamalik N.A.C
				Sidhapur.		Duchanali	(Balance)
			3.Kamalpur	Hatidhara	40,42,43,44,45	Kamalpur, Rangapur.	Nagaon, Aida G.P
						Kutarthpur, Antarsinga	.
						Kundapur, Lipiki etc.	
		2.Pataka	4.Pataka	Hatidhara	32 &33	Pataka, Kendupati,	Luhasinga
						Bankual, Podapadar.	G.P (part)
			5.Kutugaon	Hatidhara	34,36,37,38,39	Kutugaon, Kalamati,	Aida G.P.
						Badabandha, Anantapali,	
						Titigaon.	
			6.Rathipur	Hatidhara	28, 29,30,31	Rathipur, Tentulipadar,	Luhasinga, G.P.(B)
				Kusumukhuri		Talapadar, Kutulusinga	
						Luhasinga.	
		3.Manitri	7.Gopalpur	Talaipathar	19,20,21	Gopalpur, Mahendrapur,	Manitri G.P.(P)
				Mahendrapur		Nuagarh, Khamesveripali	&Nagaon G.P.(B)
			8.Manitri	Talaipathar	16,17&18	Manitri, Rajing	Manitri G.P.(B)
						Hingmandal,	
						Kharadapada	
2	DHANDATOPA	4.Dhandatopa	9.Dhandatopa	Hatidhara	46,47,1,2 & 50	Dhandatopa	Thakurgarh (P)
				Thakurgarh		Arampur,	
						Basudevpur,	
						Amasama	
			10.Alekhapur	Hatidhara	3,4,5,7 & 41	Alekhapur,	Thakurgarh (P)
						Sadanandapur.	
			11..Thakurgarh	Thakurgarh		Thakurgarh	Thakurgarh (P)
				Anandapur		Arkhakud,	
						Jogibandha,	
						Tabeda, Simlia,	
						Gunduri.	
			12.Kutulusingha	Kutulusingha	2,3	Kutulusinga	Malmura (P)
			13.Hatasimili	Hatidhara	6,8,9,&10	Hatasimili,	Thakurgarh(B)
						Kalachikata.	
		5. Malmura	14.Malmura	Kutulusingha	1	Malmura, Ghanajeori,	Malmura (P)
						Pitabalibahal.	
			15.Korab	Hatidhara	11,12,13,14,18(P)	Korab, Rampur,	Malmura (P)
					19,20 & 35	Kansab, Chatikibahal,	

3	HANDAPA	8.Handapa	22.Handapa	Handapa	4 & 5	Handapa,Baisena,	Handapa G.P.
						Gundurimunda,etc.	
			23. Kadalimunda	Kadalimunda		Kadalimunda,	Nunukapasi &
						Jamunali,Boinda	Jamunali G.P.
						etc.	
			24.Ichhapur	Handapa	1,6 & 7.	Ichhapur,Golasar,	Kanteikolia &
				Golasar		Asrubahal etc.	Jamunali (B)
				Madhupur			
				Asrubahal.			
		9.Uhkula	25.Tileswar	Tileswar(P)		Tileswar,Uhkula,	Uhkula
				Phuljhari (P)		Jamubania etc.	
				Bankimundi			
			26.Nakchi	Northern	15,21 & 22	Nakchi,Kandhal,	Nakchi(P)
				Dandarugudi		Dangjari,Madhupur	
				Kholadangjari		Ranbhuin,	
						Purunapani etc.	
			27.Takaba	Northern	19,23,24,25,26,27	Takaba,Ubd	Nakchi(B)
					28,29,30,31,32,33		
					34,35(P),36(P),		
					&37(P), 38(P)		
		10.Charkhanran	28.Hrjirida	Handapa	2, 3	Hrjirida	Kanteikolia(P)
				Northern	42, 43	Charkhman,etc	
			29.Gundurjharan	Northern	44,45,47	Gundurjharan,	Kanteikolia
						Laxmipriyapur etc.	
			30.Baliamba	Baliamba		Baliamba,Barhapat	Kanteikolia
			31.Khola	Northern	37(P),38(P),39(P)	Khola	Handapa
					39,40,41 & 46		
		11.Pedpather	32.Pedpather	Dantarikhol	1 & 8	Pedpather,Barham	Pedpather
						Jhilimunda etc	
			33.Dhundi	Dantarikhol	7	Dhundi,Govindapur	Govindapur
						Jharipani,Parbatipur	
			34.Laxmipur	Dantarikhol	4,5,6	Tentulol,Rainali etc	Sapaghara
			35.Gobindapur	Bankimundi		Gobindapur,	Bileinali.
						Bhejgotha,Bileinali,	
						Dheuragotha etc.	
4	BAMUR	12.Bamur	36.Bamur	Kishoreban	3,4,5 & 11	Bamur,Naktinali	Bamur
						Bairagipali etc.	
			37.Bhangamunda	Bindhyabasini	1	Haripur,Bhangamunda,	Bamur

		14.Sargipali	42.Sargipali	Northern	14,16,17118 &20	Sargipali,Thelkonali,	Nakchi &Ambpal
						Bishipali etc.	
			43.Gadghumura	Ghosar	8,9 & 13	Gadghumura,Jharaberani	Ambpal
						Ambpal,Gurjang etc.	
			44.Phuljhari	Phuljhari		Phuljhari,Angapada.	Angapada
						Turuda,Natada Katada.	
		15.Kadalimunda	45.Bajapur	Bijamalia		Bajapur,Jamujhari,Orada	Tusar
				Guja			
			46.Tentelapani	East Baruni		Tentelapani,Tulasipur,	Kadalimunda.
						Barapedar,Kadalimunda	
5	MADHAPUR	16.Madhapur	47.Madhapur	Nuagan		Madhapur,Ranjana,	Madhapur &
						Kundanali,Lunahandi.	Lunahandi.
			48.Kandhapada	Patrapada		Kandhapada,Patrapada	Kandhapada &
						Dudum,Routpada,	Kampala
						Beladdia etc.	
			49.Nuagan	Nuagan	23	Nuagaon,Sorispank,	Madhapur
						Gededharpur,Titirikata,	
						Sargiseni.etc.	
			50.Bijpur	Talaipathar	9,10,12	Bijpur,Bhagamunda	Kudugaon
				Nuagan		Kanthapada,Chandrapur	
		17.Dekrudu	51.Bharatapur	Talaipathar	7 & 8	Bharatapur, Haripur	Raniakata
				Nuagan	4 & 5		
			52.Ghosrakhol	Talaipathar	6,11,13,14.	Ghosrakhol,Sanjamura.	Sanjamura
						Brahmanida etc.	
			53.Raniakata	Raniakata.		Raniakata,Taldar,	Raniakata
				Taldar,		Bankapalasa	
				Goratopa			
		18.Kiakata	54.Kiakata	West Baruni		Kiakata, Kadapada	Kiakata &
						Mangalpur,Hatuapada,	Basudevpur
						Baruni,Basudevpur etc.	
			55.Naikpada	West Baruni		Naikpada,Belpada,	Kiakata
						Sankhamal,Dhuliapada	
			56.Ghodagadi	East Baruni.		Ghodagadi,Baradakata	Kandhapada
				Muchhapur		Beladdia,Bhoipada,	
						Muchhapur	
Sourse: D.F.O.Athamallik Division.							

ANNEXURE-II

LIST OF FOREST ROADS OF ATHMALLIK DIVISION			
ANNEXURE-II			
Sl. No	Name of forest Road	Range	Length in (Km)
1	Khadarapada-Ketkijharan (Hingmandal-Ketkijharan)	---Do---	4
2	Khadarapada-Ketkijharan	Madhapur	8
3	Girida-Lenkadachhida	---Do---	13
4	Girida-Lenkadachhida (Dhandatopa-Girida)	---Do---	12
5	Kamari- Udal-Dimiridihi	Handapa	23
6	Handapa-Gundurijharna	---Do---	15
7	Haripur- Dimiridihi-Pathargarh	Bamur	22
8	Phulamba- Pumapani	---Do---	4
	Total		101

ANNEXURE-III

LIST OF BUILDING, REST HOUSES, CHECK GATES & WATCH TOWERS DHANDATOPA RANGE

Sl. No.	Name of the Building	Location		No. of Rooms	Distance from Road	Remarks
		Latitude	Longitude			Good/Managable/Worst
1	Range Office, Thakurgarh	N 20° 48' 46.2"	E 84° 37' 45.7"	6 nos.	Road side	Good
2	Thakurgarh Beat Quarter (Old)	N 20° 48' 43.4"	E 84° 37' 53.5"	2 nos.	Road side	Good
3	Dhandatopa Section Quarter	N 20° 48' 00.7"	E 84° 36' 12.3"	5 nos.	Road side	Good
4	Dhandatopa Beat Quarter	N 20° 48' 00.5"	E 84° 36' 11.8"	4 nos.	Road side	Good
5	Public Facilities, Thakurgarh	N 20° 48' 46.0"	E 84° 37' 45.5"	1 no.	Road side	Good
6	Alekhpur Beat Quarter	N 20° 47' 59.2"	E 84° 38' 06.5"	4 nos.	4 Km	Good
7	Adeswar FG Quarter	N 20° 50' 20.9"	E 84° 33' 48.3"	4 nos.	6 Km	Good
8	Bhuasuninali FG Quarter	N 20° 49' 17.5"	E 84° 36' 08.5"	4 nos.	5 Km	Good
9	Ambsarmunda Fr. Quarter	N 20° 51' 38.9"	E 84° 35' 10.0"	5 nos.	Road side	Good
10	Paiksahi Fr. Quarter	N 20° 48' 59.9"	E 84° 39' 25.8"	5 nos.	Road side	Good
11	Sisookata FG Quarter	N 20° 51' 41.5"	E 84° 45' 46.0"	3 nos.	100 mtr.	Good
12	Pokanda Beat Quarter	N 20° 48' 41.2"	E 84° 44' 59.8"	3 nos.	Road side	Good
13	Kantapada Beat Quarter	N 20° 45' 08.7"	E 84° 43' 28.3"	3 nos.	1 Km	Good
14	Maimura Beat Quarter	N 20° 45' 47.7"	E 84° 42' 00.3"	4 nos.	Road side	Good

LIST OF BUILDING REST HOUSE CHEAK GATE & WATCH TOWERS IN BAMUR RANGE						
Sl No	Name of the building	Location		No of rooms	Distance from road (in mtr)	Remarks Good/manageable/works
		Latitude	Longitude			
1	2	3	4	5	6	7
1	Range Office Bamuru	21°00'43.5"	084°28'57.0'	6	20	Good
2	Forester Qtr bamur Section	21°00'43.6"	084°28'57.2'	6	15	Good
3	F.G qtr Bamur Beat	21°00'43.3"	084°28'58.1'	4	15	Good
4	F.G Qtr. BaghamundaBeat At-Haripur	21°01'55.7"	084°27'56.0'	3	5	Manageble
5	F.G Qtr. Rangamatia Beat At-Dalapaka	20°59'53.2"	084°31'04.5'	4	5	Good
6	Forester Qtr. Sarigipali Section	20°59'17.1"	084°34'01.8'	6	30	Good
7	FG Qtr. SargipaliBeat	20°59'20.0"	084°33'54.5'	3	20	Good
8	FG Qtr.Phuljhari Beat	21°54'39.8"	084°33'54.4'	3	10	Worst
9	F.G Qtr. Gadghumura Beat At-Sargipali	20°59'17.6"	084°34'01.3'	3	20	Good
10	Forester Qtr. Kishornagar Section	21°00'43.5"	084°28'14.9'	5	20	Good
11	FG Qtr.Kishornagar Beat	20°57'43.0"	084°28'15.2'	3	20	Good
12	F.G Qtr. Bajia Beat At-Kishornagar	20°57'42.9"	084°28'15.4'	4	30	Good
13	FG Qtr.Himitira Beat	20°55'48.4"	084°29'4315.1"	5	10	Good
14	Forester Qtr. Kadalimunda Section At-Bhimpur	20°55'22.7"	084°25'17.3'	5	20	Good
15	F.G Qtr. Tentelapani Beat At-Bhimpur	20°55'23.2"	084°25'17.6'	4	20	Good
16	FG QtrBajapur Beat At-Bhimpur	20°55'23.0"	084°25'27.2'	4	20	Good
17	Range Officer Residance, Bamur	21°00'43.5"	084°28'57.8'	5	20	Good

Information on Building in Handapa Range										
Sl No	Name of the Building	Location						No of Room	Distance from road	Remarks Good/Manageble/worst
		Latitude			Longitude					
		D	M	S	D	M	S			
1	Range Office Handapa	20	57	10.8	84	41	14.1	9 nos	20 mtr	Good
2	Old Range Office, Handapa	20	57	10.8	84	41	14.1	5 nos	10 mtr	Manageble
3	New Range Officer Residance	20	57	11.4	84	41	15	6nos	20 mtr	Good
4	Old Range Officer Residance	20	57	11.4	84	41	15	5 nos	20 mtr	Manageble
5	Handapa Section Forester Qtr	20	57	10.4	84	41	13.4	5 nos	10 mtr	Manageble
6	Handapa Beat F.G Qtr.	20	57	10.9	84	41	12.9	5 nos	10 mtr	Good
7	Old Handapa F.G Qtr.	20	57	10.9	84	41	12.9	4 nos	10 mtr	Damage
8	New Ichapur Beat F.G Qtr.	20	57	47	84	44	44.5	5 nos	10 mtr	Good
9	Old Ichapur Beat F.G Qtr.	20	57	47	84	44	44.5	3 nos	10 mtr	Damage
10	kadalimunda Beat F.G Qtr.	20	55	26	84	45	30.7	4 nos	10 mtr	Manageble
11	Urkula Section Forester Qtr.	20	55	37.6	84	36	36.9	6 nos	10 mtr	Good
12	Tileswar Beat F.G.Qtr.	20	53	5.5	84	37	21.9	5 nos	10 mtr	Good
13	Nakchi Beat F.G Qtr.	20	58	6.3	84	36	22.7	4 nos	10 mtr	Damage
14	Takaba Beat F.G Qtr.	21	0	13	84	38	16.3	5nos	10 mtr	Good
15	Old Takaba Beat F.G Qtr.	21	0	13	84	38	16.3	3 nos	10 mtr	Damage
16	Staff Barrack at Takaba	21	0	13	84	38	14.6	8 nos	10 mtr	Good
17	Takaba F.R.H	21	0	15.9	84	38	14.5	7 nos	10 mtr	Good
18	Takaba F.R.H kitchen	21	0	16.4	84	38	14.6	1nos	20 mtr	Manageble
19	Takaba FRH Driver shed	21	0	15.9	84	38	14.8	1 nos	10 mtr	Good
20	Udala tower	21	0	18.3	84	37	42.3	-	20 mtr	Damage
21	Charhaman Section Forester Qtr.	21	0	24.2	84	43	55.9	6nos	10 mtr	Good
22	Hinijirida Beat F.G Qtr.	21	0	23.2	84	43	55.6	5 nos	10 mtr	Good
23	Khola Beat F.G. Qtr.	21	0	52.7	84	40	8.5	5 nos	50 mtr	Good
24	Gundurujharana Beat F.G Qtr	21	2	7.7	84	44	6.7	4nos	20 mtr	Good
25	Old Gundurujharana Beat F.G Qtr	21	2	7.7	84	44	6.7	6 nos	20 mtr	Damage
26	Podipathar Section Forester Qtr.	20	53	11.8	84	41	55.4	6 nos	20 mtr	Good

LIST OF BUILDING, REST HOUSES CHECK GATE & WATCH TOWER .

MADHAPUR RANGE

Sl No	Name of the Building	Location						No of Rooms	Distance from road	Remarks Good/ Managable/ Worst
		Latitude			Longitude					
		Deg	Min	Sec	Deg	Min	Sec			
1	Madhapur Range office	20	47	8.7	84	25	3.4	5 Nos	20 Miter	Good
2	Range Officers Residence	20	42	8.62	84	26	2.73	4 Nos	30 Miter	Worst
3	Madhapur Section Office	20	47	7.6	84	25	6.1	3 Nos	20 Miter	Worst
4	Madhapur Beat office	20	47	7.4	84	25	6.5	3 Nos	20 Miter	-do-
5	Madhapur Rest House	20	47	5.42	84	24	59.64	2 Nos	10 Miter	-do-
6	Nuagaon Beat Office	20	48	19.5	84	25	37.2	3 Nos	1 Km	-do-
7	Nuagaon Barrack	20	49	0.6	84	26	8.2	2 Nos	20 Miter	Good
8	Watch Tower	20	49	51.94	84	26	31.66	3 Nos	800 Miter	-do-
9	Bijpur Beat Office	20	47	41.8	84	27	54	3 Nos	6 Km	Worst
10	Kandhapada Beat Office	20	48	49.6	84	23	24.8	3 Nos	30 Miter	Good
11	Kiakata Section Office	20	51	52.4	84	19	16.9	3 Nos	20 Miter	Worst
12	Kiakata Beat Office	20	51	52.5	84	19	17.5	3 Nos	30 Miter	Good
13	Ghodagadi Beat Office	20	50	29.7	84	21	30.6	3 Nos	5 Km	Worst
14	Naikpada Beat Office	20	53	25.2	84	16	47.6	3 Nos	800 Miter	Good
15	Kiakata Check gate	20	52	7.1	84	18	53.2	3 Nos	20 Miter	Good
16	Kiakata Forest Rest House	20	51	54.4	84	19	17.5	3 Nos	20 Miter	Worst
17	Dekrud Section Office	20	52	45.1	84	27	9.9	3 Nos	20 Miter	Good
18	Bharatapur Beat Office	20	52	47.9	84	27	3.1	3 Nos	40 Miter	Good
19	Raniakata Beat Office	20	52	45	84	27	10	3 Nos	20 Miter	Worst
20	Ghosrakhol Beat Office	20	51	5.3	84	30	26.1	3 Nos	6 KM	Good

ANNEXURE - IV

DEVLOPMENT (FOREST) DEPARTMENT

NOTIFICATOIN

The 3rd January 1958

No. 227-12F-179 (m) 57 D. In Pursuance of sub section (3) of section 20-A of the Indian Forest Act, 1927 (XVI of 1927) as amended subsequently in its applications to the State of Orissa the State Government do hereby certify that the documents mentioned in the schedule there to Annexed had been prepared under the authority of the Ruler of Athamallik State before the date of merger and have been under the authority of the State Government Continued to be recognized maintained and acted upon there after.

SCHEDULE

(1) Working Plan for the Reserved Forests of the Athamallik State for the years 1946-1961

By Order of Governor

Secretary to Government

ANNEXURE - V

COMPARTMENT WISE AREA & WORKING PRESCRIPTIONS OF ALL THE BLOCKS OF THE DIVISION												
Annexure-V												
Block	Compt. No	Total Area	Area diverted		Area under	Soil/ Imp W.C	Reh.W.C	Plantation W.C.		Prote. W.C	Bamboo C.W.C	JFM C.W.C.
			FRA	FC Act	Plan			Existing	Propose			
RESERVED FORESTS												
Athamallik Range												
Kusum Kuhuri	1	269.88			269.88		269.88					119.3
	2	183.13			183.13		180.13			3.00		12.7
	3	159.03			159.03		159.03					27
Total		**612.04**			**612.04**	**0.00**	**609.04**	**0.00**	**0.00**	**3.00**	**0.00**	**159.00**
Talaipathar	16	327.39			327.39	327.39					327.39	
	17	193.09			193.09	193.09					193.09	
	18	280.87			280.87	280.87					280.87	
	19	462.85			462.85	462.85					462.85	
	20	314.22			314.22	314.22					314.22	
	21	227.62			227.62	227.62					227.62	
Total		**1806.04**			**1806.04**	**1806.04**	**0.00**	**0.00**	**0.00**	**0.00**	**1806.04**	**0.00**
Mahendrapur	1	424.60			424.60		324.49	100.11				
	2	9.47			9.47		9.47					
Total		**434.07**			**434.07**	**0.00**	**333.96**	**100.11**	**0.00**	**0.00**	**0.00**	**0.00**
Range Total		**2852.15**			**2852.15**	**1806.04**	**943.00**	**100.11**	**0.00**	**3.00**	**1806.04**	**159.00**
Dhundatopa Range												
Talaipathar	1	403.75			403.75	363.52		40.23			403.75	
	2	219.43			219.43	219.43					219.43	
	3	231.48			231.48	231.48					231.48	
	4	307.12			307.12	307.12					307.12	
	15	145.11			145.11	145.11					145.11	
	22	315.98			315.98	315.98					315.98	
	23	231.13			231.13	231.13					231.13	
	24	200.99			200.99	200.99					200.99	
Total		**2054.99**			**2054.99**	**2014.76**	**0.00**	**40.23**	**0.00**	**0.00**	**2054.99**	**0.00**
Kutulsinga	1	162.06			162.06		142.06	20.00	0.00	0.00	0.00	
	2	172.02			172.02		172.02	0.00	0.00			
	3	225.19	0.00	2.55	222.64		200.64	20.00		2.00		
	4	336.74			336.74		334.24			2.50		
	5	126.05			126.05		126.05					
	6	378.16			378.16		336.16	40.00		2.00		
	7	246.42			246.42		196.42	40.00		10.00		
Total		**1646.64**	**0.00**	**2.55**	**1644.09**	**0.00**	**1507.59**	**120.00**	**0.00**	**16.50**	**0.00**	**0.00**
Dantarikhol	2	276.49			276.49		156.49	120.00				
	3	250.83			250.83		90.83	160.00				
Total		**527.32**			**527.32**	**0.00**	**247.32**	**280.00**	**0.00**	**0.00**	**0.00**	**0.00**
Range Total		**4228.95**		**2.55**	**4226.40**	**2014.76**	**1754.91**	**440.23**	**0.00**	**16.50**	**2054.99**	**0.00**
Madhapur Range												
Talaipathar	5	322.97			322.97	322.97					322.97	
	6	355.43			355.43	355.43					355.43	
	7	374.49			374.49	374.49					374.49	
	8	428.11			428.11	428.11					428.11	
	9	167.93			167.93	167.93					167.93	
	10	190.75			190.75	190.75					190.75	
	11	233.47			233.47	233.47					233.47	
	12	187.24			187.24	187.24					187.24	
	13	425.40			425.40	425.40					425.40	
	14	465.72			465.72	465.72					465.72	
Total		**3151.51**			**3151.51**	**3151.51**	**0.00**	**0.00**	**0.00**	**0.00**	**3151.51**	0

East Baruni	1	253.04			253.04		253.04					
	2	237.37			237.37		237.37					
	3	303.84			303.84		267.30	10.00		26.54		
	4	189.90			189.90		181.37			8.53		
	5	307.64			307.64		218.33	20.00		69.31		
	6	160.46			160.46		160.46					
	7	154.29			154.29		154.29					
Total		**1606.54**			**1606.54**	**0.00**	**1472.16**	**30.00**	**0.00**	**104.38**	**0.00**	366
West Baruni	1	84.93			84.93		84.93					
	2	184.04			184.04		184.04					
	3	131.24			131.24		131.24					
Total		**400.21**			**400.21**	**0.00**	**400.21**	**0.00**	**0.00**	**0.00**	**0.00**	144.68
Nuagaon	1	313.71			313.71		313.71					192
	2	226.51	0.00	52.00	174.51		131.51	43.00				40
	3	272.57			272.57		205.57	67.00				77
	4	280.36			280.36		280.36					
	5	165.78			165.78		165.78					
Total		**1258.93**			**1206.93**	**0.00**	**1096.93**	**110.00**	**0.00**	**0.00**	**0.00**	**309.00**
Range Total		**6417.19**			**6365.19**	**3151.51**	**2669.30**	**140.00**	**0.00**	**104.38**	**3151.51**	**819.68**
Handapa Range												
Northern	15	460.79			460.79	460.79						
	19	426.60			426.60	426.60						
	21	559.03			559.03	559.03						
	22	689.30			689.30	689.30						
	23	446.86			446.86	446.86						
	24	627.72			627.72	0.00				627.72		
	25	353.64			353.64	353.64						
	26	318.51			318.51	318.51						
	27	374.72			374.72	0.00				374.72		
	28	398.43			398.43	0.00				398.43		
	29	379.99			379.99	0.00				379.99		
	30	473.38			473.38	0.00				473.38		
	31	271.67			271.67	0.00				271.67		
	32	382.92			382.92	0.00				382.92		
	33	383.21			383.21	0.00				383.21		
	34	509.39			509.39	0.00				509.39		
	35	417.46			417.46	0.00				417.46		
	36	402.43			402.43	0.00				402.43		
	37	286.60			286.60	0.00				286.60		
	38	425.08			425.08	425.08						
	39	483.80			483.80	0.00				483.80		
	40	351.30			351.30	351.30						
	41	288.08			288.08	0.00				288.08		
	42	417.46			417.46	0.00				417.46		
	43	425.66			425.66	425.66						
	44	408.68			408.68	408.68						
	45	452.59			452.59	452.59						
	46	596.04			596.04	596.04						
	47	324.95			324.95	324.95						
Total		**12336.29**			**12336.29**	**6239.03**	**0.00**	**0.00**	**0.00**	**6097.26**	**0.00**	**260.00**
Handapa RF	1	346.46			346.46					346.46		100
	2	81.30			81.30					81.30		
	3	235.14			235.14					235.14		
	4	324.06			324.06		324.06					
	5	314.70			314.70					314.70		
	6	231.40			231.40					231.40		60
	7	266.15			266.15					266.15		100
Total		**1799.21**			**1799.21**	**0.00**	**324.06**	**0.00**	**0.00**	**1475.15**	**0.00**	**260.00**

Dandarugudi RF	1	162.31			162.31			162.31				140
Total		**162.31**			**162.31**	**0.00**	**0.00**	**162.31**	**0.00**	**0.00**	**0.00**	**140.00**
Kholdangjani	1	221.11			221.11		167.18	53.93				100
Total		**221.11**			**221.11**	**0.00**	**167.18**	**53.93**	**0.00**	**0.00**	**0.00**	**100.00**
Kadalimunda	1	298.23	0.00	0.90	297.33		0.00	59.50	0.00	237.83		200
Total		**298.23**			**297.33**	**0.00**	**0.00**	**59.50**	**0.00**	**237.83**	**0.00**	**200.00**
Dantarikhol	1	201.24			201.24		110.42	90.82				
	4	115.49			115.49		115.49		0.00			
	5	187.83			187.83		0.00			187.83		
	6	195.41			195.41		195.41					
	7	250.59			250.59		235.34	15.25				
	8	146.76			146.76		99.76	47.00				
Total		**1097.32**			**1097.32**	**0.00**	**756.42**	**153.07**	**0.00**	**187.83**	**0.00**	**162.13**
Bankimundi	1	155.71			155.71		75.48	80.23				
	2	136.72			136.72		123.72	13.00	0.00			
	3	100.64			100.64		70.64	30.00				
Total		**393.07**			**393.07**	**0.00**	**269.84**	**123.23**	**0.00**	**0.00**	**0.00**	**230.10**
Range Total		**16307.54**	**0.00**	**0.90**	**16306.64**	**6230.03**	**1517.50**	**552.04**	**0.00**	**7908.07**	**0.00**	**1342.23**
Barnur Range												
Northern	1	350.13			350.13	350.13						
	2	266.75			266.75	266.75						
	3	383.50			383.50	383.50						
	4	403.38			403.38	403.38						
	5	487.41			487.41	457.41		30.00				
	6	415.10			415.10	415.10						
	7	216.48			216.48	216.48						
	8	370.62			370.62	370.62						
	9	380.93			380.93	380.93						
	10	333.74			333.74	333.74						
	11	357.16			357.16	357.16						
	12	584.33			584.33	564.33		20.00				
	13	454.45			454.45	424.45		30.00				
	14	381.14			381.14	381.14						
	16	281.02			281.02	281.02						
	17	336.37			336.37	336.37						
	18	326.48			326.48	326.48						
	20	509.39			509.39	509.39						
Total		**6838.38**			**6838.38**	**6238.38**	**0.00**	**80.00**	**0.00**	**0.00**	**0.00**	**119.00**
Bindhyabasini	1	275.84			275.84		263.35	12.49				20
Total		**275.84**			**275.84**	**0.00**	**263.35**	**12.49**	**0.00**	**0.00**	**0.00**	**20**
Kishoreban	1	344.56			344.56		310.03	34.53				100
Total		**344.56**			**344.56**	**0.00**	**310.03**	**34.53**	**0.00**	**0.00**	**0.00**	**100.00**
Ghosar	1	213.67			213.67		133.67	30.00		50.00		
	2	354.22			354.22		274.22	30.00		50.00		
	3	572.64	0.00	0.1854	572.4506		364.4506	20	0.00	188.00		
Total		**1140.53**			**1140.34**	**0.00**	**772.3406**	**80.00**	**0.00**	**288.00**	**0.00**	**450.00**
Bijamalha	1	216.95			216.95		135.41	55.00		26.54		
Total		**216.95**			**216.95**	**0.00**	**135.41**	**55.00**	**0.00**	**26.54**	**0.00**	0
Guja	1	346.18			346.18		346.18					
Total		**346.18**			**346.18**	**0.00**	**346.18**	**0.00**	**0.00**	**0.00**	**0.00**	0
Range Total		**9162.44**			**9162.2506**	**6758.38**	**1827.3106**	**262.02**	**0**	**314.54**	**0**	**739**
Grand Total		**38968.27**		**55.6394**	**38912.6306**	**19969.72**	**9012.0206**	**1494.4**	**0**	**8436.49**	**7012.54**	**3059.91**

PROTECTED FORESTS												
Athamallik Range												
Kuber Hill		412.54					412.54					
Range Total		**412.54**					**412.54**					
Dhandapa Range												
Thakurgarh		139.62					139.62					
Phalaibahal		160					160					
Rampur		114.33					114.33					
Range Total		**413.95**					**413.95**					
Mahapur Range												
Purunpani		132					132					
Mahapur 'A'		54.58					54.58					
Mahapur 'B'		28.77					28.77					
Mangalpur		87.79					87.79					
Range Total		**303.14**					**303.14**					
Handapa Range												
Gandhrijharan		802.91					802.91					
Kanmkani		1226.13					1226.13					
Solanda		189.8					189.8					
Barham		185.35					185.35					
Range Total		**2404.19**					**2404.19**					
Banar Range												
Susuka		141.64					141.64					
Bhangamunda		111.22					111.22					
Dighi		141					141					
Baripurunapani		1214.08					1214.08					
Tileswar		1022.07					1022.07					
Tulusipur		43.99					43.99					
Bijipur		69.12					69.12					
Range Total		**2743.12**					**2743.12**					
Grand Total		**6276.94**					**6276.94**					

* Sel/Imp W.C. - Selection Cum Improvement Working Circle
* Reh. W.C. - Rehabilitation Working Circle
* Prote.W.C. - Protection Working Circle
* Bamboo O.W.C. - Bamboo Overlapping Working Circle

ANNEXURE-VI

Information on SMC Work carried out in Madhapur Range from the year 2005-06 to 2020-21

SL No	Year	Scheme	Forest Block	Compt No	Activity Taken up	Quantity	Expenditure	Remarks
7	2011-12	CAMPA	East Baruni RF	4	LBCD	20 Nos	2,70,000	
					Total	**20 Nos**	**2,70,000**	
8	2014-15	CAMPA	East Baruni RF	1	LBCD	189 Cum	2,26,800	
					Total	**189 Cum**	**2,26,800**	
	2015-16	CAMPA	West Baruni RF	1	SMC	84.9	226800	
					Total	**84.9**	**226800**	
	2016-17	CAMPA	East Baruni RF	2	SMC	75	74900	
	-do-	-do-	East Baruni RF	2	SMC	150	106200	
					Total	**225**	**181100**	
	2017-18	CAMPA	East Baruni RF	7	SMC	8	16000	
	-do-	-do-	West Baruni RF	3	SMC	33.75	54000	
	-do-	-do-	East Baruni RF	2	SMC	2	8000	
	-do-	-do-	East Baruni RF	7	SMC	41.25	84000	
	-do-	-do-	East Baruni RF	2	SMC	10	20000	
	-do-	-do-	East Baruni RF	2	SMC	75	152000	
	-do-	-do-	East Baruni RF	2	SMC	150	300000	
	-do-	-do-	West Baruni RF	1	SMC	84.9	133000	
	-do-	-do-	East Baruni RF	3&4	SMC	67.5	136000	
	-do-	-do-	East Baruni RF	2	SMC	10	20000	
	-do-	-do-	East Baruni RF	3	SMC	14	28000	
	-do-	-do-	East Baruni RF	2	SMC	10	20000	
	-do-	-do-	East Baruni RF	2	SMC	21	44000	
					Total	**527.4**	**1017000**	
	2018-19	Budget Head	Hatuapada KF		SMC	50	252150	
	-do-	-do-	Singarmunda KF		SMC	10	28,000	
	-do-	-do-	Mundapada KF		SMC	35	127400	
	-do-	CAMPA	East Baruni RF	3&4	SMC	67.5	121122	
	-do-	-do-	East Baruni RF	7	SMC	41.25	74019	
	-do-	-do-	East Baruni RF	5	SMC	20	35388	
	-do-	-do-	East Baruni RF	7	SMC	8	14355	
	-do-	-do-	West Baruni RF	3	SMC	33.75	59664	
	-do-	-do-	East Baruni RF	2	SMC	10	17944	
	-do-	-do-	East Baruni RF	2	SMC	10	17944	
	-do-	-do-	East Baruni RF	2	SMC	10	17944	
	-do-	-do-	East Baruni RF	2	SMC	150	269160	
	-do-	-do-	East Baruni RF	2	SMC	75	134580	
	-do-	-do-	Nuagaon RF	4&5	SMC	150	672990	
	-do-	-do-	Nuagaon RF	3	SMC	100	448520	
					Total	**770.5**	**2291030**	

	2019-20	Budget Head	Hatuapada KF		SMC	50	114520	
	-do-	-do-	Bijipur KF		SMC	70	400820	
	-do-	-do-	Kanadadadar KF		SMC	8	22904	
	-do-	CAMPA	Nuagaon RF	4&5	SMC	150	357600	
	-do-	-do-	Nuagaon RF	3	SMC	100	238400	
					Total	**378**	**1134244**	
	Year	Scheme	Forest Block	Compt No	Activity taken up	Quantity in ha	Expenditure	
	2020-21	Budget Head	Bijipur KF		SMC	70	298000	
	-do-	-do-	Manarbeda KF		SMC	10	29800	
	-do-	CAMPA	East Barumi RF	6 & 7	SMC	70	217000	
	-do-	-do-	Nuagaon RF	4	SMC	100	596000	
	-do-	MGNREGS	Talcipathar SWC II	9,10, & 12	SMC	545	681998	
	-do-	-do-	Muchhapur DPFA		SMC	54.58	286934	
	-do-	-do-	Nuagaon RF	1	SMC	50	211172	
	-do-	-do-	Nuagaon RF	1	SMC	50	210000	
	-do-	-do-	Talcipathar SWC II	11	SMC	30	84147	
	-do-	-do-	Talcipathar SWC II	13	SMC	425.4	409303	
	-do-	-do-	Talcipathar SWC II	14	SMC	465.72	808146	
					Total	**1870.7**	**57,85,500**	
					G.Total	**7403.8**	**1,39,05,,686**	

Year	Quantity	Expenditure
2005-06	16	34,807
2006-07	138	1,68,835
2007-08	288	1,10,950
2008-09	597	4,21,780
2009-10	1433	13,67,550
2010-11	867	6,16,230
2011-12	20	2,70,000
2012-13	-Nil-	-Nil-
2013-14	-Nil-	-Nil-
2014-15	189 Cum	2,26,800
2015-16	-Nil-	-Nil-
2016-17	-Nil-	-Nil-
2017-18	527.4	1017000
2018-19	770.5	2291090
2019-20	770.5	2291090
2020-21	1870.7	57,85,500
Grand Total	**7403.8**	**1,39,05,,686**

Information on SMC work carried in Dhandatopa Range from the year 2005-2006 to 2020-21						
Year	Scheme	Forest Block	Comptt. No.	Activity Taken up	Quantity	Expenditure
2006-07	S.M.C., R.W.C.	Kutulusinga R.F.	1	Crossband	15	7,260.00
				Total	15	7,260.00
2007-08	P.W.C.	Kutulusinga R.F.	2	Checkdam	12	4,200.00
	Economic R.D.F.	Haridhara R.F.	07 & 08	Crossband	85	53,200.00
	R.W.C.	Dantaikhol R.F.	2	Crossband	49	68,600.00
	R.W.C.	Kutulusinga R.F.	3	Crossband	100	50,540.00
	B.M.C.	Haridhara R.F.	01 & 02	Checkdam	81	28,000.00
	R.W.C.	Kutulusinga R.F.	2	Crossband	14	16,800.00
	Economic R.D.F.	Haridhara R.F.	07 & 08	Crossband	14	14,280.00
	R.W.C.	Dantaikhol R.F.	3	Crossband	13	15,190.00
	R.W.C.	Kutulusinga R.F.	02 & 03	Crossband	16	18,900.00
	Economic R.D.F.	Haridhara R.F.	07 & 08	Crossband	21	28,270.00
	R.W.C.	Kutulusinga R.F.	3	Crossband	22	24,010.00
				Total	**427**	**321,990.00**
2008-09	R.W.C.	Dantarikhol R.F.	3	Checkdam(R. R. Stone Structure)	71	21,000.00
	Economic R.D.F.	Haridhara R.F.	05 & 10	Checkdam(R. R. Stone Structure)	60	14,700.00
	R.W.C.	Dantarikhol R.F.	2	Checkdam(R. R. Stone Structure)	53	21,000.00
	R.W.C.	Dantarikhol R.F.	2	Checkdam(R. R. Stone Structure)	51	21,000.00
	Economic R.D.F.	Haridhara R.F.	5(P) & 10(P)	Checkdam(R. R. Stone Structure)	72	16,730.00
	R.W.C.	Dantarikhol R.F.	2	Checkdam(R. R. Stone Structure)	31	16,800.00
	R.W.C.	Kutulusinga R.F.	3	Crossband	80	28,000.00
	R.W.C.	Kutulusinga R.F.	3	Crossband	144	55,720.00
	R.W.C.	Kutulusinga R.F.	2	Checkdam(R. R. Stone Structure)	40	10,500.00
	R.W.C.	Kutulusinga R.F.	2	Checkdam(R. R. Stone Structure)	40	10,290.00

	R.W.C.	Kutulusinga R.F.	1	Checkdam(R. R. Stone Structure)	45	37,590.00
	Economic R.D.F.	Hatidhara R.F.	05 & 10	Checkdam(R. R. Stone Structure)	42	21,280.00
	B.W.C. Plantation	Hatidhara R.F.	01 & 02	Checkdam(R. R. Stone Structure)	25	32,900.00
				Staggered Trench	20	
	B.W.C. Plantation	Hatidhara R.F.	01 & 02	Checkdam(R. R. Stone Structure)	188	11,900.00
	R.W.C.	Kutulusinga R.F.	02 & 03	Checkdam(R. R. Stone Structure)	72	18,450.00
				Total	**1034**	**337,860.00**
2009-10	S.S.O.	Hatidhara (N) R.F.	S.W.C. Coupe No. (III)	Staggered Trench	210	90,000.00
				Gully Plugging	105	
				Parculation tank	6	
	R.W.C.	Kutulusinga R.F.	02 & 03	Checkdam	30	90,000.00
				Staggered Trench	800	
				Parculation Tank	3	
	R.W.C.	Kutulusinga R.F.	2	Checkdam	20	45,000.00
				Staggered Trench	400	
				Parculation Tank	2	
	R.W.C.	Dantarikhol R.F.	2	Checkdam	107	54,000.00
				Staggered Trench	330	
				Parculation tank	2	
	R.W.C.	Dantarikhol R.F.	2 & 3	Checkdam	156	63,000.00
				Staggered Trench	417	
				Parculation tank	2	
	R.W.C.	Dantarikhol R.F.	2 & 3	Checkdam	56	36,900.00
				Staggered Trench	312	
				Parculation tank	1	
	R.W.C.	Dantarikhol R.F.	1	Checkdam	105	58,320.00
				Staggered Trench	260	
				Parculation tank	5	
	R.W.C.	Kutulusinga R.F.	1	Checkdam	90	51,840.00
				Staggered Trench	240	
				Parculation tank	3	
				Total	**3662**	**489,060.00**

2010-11	S.S.O.	Hatidhara R.F.	21	Staggered Trench	305	98,000.00
				Gully Plugging	150	
				Parculation Tank	115	
	S.S.O.	Hatidhara R.F.	21	Staggered Trench	200	36,000.00
				Gully Plugging	75	
				Parculation Tank	5	
				Total	850	134,000.00
2011-12	S.S.O.	Hatidhara R.F.	19	L.B.C.D.	15	50,000.00
	S.S.O.	Hatidhara R.F.	13	L.B.C.D.	10	40,000.00
				Total	25	90,000.00
2012-13	S.S.O.	Hatidhara R.F.	12 & 14	L.B.C.D.	30	17,621.00
	S.S.O.	Hatidhara R.F.	12 & 14	L.B.C.D.	30	17,621.00
	S.S.O.	Hatidhara R.F.	12 & 14	Parculation Tank (60' X 60' X 9')	1	81,000.00
				L.B.C.D.	10	
				Total	**121**	**116,242.00**
2013-14	S.S.O.	Taleipathar R.F.	22	L.B.C.D.	78	33,000.00
	S.S.O.	Taleipathar R.F.	22	L.B.C.D.	25	6,000.00
	S.S.O.	Hatidhara R.F.	9	L.B.C.D.	113	75,00.00
	S.S.O.	Hatidhara R.F.	9	L.B.C.D.	102	35,000.00
	S.S.O.	Taleipathar R.F.	22	Cost of Stone Boulder 184 Cum		65,872.00
	S.S.O.	Taleipathar R.F.	22	Parculation Tank	39	60,000.00
				Stone Bond	92	
	S.S.O.	Talepathar R.F.	22	L.B.C.D.	102	63,000.00
	CAMPA	Kutulasinga R.F.	5	Parculation Tank (60' X 50' X 7')	1	46,828.00
	-do-	Kutulasinga R.F.	5	L.B.C.D.	60	69,750.00
	-do-	Kutulasinga R.F.	5	L.B.C.D.	56	63,300.00
	-do-	Hatidhara R.F.	1	Crossband	26	31,050.00
	-do-			Cost of Stone boulder 116.01cum		25,000.00
	-do-	Hatidhara R.F.	10	L.B.C.D.	92	81,900.00
	-do-			Cost of Stone boulder 278.62		60,000.00
	-do-	Taleipathar R.F.	10	L.B.C.D.	91	53,700.00
	-do-			Cost of Stone boulder 185.62cum		40,000.00

	-do-	Hatidhara R.F.	10	L.B.C.D.	33	50,250.00
				Cost of Stone boulder 47.43cum		10,221.00
				Total	910	794,871.00
2014-15	CAMPA	Hatidhara R.F.	10	L.B.C.D.	31	18,700.00
	-do-			Cost of Stone boulder 46.40		10,000.00
	-do-	Hatidhara R.F.	18	Stone Bond	30	63,000.00
	-do-	Hatidhara R.F.	9	Stone Bond	28	67,000.00
	-do-	Hatidhara R.F.	19	L.B.C.D.	20	13,900.00
	-do-	Hatidhara R.F.	9	Stone Bond	46	57,600.00
				Total	**155**	**230,200.00**
2015-16	CAMPA	Hatidhara R.F.	8	L.B.C.D.	70	100,000.00
	-do-	Hatidhara R.F.	8	L.B.C.D.	20	40,000.00
	-do-	Hatidhara R.F.	04 & 05	L.B.C.D.	38	44,000.00
	-do-	Hatidhara R.F.	04 & 05	L.B.C.D.	12	14,000.00
	-do-	Taleipathar R.F.	03 & 04	L.B.C.D.	70	100,000.00
	-do-	Taleipathar R.F.	03 & 04	Crossband	45	57,000.00
	-do-	Taleipathar R.F.	03 & 04	Crossband	23	30,000.00
	-do-	Taleipathar R.F.	03 & 04	Crossband	23	30,000.00
	-do-	Hatidhara R.F.	8	L.B.C.D.	30	40,000.00
	-do-	Hatidhara RF	5	Crossband	15	20,000.00
	-do-	Taleipathar R.F.	03 & 04	Crossband	45	55,000.00
	-do-	Taleipathar R.F.	03 & 04	Crossband	40	50,000.00
				Total	431	580,000.00

Sl.No	Year	Scheme	Forest Block	Compt. No	Activity Taken up	Quantity	Expenditure	Remarks
1	2017-18	Nil	Nil	Nil	LBCD	Nil	Nil	
2	2018-19	MGNREGA	Kutuluinga RF	3,4&5	LBCD	342cum	165620	
3	2018-19	MGNREGA	Kutuluinga RF	2&3	LBCD	458.0025cum	85180	
4	2018-19	MGNREGA	Kutuluinga RF	7	LBCD	463cum	280640	
5	2019-20	Nil	Nil	Nil	LBCD	Nil	Nil	
6	2020-21	MGNREGA	Talcipathar RF	3&4	LBCD	1929.97cum	1150508	
7	2020-21	MGNREGA	Damarkhol RF	3	LBCD	791cum	451581	
	2020-21	MGNREGA	Kutuluinga RF	6	LBCD	774.8cum	501147	
	2020-21	MGNREGA	Rampur DPF	-	LBCD	250.842cum	179992	
8	2020-21	MGNREGA	Kutuluinga RF	2	LBCD	498.526cum	322132	
9	2020-21	MGNREGA	Hatidhara RF	20	LBCD	185.49ha	886721	
10	2020-21	CAMPA	Hatidhara RF	1	LBCD	274.64cum	193230	
11	2020-21	CAMPA	Hatidhara RF	3	LBCD	1070.17cum	738146	
12	2020-21	CAMPA	Hatidhara RF	2	LBCD	888.54cum	611496	
13	2020-21	CAMPA	Hatidhara RF	12	LBCD	916.48cum	630866	

ABSTRACT		
Year	**Quantity**	**Expenditure**
2006-07	15	7,260.00
2007-08	427	3,21,990.00
2008-09	1034	3,37,860.00
2009-10	3662	4,89,060.00
2010-11	850	1,34,000.00
2011-12	25	90,000.00
2012-13	121	1,16,242.00
2013-14	910	7,94,871.00
2014-15	155	2,30,000.00
2015-16	431	5,80,000.00
G.Total	7630	97,260.00

Information S.M.C. Work Carried out in Athamallik Range								
From the Year 2005-06 to 2016-2017								
Sl.No	Year	Name of the Scheme	Forest Block	Compt No	Activity Taken Up	Quantity	Expenditure	Remarks
1	2006-2007	CAMPA	Haridhara R.F		Check dam	53	13750	
	2006-2007	- do-	Talaipathar R.F		Staggered Trench	10		
					Cross dam	18	6600	
	2006-2007	- do-	Mahendrapur R.F		L. B.C. D	80		
					Staggered Trench	30		
					Percolation Tank	3	2904)	
	2006-2007	- do-	Talaipathar R.F	19	Staggered Trench	36	6600	
	2006-2007	- do-	Talaipathar R.F	16	Staggered Trench	22		
					Check dam	30	9900	
	2006-2007	- do-	Haridhara R.F	31	L. B.C. D	25		
					Staggered Trench	14	9240	
	2006-2007	- do-	Talaipathar R.F	17	L. B.C. D	5		
					Percolation Tank	1	1375	
	2006-2007	- do-	Talaipathar R.F	17	L. B.C. D	15		
					Percolation Tank	15	4180	
	2006-2007	- do-	Kusumkahuri R.F		L. B.C. D	40		
					Staggered Trench	15	22770	
	2006-2007	- do-	Kusumkahuri R.F		L. B.C. D	22		
					Staggered Trench	16	11000	
	2006-2007	- do-	Talaipathar R.F	17	L. B.C. D	7		
					Percolation Tank	5		
					Staggered Trench	7	2420	
	2006-2007	- do-	Kusumkahuri R.F		L. B.C. D	12		
					Staggered Trench	10	6600	
	2006-2007	- do-	Kusumkahuri R.F		L. B.C. D	12		
					Staggered Trench	10	6600	
	2006-2007	- do-	Kusumkahuri R.F		L. B.C. D	12		
					Staggered Trench	10	6600	
	2006-2007	- do-	Kusumkahuri R.F		L. B.C. D	12		
					Staggered Trench	10	5830	
					Total-	**557**	**140705**	
2	2007-2008	R.W.C	Mahendrapur R.F	1	Staggered Trench	25		
					Gully plugging	45	16800	
	2007-2008	R.D.F	Haridhara R.F		Staggered Trench	66		
					Check dam	95	21000	
	2007-2008	R.W.C	Kusumkahuri R.F	3	Stone bond wall	100	33600	
	2007-2008	R.W.C	Haridhara R.F	49 &50	Stone bond wall	315		
					Staggered Trench	1420	33600	
	2007-2008	R.D.F	Haridhara R.F	31	Staggered Trench	50		
					Stone bond wall	60	28000	
	2007-2008	R.D.F	Haridhara R.F		Staggered Trench	1400		
					Stone bond wall	275	51500	
	2007-2008	G. Other Works	Haridhara R.F	29	Stone bond wall	350	40350	
	2007-2008	G. Other Works	Talaipathar R.F	29	Stone bond wall	50	6440	
	2007-2008	R.W.C	Kusumkahuri R.F	1 & 2	Stone bond wall	101	29000	
	2007-2008	R.W.C	Kusumkahuri R.F	1 & 2	Stone bond wall	90	28000	
	2007-2008	R.W.C	Mahendrapur R.F	1	Stone bond wall	100	19000	
	2007-2008	R.D.F	Talaipathar R.F		Check Dam	40	14000	
	2007-2008	R.D.F	Talaipathar R.F		Check Dam	40	14000	
	2007-2008	J.V.P	Paleswar		Staggered Trench	200	5469	
	2007-2008	CAMPA	Kusumkahuri R.F		Cross dam	13	9240	
	2007-2008	CAMPA	Haridhara R.F	31	Cross dam	4	2240	
					Total-	**4839**	**332239**	

3	2008-2009	R.D.F	Talepathar R.F		Stone bond wall	52	
					Staggered Trench	68	10500
	2008-2009	R.W.C	Kusumkuhuri R.F	1	Stone bond wall Check dam	310	39060
	2008-2009	R.W.C	Kusumkuhuri R.F	2	Stone bond wall Check dam	235	35280
	2008-2009	R.D.F	Haridhara R.F	31	Stone bond wall Check dam	250	21000
	2008-2009	R.W.C	Mahendapur R.F		Stone bond wall Check dam	95	18480
	2008-2009	R.W.C	Mahendapur R.F		Stone bond wall Check dam	100	21000
	2008-2009	R.W.C	Haridhara R.F	31	Stone bond wall Check dam	241	10500
	2008-2009	R.W.C	Kusumkuhuri R.F	2 & 3	Stone bond wall Check dam	341	54600
	2008-2009	R.W.C	Mahendapur R.F	2	Stone bond wall Check dam	120	21000
	2008-2009	R.W.C	Talepathar R.F		Stone bond wall Check dam	135	18900
	2008-2009	R.W.C	Kusumkuhuri R.F	3	Stone bond wall Check dam	231	39060
	2008-2009	G. Other Works	Haridhara R.F	30	Stone bond wall Check dam	33	5775
	2008-2009	S.S.O.Timber	Haridhara R.F	31	Stone bond wall Check dam	31	5400
	2008-2009	Regeneration Cleaning	Haridhara R.F	30 & 31	L. B .C. D	145	25375
	2008-2009	G. Other Works	Haridhara R.F	31	L. B .C. D	55	9625
	2008-2009	S.S.O.Timber	Haridhara R.F	31	Stone bond wall Check dam	37	6475
	2008-2009	S.S.O.Timber	Haridhara R.F	31	Stone bond wall Check dam	35	6125
	2008-2009	R.W.C	Talepathar R.F	18	Stone bond wall Check dam	20	4900
	2008-2009	R.W.C	Kusumkuhuri R.F	1 & 2	L. B .C. D	25	10150
	2008-2009	R.D.F	Haridhara R.F	3	L. B .C. D	14	2450
	2008-2009	S.S.O.Timber	Haridhara R.F	32	L. B .C. D	20	3500
	2008-2009	S.S.O.Timber	Haridhara R.F	32	L. B .C. D	20	3500
	2008-2009	S.S.O.Timber	Haridhara R.F	31	L. B .C. D	20	3500
	2008-2009	R.W.C	Haridhara R.F	49 & 50	L. B .C. D	115	
					Staggered Trench	502	52990
					Total-	**3231**	**429145**
4	2009-2010	R.W.C	Kusumkuhuri R.F		L. B .C. D	98	35700
	2009-2010	R.D.F	Mahendapur R.F		L. B .C. D	190	
					Staggered Trench	40	35000
	2009-2010	R.W.C	Mahendapur R.F		L. B .C. D	50	15820
	2009-2010	R.W.C	Kusumkuhuri R.F	9 & 10	L. B .C. D	35	49140
	2009-2010	R.W.C	Kusumkuhuri R.F		L. B .C. D	20	
					Check Dam	95	31860
	2009-2010	R.W.C	Mahendapur R.F		L. B .C. D	100	
					Check Dam	170	23760
	2009-2010	R.W.C	Mahendapur R.F		L. B .C. D	100	33480
	2009-2010	R.W.C	Haridhara R.F		L. B .C. D	70	24300
	2009-2010	R.W.C	Haridhara R.F	31	L. B .C. D	45	13500
	2009-2010	R.W.C	Kusumkuhuri R.F		L. B .C. D	180	89100
	2009-2010	S.S.O.Timber	Haridhara R.F	34	L. B .C. D	50	8750
	2009-2010	S.S.O.Timber	Haridhara R.F	34	L. B .C. D	70	12250
	2009-2010	S.S.O.Timber	Haridhara R.F	34	L. B .C. D	60	10500
					Total-	**1373**	**383160**

7	2012-2013	SS.OTimber	Hatidhara R.F	40	L.B.C.D	10	1750	
	2012-2013	SS.OTimber	Hatidhara R.F	40	L.B.C.D	6	1050	
	2012-2013	Block Plantation	Mahendrapur RF	1	L.B.C.D	60		
					Loose boulder trip	20	4625	
	2012-2013	SS.OTimber	Takipathar R.F	20	L.B.C.D	10	1750	
	2012-2013	SS.OTimber	Takipathar R.F	20	L.B.C.D	10	1750	
	2012-2013	SS.OTimber	Takipathar R.F	20	L.B.C.D	10	1750	
	2012-2013	SS.OTimber	Hatidhara R.F	40	L.B.C.D	10	1750	
	2012-2013	SS.OTimber	Hatidhara R.F	40	L.B.C.D	10	1750	
	2012-2013	SS.OTimber	Hatidhara R.F	40	L.B.C.D	8	1400	
	2012-2013	SS.OTimber	Takipathar R.F	19 & 20	L.B.C.D	10	1750	
	2012-2013	SS.OTimber	Takipathar R.F	19	L.B.C.D	7	1225	
	2012-2013	SS.OTimber	Hatidhara R.F	43	L.B.C.D	18	3150	
	2012-2013	SS.OTimber	Takipathar R.F	19	L.B.C.D	15	2615	
	2012-2013	SS.OTimber	Takipathar R.F	19	L.B.C.D	10	1750	
	2012-2013	SS.OTimber	Hatidhara R.F	43	L.B.C.D	6	1050	
	2012-2013	CAMPA	Kusumkuhari RF	2	loose boulder trip	20		
					L.B.C.D	10	3600	
	2012-2013	CAMPA	Kusumkuhari RF	3	loose boulder trip	15		
					L.B.C.D	10	5025	
	2012-2013	CAMPA	Kusumkuhari RF	3	loose boulder trip	12		
					L.B.C.D	10	4515	
					Total-	**297**	**202140**	
8	2013-2014	SS.OTimber	Hatidhara R.F	42	L.B.C.D	50	9625	
	2013-2014	SS.OTimber	Hatidhara R.F	42	L.B.C.D	35	6125	
	2013-2014	SS.OTimber	Hatidhara R.F	41	L.B.C.D	35	6125	
	2013-2014	Block Plantation	Mahendrapur RF		loose boulder trip	5		
					L.B.C.D	30	1800	
					Total-	**155**	**30875**	
9	2014-2015							Nil
10	2015-2016	Timber	Hatidhara R.F	44	L.B.C.D	80	14000	
	2015-2016	Plantation	Mahendrapur RF		L.B.C.D	226	175600	
	2015-2016	Timber	Hatidhara R.F	44	L.B.C.D	100	17500	
	2015-2016	- do-	- do-	44	L.B.C.D	100	17500	
	2015-2016	- do-	- do-	45	L.B.C.D	80	14000	
	2015-2016	- do-	- do-	45	L.B.C.D	80	14000	
	2015-2016	- do-	- do-	45	L.B.C.D	180	31500	
	2015-2016	- do-	- do-	44 & 45	L.B.C.D	200	35000	
	2015-2016	- do-	- do-	50	L.B.C.D	100	17500	
	2015-2016	- do-	- do-	50	L.B.C.D	100	17500	
	2015-2016	- do-	- do-	50	L.B.C.D	100	17500	
	2015-2016	- do-	- do-	50	L.B.C.D	80	14000	
	2015-2016	- do-	- do-	50	L.B.C.D	69	12075	
	2015-2016	- do-	- do-	50	L.B.C.D	59	10325	
					Total-	**1554**	**408000**	

11	2016-2017	S.S.O Timber	Hatidhura R.F	49	L.B.C.D	6	45464
	2016-2017	-do-	-do-	49	L.B.C.D	8	40798
	2016-2017	-do-	-do-	49	L.B.C.D	6	43024
	2016-2017	-do-	-do-	49	L.B.C.D	7	40891
	2016-2017	-do-	-do-	49	L.B.C.D	5	35540
	2016-2017	-do-	-do-	49	L.B.C.D	5	34098
	2016-2017	-do-	-do-	49	L.B.C.D	6	40391
	2016-2017	-do-	-do-	49	L.B.C.D	6	39675
	2016-2017	-do-	-do-	49	L.B.C.D	7	52257
	2016-2017	-do-	-do-	49	L.B.C.D	10	52061
	2016-2017	-do-	-do-	48	L.B.C.D	5	48337
	2016-2017	-do-	-do-	48	L.B.C.D	2	42920
	2016-2017	-do-	-do-	48	L.B.C.D	4	47004
	2016-2017	-do-	-do-	48	L.B.C.D	4	48621
	2016-2017	-do-	-do-	48	L.B.C.D	12	48286
	2016-2017	-do-	-do-	48	L.B.C.D	3	53214
	2016-2017	-do-	-do-	49	L.B.C.D	5	12921
	2016-2017	-do-	-do-	49	L.B.C.D	7	20320
	2016-2017	-do-	-do-	49	L.B.C.D	9	25843
	2016-2017	-do-	-do-	49	L.B.C.D	11	42297
	2016-2017	-do-	-do-	49	L.B.C.D	6	25843
	2016-2017	-do-	-do-	49 & 50	L.B.C.D	11	51417
	2016-2017	-do-	-do-	49	L.B.C.D	4	
					Earthen Check dam	2	51533
	2016-2017	-do-	-do-	48	Earthen Check dam	2	21964
	2016-2017	-do-	-do-	49	L.B.C.D	5	30441
	2016-2017	-do-	-do-	49	Cost of R.R Stone	...	34400
	2016-2017	-do-	-do-	48	Cost of R.R Stone	...	38700
	2016-2017	-do-	-do-		Cost of R.R Stone	...	39660
	2016-2017	Timber	Hatidhura R.F	47,50	L.B.C.D	40	42000
	2016-2017	-do-	-do-	47	L.B.C.D	40	36000
	2016-2017	-do-	-do-	47	L.B.C.D	40	42000
	2016-2017	-do-	-do-	47	L.B.C.D	50	48000
					Total-	**328**	**1276730**

Sl. No	Year	Scheme	Forest Block	Compt No.	Activity Taken	Quantity Nos	Expenditure	Remarks
	2017-18	OMBADC	Kuhar DFF		LBCD& Staggered	105	469700	
	2017-18	OMBADC	Talaipathar RF	20	LBCD	107	488736	
	2017-18	OMBADC	Talaipathar RF	19	LBCD	44	257064	
	2017-18	OMBADC	Talaipathar RF	19&20	LBCD	16	68320	
	2017-18	OMBADC	Talaipathar RF	16	LBCD	120	668680	
	2017-18	OMBADC	Talaipathar RF	18	Gradal Bund	740	113960	
	2017-18	OMBADC	Mahendagar		Percolation Pit	80	5486	
					TOTAL	**1212**	**2081916**	
	2018-19	CAMPA	Kasamkuhuri RF ANR 150	2&3	Staggerd Trench	3375	252336	
	2018-19	CAMPA	Kasamkuhuri RF ANR 150	2&3	LBCD	85	420564	
					TOTAL	**3460**	**672900**	
	2019-20	CAMPA	Kasamkuhuri RF ANR 50	3	Staggerd Trench	1500	143150	
	2019-20	CAMPA	Kasamkuhuri RF ANR 50	3	LBCD	5	129080	
	2019-20	CAMPA	Kasamkuhuri RF ANR 150	2&3	Staggerd Trench	1446	178800	
					TOTAL	**2951**	**451930**	
	2020-21	CAMPA	Talaipathar RF	18	LBCD	19	281671	
	2020-21	CAMPA	Hatidhura RF	39	LBCD	50	949726	
	2020-21	CAMPA	Hatidhura RF	48	LBCD	4	170754	
	2020-21	CAMPA	Hatidhura RF	34	LBCD	4	118802	
	2020-21	CAMPA	Hatidhura RF	38	LBCD	7	151384	
	2020-21	CAMPA	Hatidhura RF	38	Wiremesh	22	341978	
	2020-21	CAMPA	Hatidhura RF	34	Wiremesh	9	155585	
	2020-21	MGNRE	Talaipathar RF	21	LBCD	37	211554	
	2020-21	MGNRE GS	Kasamkuhuri RF	02 &03	LBCD& Staggered	33	540256	
	2020-21	MGNRE GS	Hatidhura RF	28&29	LBCD& Staggered	56	1012230	
	2020-21	MGNRE GS	Hatidhura RF	31 &32	LBCD& Staggered	18	342999	
	2020-21	MGNRE	Kuhar DFF		LBCD	33	312198	
	2020-21	MGNRE	Kasamkuhuri	1	LBCD	37	321290	
	2020-21	Budget	Talaipathar RF	20	LBCD	48	342877	
	2020-21	Budget	Hatidhura RF	28	LBCD	34	348648	
	2020-21	Budget	Hatidhura RF	29	LBCD	8	118622	
	2020-21	Budget	Hatidhura RF	40	LBCD	28	119560	
	2020-21	Budget	Hatidhura RF	41	LBCD	25	184464	
	2020-21	Budget	Hatidhura RF	43	LBCD	8	72633	
	2020-21	Budget	Hatidhura RF	28 &29	LBCD	20	460802	
	2020-21	Budget	Hatidhura RF	30,31 &32	LBCD	11	165505	
	2020-21	Budget	Hatidhura RF	41 &42	LBCD	39	316270	
	2020-21	Budget	Hatidhura RF	41,42 &46	LBCD	9	56236	
					TOTAL	**559**	**696144**	

ABSTRACT		
Year	Quantity	Expenditure
2005-2006	0	0
2006-2007	557	140705
2007-2008	4839	332239
2008-2009	3231	429145
2009-2010	1373	383160
2010-2011	556	157050
2011-2012	233	129140
2012-2013	297	202140
2013-2014	155	39875
2014-2015	0	0
2015-2016	1554	408000
2016-2017	328	1276730
2017-18	1212	2081916
2018-19	3460	672900
2019-20	2951	451930
2020-21	559	6996144
G.Total–	**21305**	**13701074**

Information on SMC work carried in Bamur Range from the year 2005-2006 to 2020-21			
1	2007-2008	SMC	94 Nos.
	2007-2008	SMC	93 Nos.
	2007-2008	SMC	06 Nos.
	2007-2008	Pathargarh Comp. No-1 SMC	14 Nos.
	2007-2008	Comp-No-1 SMC	07 Nos.
	2007-2008	Udal Comp No-1 SMC	13 Nos.
	2007-2008	Udal Comp No-1 SMC	07 Nos.
	2007-2008	EastBaraniR.F. SMC	80 Nos.
	2007-2008	Pathargarh SMC	11 Nos.
	2007-2008	SMC	14 Nos.
	2007-2008	SMC	13 Nos.
	2007-2008	SMC	25 Nos.
	2007-2008	Kiskoreban R.F SMC	164 Nos.
	2007-2008	SMC	18 Nos.
	2007-2008	N.R.F Comp No-1	71 Nos.
		Udal SWC-1 SMC	
	2007-2008	Bindhyabasini R.F SMC	95 Nos.
	2007-2008	N.R.F Comp No-12 SMC	149 Nos.
	2007-2008	Kiskoreban R.F SMC	155 Nos.
	2007-2008	EastBaraniR.F SMC	360 Nos.
	2007-2008	EastBaraniR.F SMC	268 Nos.
	2007-2008	Bijamaliha R.F SMC	35 Nos.
		Total	**1862**
2	2008-2009	Kiskoreban R.F SMC	159 Nos.
	2008-2009	BindkyabasiniR.F SMC	85 Nos.
	2008-2009	Kishoreban R.F SMC	166 Nos.
		Coop Pathargarh (ii) SMC	09 Nos.
	2008-2009	Kiskoreban R.F SMC	130 Nos.
	2008-2009	Coop Pathargarh (ii) SMC	13 Nos.
	2008-2009	EastBaraniR.F SMC	183 Nos.
	2008-2009	Coop Pathargarh (ii) SMC	18 Nos.
	2008-2009	Coop Pathargarh (ii) SMC	25 Nos.
	2008-2009	EastBaraniR.F SMC	132 Nos.
	2008-2009	EastBaraniR.F SMC	168 Nos.
	2008-2009	EastBaraniR.F SMC	161 Nos.
	2008-2009	Bijamaliha R.F SMC	14 Nos.
	2008-2009	Coop Pathargarh (ii) SMC	11 Nos.
	2008-2009	Coop Pathargarh (ii) SMC	22 Nos.
	2008-2009	Coop Pathargarh (ii) SMC	27 Nos.

	2008-2009	Coup Pathargarh (ii) SMC	10 Nos.
	2008-2009	Coup Pathargarh (ii) SMC	30 Nos.
	2008-2009	Coup Pathargarh (ii) SMC	16 Nos.
	2008-2009	Northern R.F SMC	20 Nos.
	2008-2009	Northern R.F SMC	24 Nos.
	2008-2009	Northern R.F SMC	20 Nos.
	2008-2009	Northern R.F SMC	32 Nos.
	2008-2009	Kishoreban R.F SMC	18 Nos.
	2008-2009	N.R.F Comp No-13 SMC	138 Nos.
	2008-2009	N.R.F Comp No-13 SMC	175 Nos.
	2008-2009	East Barani R.F SMC	22 Nos.
	2008-2009	N.R.F Comp No-12 SMC	196 Nos.
	2008-2009	N.R.F Comp No-12 SMC	146 Nos.
	2008-2009	N.R.F Comp No-13 SMC	55 Nos.
		Total	**3347**
3	2009-2010	N.R.F Comp No-13 SMC	154 Nos.
	2009-2010	N.R.F Comp No-13 SMC	176 Nos.
	2009-2010	Kishoreban R.F SMC	179 Nos.
	2009-2010	East Barani R.F SMC	100 Nos.
	2009-2010	East Barani R.F SMC	83 Nos.
	2009-2010	East Barani R.F SMC	170 Nos.
	2009-2010	Bijomaliha R.F SMC	23 Nos.
	2009-2010	Kishoreban R.F SMC	226 Nos.
	2009-2010	Kishoreban R.F SMC	203 Nos.
	2009-2010	Bindhyabasini R.F SMC	74 Nos.
	2009-2010	Pathargarh S.W.C – (iii) SMC	16 Nos.
	2009-2010	Pathargarh S.W.C – (iii) SMC	07 Nos.
	2009-2010	N.R.F Comp No-13 SMC	110 Nos.
	2009-2010	Pathargarh S.W.C – (iii) SMC	11 Nos.
	2009-2010	N.R.F Comp No-13 SMC	07 Nos.

	2009-2010	N.R.F Comp No-12 SMC	85 Nos.
	2009-2010	N.R.F Comp No-12 SMC	76 Nos.
	2009-2010	Kishoreban R.F SMC	41 Nos.
	2009-2010	Kishoreban R.F SMC	37 Nos.
	2009-2010	N.R.F Comp No-12 SMC	14 Nos.
	2009-2010	N.R.F Comp No-13 SMC	24 Nos.
		Total	**5163**
4	2010-2011	Pathargarh S.W.C – (iii) SMC	20 Nos.
	2010-2011	Pathargarh S.W.C – (iii) SMC	19 Nos.
	2010-2011	Pathargarh S.W.C – (iv) SMC	36 Nos.
	2010-2011	Pathargarh S.W.C – (iv) SMC	60 Nos.
	2010-2011	Pathargarh S.W.C – (iv) SMC	30 Nos.
	2010-2011	Pathargarh S.W.C – (iv) SMC	40 Nos.
	2010-2011	Pathargarh S.W.C – (iv) SMC	43 Nos.
	2010-2011	Pathargarh S.W.C – (iv) SMC	42 Nos.
	2010-2011	Pathargarh S.W.C – (iv) SMC	70 Nos.
		Total	**5523**
5	2011-2012	Pathargarh S.W.C – (vi) SMC	05 Nos.
		Pathargarh S.W.C – (vi) SMC	10 Nos.
	2011-2012	Pathargarh S.W.C – (vi) SMC	15 Nos.
	2011-2012	Pathargarh S.W.C – (vi) SMC	22 Nos.
	2011-2012	Pathargarh S.W.C – (vi) SMC	10 Nos.
	2011-2012	Pathargarh S.W.C – (vi) SMC	22 Nos.
	2011-2012	Pathargarh S.W.C – (vi) SMC	15 Nos.
	2011-2012	Pathargarh S.W.C – (vi) SMC	25 Nos.
	2011-2012	Pathargarh S.W.C – (vi) SMC	10 Nos.
		Total	**134**
6	2012-2013	Pathargarh S.W.C – (vi) SMC	10 Nos.

	2012-2013	Pathargarh S.W.C – (vi) SMC	19 Nos.
	2012-2013	Pathargarh S.W.C – (vi) SMC	79 Nos.
	2012-2013	Pathargarh S.W.C – (vi) SMC	40 Nos.
	2012-2013	Pathargarh S.W.C – (vi) SMC	60 Nos.
	2012-2013	Pathargarh S.W.C – (vi) SMC	30 Nos.
	2012-2013	Pathargarh S.W.C – (vi) SMC	14 Nos.
	2012-2013	Pathargarh S.W.C – (vi) SMC	79 Nos.
	2012-2013	Pathargarh S.W.C – (vi) SMC	40 Nos.
	2012-2013	Pathargarh S.W.C – (vi) SMC	60 Nos.
	2012-2013	Pathargarh S.W.C – (vi) SMC	30 Nos.
	2012-2013	N.R.F SMC	36 Nos.
	2012-2013	N.R.F Comp No-12	69 Nos.
		Pathargarh S.W.C – (vi) SMC	
		Total	**566**
7	2013-2014	Pathargarh S.W.C – (vii) SMC	21 Nos.
	2013-2014	N.R.F Comp No-16 & 17	20 Nos.
		Pathargarh S.W.C – (vii) SMC	
	2013-2014	Pathargarh S.W.C – (vii) SMC	20 Nos.
	2013-2014	N.R.F Comp No-16 & 17	20 Nos.
		Pathargarh S.W.C – (vii) SMC	
	2013-2014	N.R.F Comp No-16 & 17 Clesning	52 Ha.
		Pathargarh S.W.C – (vii) SMC	150 Nos.
	2013-2014	N.R.F Comp No-16 & 17	50 Nos.
		Pathargarh S.W.C – (vii) SMC	
		Total	**333**

8	2014-2015	Nil	Nil
9	2015-2016	Nil	Nil
10	2016-17	Nil	Nil
	2017-18	OMBADC, Digi DPF	
	2017-18	OMBADC, Bindhyabasini RF	
		Total	
12	2018-19	OMBADC,	
13	2019-20	OMBADC,	
14	2020-21	OMBADC,NRF 1 &2,13,1	
		G Total	**16128**

ABSTRACT		
Year	**Quantity**	**Expenditure**
2005-2006		
2006-2007		
2007-2008	1062	857115
2008-2009	3347	2895010
2009-2010	5163	6674540
2010-2011	5523	13653170
2011-2012	134	204390
2012-2013	556	877555
2013-2014	333	2083010
2014-2015		
2015-2016		
2016-2017		
2017-2018		1694763
2018-2019		300277.4
2019-2020		557286.6
2020-2021		521518
G.Total	**16128**	**10,27,45,670.00**

Information on S.M.C Work Carried out in Handapa Range								
from the year 2010-11- to 2020-21								
Sl No	Year	Name of the Scheme	Forest Block	Compartment	Quantity		Expenditure	Remarks
				No	No	Cum		
1	2010-11	CAMPA	Hinjirida KF	-	900			
					120		27000	
2	2010-11	-do-	Dantarikhole R.F	8		143.6	47.520.00	
Total					**1020**	**143.6**	**74.520.00**	
1	2011-12	CAMPA	Dantarikhole R.F	8	115.03		30600	
2	2011-12	CAMPA	Dantarikhole R.F	8	3		11880	
3	2011-12	CAMPA	Kandali BP	-	40			
					10		9000	
					20			
4	2011-12	CAMPA	Hinjirida ANR		30		18000	
5	2011-12	CAMPA	Dantarikhole R.F	8		115.02	30600	
6	2011-12	CAMPA	Dantarikhole R.F	8			11.880.00	
7	2011-12	CAMPA	Dantarikhole R.F	1		167	44422	
8	2011-12	CAMPA	Dantarikhole R.F	1		170	45220	
9	2011-12	CAMPA	Dantarikhole R.F	1		179	47614	
10	2011-12	CAMPA	Dantarikhole R.F	1	76			
					21		42660	
Total					**202**	**746.05**	**2,91,867.00**	
1	2012-13	CAMPA	Dantarikhole R.F	1	10		45000	
2	2012-14	CAMPA	Dantarikhole R.F	1	32		45000	
3	2012-15	CAMPA	Dantarikhole R.F	1	21		45000	
4	2012-16	CAMPA	Dantarikhole R.F	1	19		45000	
Total					**82**		**1,80,000.00**	
1	2013-14	CAMPA	Bankimundi R.F	-	30		36,000.00	
2	2014-15	CAMPA	Bankimundi R.F	-	25		45,000.00	
Total					**55**		**81,000.00**	
1	2015-16	CAMPA	Bankimundi R.F		8		12,000.00	
2	2015-16	CAMPA	Bankimundi R.F		67		87,000.00	
Total					75		**99,000.00**	

1	2015-16	CAMPA	Barkimundi R.F		15		1,14,280.00	
2	2015-16	CAMPA	Barkimundi R.F		20		1,25,720.00	
3	2015-16	CAMPA	Barkimundi R.F		15		1,02,870.00	
4	2015-16	CAMPA	Barkimundi R.F		12		97,130.00	
Total-					**62**		**4,40,000.00**	
1	2015-16	CAMPA	Barkimundi R.F		10		1,29,600.00	
2	2015-16	CAMPA	Barkimundi R.F		11		1,10,400.00	
Total-					21		2,40,000.00	
	2016-17	-	-	-	-	-	-	
	2017-18	-	-	-	-	-	-	
	2018-19	CAMPA General	Dantarikhol RF, 100 Ha.	5	300 nos.	67290	67290	
	-do-	-do-	-do-	5	200 nos.	44860	44860	
	-do-	-do-	-do-	5	200 nos.	44860	44860	
	-do-	-do-	-do-	5	300 nos.	67290	67290	
	-do-	-do-	-do-	5	300 nos.	67290	67290	
	-do-	-do-	-do-	5	300 nos.	67290	67290	
	-do-	-do-	-do-	5	200 nos.	44860	44860	
	-do-	-do-	-do-	5	200 nos.	44860	44860	
	-do-	-do-	-do-	5	300 nos.	67290	67290	
	2019-20	CAMPA Genera	Dantarikhol RF 100 Ha.	5	1300 nos.	114432	114432	
	-do-	-do-	-do-	5	2 nos.	88	88	
					1302 nos	**1,14,520**	**1,14,520**	
	2020-21	IGC	Batipunnapani DPF	-	450 nos.	44700	44700	
	2020-21	CAMPA General	Handapa RF,	3 & 4	2 Ha	61984	61984	
	-do-	-do-	-do-	3 & 4	2.88 Ha.	89400	89400	
	-do-	-do-	-do-	3 & 4	1.73 Ha.	53640	53640	
	-do-	-do-	-do-	3 & 4	2.64 Ha.	81950	81950	
	-do-	-do-	-do-	3 & 4	2.11 Ha.	65560	65560	
	2020-21	CAMPA General	Northern RF,	41	4 Nos.	64368	64368	

ABSTRACT

Year	Activity taken up		Expenditure
	No.	Cum	
2010-11	1,020.00	143.6	74,520.00
2011-12	202	746.05	291,876.00
2012-13	82		180,000.00
2013-14	55		81,000.00
2014-15	75		99,000.00
2015-16	62		440,000.00
2016-17	21		240,000.00
2017-18	0	0	0
2018-19	2300	5,15,890	5,15,890
2019-20	1302	1,14,520	1,14,520
2020-21	3,441.36	33,55,757	33,55,757
G.Total	**8,560.36**	**34,71,382.54**	**45,33,423.00**

	-do-	-do-	-do-	41	4 nos.	64368	64368	
	-do-	-do-	-do-	41	3 nos.	64368	64368	
	-do-	-do-	-do-	41	3 nos.	64368	64368	
	2020-21	IGC	Batipunupani DPF	-	12 nos.	27118	27118	
	2020-21	CAMPA General	Northern Rf	35	4 nos.	67050	67050	
	-do-	-do-	-do-	35	4 nos.	76884	76884	
	2020-21	CAMPA General	Northern Rf	39 &41	17 nos.	89400	89400	
	-do-	-do-	-do-	39 & 41	17 nos.	89400	89400	
	-do-	-do-	-do-	39 & 41	17 nos.	44700	44700	
	-do-	-do-	Handapa RF	3 & 4	6 bxl 177.68 Kg	19883	19883	
	-do-	-do-	-do-	3 & 4	6 nos.	81950	81950	
	-do-	-do-	-do-	3 & 4	6 nos.	38740	38740	
	-do-	-do-	-do-	3 &6	6 nos.	13410	13410	
	-do-	IGC	Batipunupani DPF	-	7 nos.	62282	62282	
	2020-21	CAMPA General	Northern Rf	35	5 nos.	85228	85228	
	-do-	-do-	Northern RF,	35	4 nos.	85228	85228	
	2020-21	CAMPA General	Northern Rf	39 &41	5 nos.	77480	77480	
	-do-	-do-	-do-	39 & 41	4 nos.	85228	85228	
	-do-	-do-	-do-	39 & 41	2 nos.	40230	40230	
	2020-21	CAMPA General	Northern Rf	35	91.977 Ha	62878	62878	
	-do-	-do-	-do-	35	102.22 cum	63772	63772	
	-do-	-do-	-do-	35	88.4025 cum	67050	67050	
	-do-	-do-	-do-	35	91.445 cum	61090	61090	
	-do-	-do-	-do-	35	89.925 cum	58408	58408	
	-do-	-do-	-do-	35	135.97 cum	88804	88804	
	-do-	-do-	-do-	35	110.02.35 cum	74500	74500	
	-do-	-do-	-do-	35	53.82 cum	35760	35760	
	-do-	-do-	-do-	35	104.13 cum	78222	78222	
	-do-	-do-	-do-	35	135.97 cum	81652	81652	
	-do-	-do-	-do-	35	1 no	47	47	
	2020-21	MGNREGS	Handapa RF,	4	12000 nos.	226927	226927	
	-do-	-do-	-do-	5 & 6	12000 nos.	131634	131634	
	-do-	-do-	Dantarikhol RF,	6	100 nos.	99360	99360	
	-do-	-do-	Dantarikhol RF,	1	100 nos.	157734	157734	
	-do-	-do-	Northern RF,	42	200 nos.	158976	158976	
	-do-	-do-	Kadalimunda Rf		50 nos.	270026	270026	

ANNEXURE -VII
Report of Athmallik Forest Division

ANNEXURE-VIII

Information on Regeneration cleaning carried out in Athmallik Division From 2005-06 to 2016-17.

Sl No	Year	Scheme	Forest Block	Compt No	Area treated in ha	Expenditure	Remarks
1	2005-06	State Plan	Nuagaon RF	4	75 ha	38,663	
	2005-06	State Plan	Taleipathar RF	7	10 ha	13,125	
	2005-06	State Plan	Baruni RF		4 ha	4,935	
				Total	**89 ha**	**56,723**	
2	2006-07	State Plan	Nuagaon RF	8	166.6 ha	99,055	
	2006-07	State Plan	Nuagaon RF	1	22.15	9,900	
				Total	**188.21 ha**	**1,88,955**	
3	2007-08	State Plan	East Baruni RF	6	53.53 ha	56,120	
				Total	**53.53 ha**	**56,120**	
4	2008-09	State Plan	-Nil-	- Nil-	- Nil-	- Nil-	
5	2009-10	State Plan	-Nil-	- Nil-	- Nil-	- Nil-	
	2009-10	CAMPA	Subarnapur KF		119 ha	2,25,000	
	-do-	-do-	Keatnkijharan KF		75 ha	1,34,820	
	-do-	-do-	Khajurijharan KF		34 ha	61,200	
	-do-	-do-	Mangalpur KF		15 ha	27,000	
	-do-	-do-	East Baruni RF		156 ha	1,86,300	
				Total	**399 ha**	**6,34,320**	
6	2010-11	State Plan	Taleipathar RF	13	362 ha	1,81,000	
				Total	**362 ha**	**1,81,000**	
	2010-11	CAMPA	East Baruni RF	5	241.5 ha	3,96,900	
	2010-11	CAMPA	Nuagaon RF	2	40 ha	58,860	
				Total	**281.5 ha**	**4,55,760**	
7	2011-12	State Plan	East Baruni RF	4	30 ha	54,000	
				Total	**30 ha**	**54,000**	
	2011-12	CAMPA	East Baruni RF	4	149.8 ha	2,43,244	
			East Baruni RF	1	26 ha	1,04,800	
				Total	**175.8 ha**	**3,48,044**	
8	2012-13	State Plan	-Nil-	- Nil-	- Nil-	- Nil-	
9	2013-14	State Plan	-Nil-	- Nil-	- Nil-	- Nil-	
10	2014-15	State Plan	-Nil-	- Nil-	- Nil-	- Nil-	
Sl No	Year	Scheme	Forest Block	Compt No	Area treated in ha	Expenditure	Remarks
11	2015-16	State Plan	-Nil-	- Nil-	- Nil-	- Nil-	
12	2016-17	State Plan	-Nil-	- Nil-	- Nil-	- Nil-	
13	2016-17	CAMPA	East Baruni RF	3& 4	101.25 ha	4,01,000	
	-do-	-do-	East Baruni RF	7	49.25 ha	1,97,000	
	-do-	-do-	East Baruni RF	2	20 ha	80,000	
	-do-	-do-	East Baruni RF	5	20 ha	80,000	
	-do-	-do-	West Baruni RF	2	235 ha	9,40,000	
				Total	**425.25 ha**	**16,98,000**	

Year	Area Treated in Ha	Expenditure
2005-06	89	56,723
2006-07	188.21	1,88,955
2007-08	53.53	56,120
2009-10	399	6,34,320
2010-11	643.5	6,36,760
2011-12	205.8	4,02,044
2012-13	- Nil-	- Nil-
2013-14	- Nil-	- Nil-
2014-15	- Nil-	- Nil-
2015-16	- Nil-	- Nil-
2016-17	425.25	16,98,000
G.Total	**2004.29**	**36,72,922**

	REGENERATION CLEANING OPERATIONS IN DHANDATOPA RANGE				
Year	Scheme	Forest Block	Comptt No	Area Treated in Ha.	Expenditure
2005-06		Hatidhara R.F	13	5	4,987.00
			Total	**5**	**4,987.00**
2006-07	2406 State Plan 12th F.C	Kutulusinga R	2		34,329.00
2006-07	-do-	Hatidhara R.F	8		19,965.00
			Total		**54,294.00**
2007-08	R.W.C	Kutulusinga R	3	17.73	18,620.00
2007-08	R.W.C	Kutulusinga R	2 & 3	9.47	27,440.00
			Total	**27.2**	**46,060.00**
2009-10	S.S.O	Hatidhara R.F	Coupe-iii	51	43,290.00
			Total	**51**	**43,290.00**
2010-11	S.S.O	Hatidhara R.F	21	220	100,000.00
2010-11	S.S.O	Hatidhara R.F	21	80	36,000.00
2010-11	S.S.O	Hatidhara R.F	20 & 21	60	50,000.00
2010-11	S.S.O	Hatidhara R.F	20 & 21	60	50,000.00
2010-11	S.S.O	Hatidhara R.F	20 & 21	97.5	87,750.00
2010-11	S.S.O	Hatidhara R.F	20 & 21	104	93,600.00
2010-11	S.S.O	Hatidhara R.F	20, 21 & 22	55.2	49,680.00
			Total	**159.2**	**553,610.00**
2011-12	S.S.O	Hatidhara R.F	19	100	54,000.00
2011-12	S.S.O	Hatidhara R.F	19	50	27,000.00
2011-12	S.S.O	Hatidhara R.F	19	120	64,000.00
2011-12	S.S.O	Hatidhara R.F	19	100	54,000.00
2011-12	S.S.O	Hatidhara R.F	19	120	64,800.00
2011-12	S.S.O	Hatidhara R.F	19	60	32,400.00
2011-12	S.S.O	Hatidhara R.F	13	126.15	113,580.00
			Total	**676.15**	**409,780.00**
2012-13	S.S.O	Hatidhara R.F	12	183	101,750.00
2012-13	S.S.O	Hatidhara R.F	12	100	55,500.00
2012-13	S.S.O	Hatidhara R.F	12	92	50,875.00
2012-13	S.S.O	Hatidhara R.F	14	50	75,000.00
2012-13	S.S.O	Hatidhara R.F	12 & 14	40	78,379.00
2012-13	S.S.O	Hatidhara R.F	12 & 14	40	86,329.00
			Total	**505**	**447,833.00**

Information On Regeneration Cleaning Carried out in Athhmallik Range From the Year 2005-06 to 2016-2017							
Sl.No	Year	Name of the Scheme	Forest Block	Comptt No	Area Treated in Hect	Expenditure	Remarks
1	2006-2007	R.W.C	Mahendrapur R.F		25	16500	
	2006-2007	R.D.F	Taleipathar R.F		25	16500	
	2006-2007	CAMPA R.D.F	Hatidhara R.F	U.C.O Plantation	24	19,800	
	2006-2007	CAMPA R.D.F	Hatidhara R.F	U.C.O Plantation	26	21,450	
	2006-2007	CAMPA R.W.C	Kusumkuhuri R.F	...	30	19,800	
	2006-2007	CAMPA R.W.C	Kusumkuhuri R.F	...	27	17,820	
	2006-2007	CAMPA R.W.C	Kusumkuhuri R.F	...	10	6,600	
	2006-2007	CAMPA R.W.C	Mahendrapur R.F	...	5	3,355	
	2006-2007	CAMPA R.W.C	Taleipathar R.F	19	10	6,600	
	2006-2007	CAMPA R.W.C	Taleipathar R.F	18	10	6,600	
	2006-2007	CAMPA R.W.C	Mahendrapur R.F	....	14	9,240	
	2006-2007	CAMPA R.W.C	Taleipathar R.F	16	15	9,900	
	2006-2007	CAMPA R.W.C	Hatidhara R.F	31	25	16,500	
	2006-2007	CAMPA R.W.C	Kusumkuhuri R.F	....	43	28,380	
	2006-2007	CAMPA R.W.C	Taleipathar R.F	17	10	6,600	
				Total -	299	205,645	
2	2007-2008	R.W.C	Kusumkuhuri R.F	3	60	63,000	
	2007-2008	CAMPA R.W.C	Hatidhara R.F	29	50	35,000	
	2007-2008	CAMPA R.W.C	Hatidhara R.F	45	30	19,950	
				Total -	140	117,950	
3	2008-2009	Regeneration Cleaning	Hatidhara R.F	31,31	107.2	49,665	
	2008-2009	G.Others	Hatidhara R.F	31	72.8	41,335	
				Total -	180	91,000	
4	2009-2010	R.D.F	Mahendrapur R.F		50	16,170	
	2009-2010	R.D.F	Mahendrapur R.F		50	46,830	
				Total -	100	63,000	
5	2010-2011	Nil	Nil	Nil	Nil	Nil	Nil
6	2011-2012	CAMPA	Kusumkuhuri R.F	2	12.6	22,680	
	2011-2012	CAMPA	Kusumkuhuri R.F	2	15.7	28,260	
	2011-2012	CAMPA	Kusumkuhuri R.F	2	11.7	35870	
	2011-2012	CAMPA	Kusumkuhuri R.F	9	25	45,000	
	2011-2012	CAMPA	Kusumkuhuri R.F	3	25	45,000	
	2011-2012	CAMPA	Kusumkuhuri R.F	3	27	48,600	
	2011-2012	CAMPA	Kusumkuhuri R.F	3	23	45,000	
				Total -	140	270,410	
7	2012-2013	Regeneration Cleaning	Kusumkuhuri R.F	2	6	19,950	
				Total -	6	19,950	

ABSTRACT		
Year	Area Treated in Hect	Expenditure
2005-2006	0	0
2006-2007	299	205,645
2007-2008	140	117950
2008-2009	180	91000
2009-2010	100	63000
2010-2011	Nil	Nil
2011-2012	140	270410
2012-2013	6	19950
2013-2014	Nil	Nil
2014-2015	Nil	Nil
2015-2016	Nil	Nil
2016-2017	Nil	Nil
G.Total--	**865**	**767955**

Information on Regeneration cleaning carried out in Handapa Range from the year 2005 - 06 to 2016 -17							
Sl No.	Year	Name of the Scheme	Forest Block	Comartment No	Area treated in ha.	Expenditure	Remarks
1	2010-11	CAMPA	Dantarikhol R.F	8	26.4	51,840.00	
Total					**26.4**	**51,840.00**	
1	2011-12	CAMPA	Dantarikhol R.F	-	23.6	38,160.00	
2	do	do	Hinjirida ANR	8	20	18,000.00	
3	do	do	Dantarikhol R.F	1	23.6	38,160.00	
4	do	do	do	1	25	58,500.00	
5	do	do	do	1	34.6	56,160.00	
6	do	do	do	1	34.6	56,160.00	
7	do	do	do	7 & 8	5.8	9,180.00	
8	do	do	do	7 & 8	26.44	42,840.00	
9	do	do	do	7 & 8	23.55	38,160.00	
10	do	do	do	7 & 8	23.16	37,530.00	
11	do	do	do	7 & 8	26.85	43,470.00	
Total					**267.2**	**436,320.00**	
1	2012-13	-	-	-	-	-	-
2	2013-14	CAMPA	Bankimundi R.F	-	12	36,000.00	
3	do	do	do	-	15	45,000.00	
Total					**27**	**81,000.00**	
1	2014-15	CAMPA	Bankimundi R.F	-	33	99,000.00	
Total					**33**	**99,000.00**	
1	2015-16	CAMPA	Bankimundi R.F	-	28.57	85,710.00	
2	do	do	do	-	31.43	94,280.00	
3	do	do	do	-	25.71	77,130.00	
4	do	do	do	-	24.29	72,870.00	
Total					**110**	**329,990.00**	
1	2016-17	CAMPA	Bankimundi R.F	-	32.4	97,200.00	
2	do	do	do	-	27.6	82,800.00	
Total					**60**	**180,000.00**	

Abstract : -		
Year	Area trated In ha.	Expenditure
2010-11	26.4	51,840.00
2011-12	267.2	436,320.00
2012-13	Nil	Nil
2013-14	27	81,000.00
2014-15	33	99,000.00
2015-16	110	329,990.00
2016-17	60	180,000.00
Total	**523.6**	**1,178,150.00**

Regeneration cleaning of Bamur Range				
SL No.	Year	Item of Work	Quantity (In No)	Amount
1	2007-2008	R.W.C Cleaning	36 Ha.	37,800.00
2	2007-2008	R.W.C Cleaning	36 Ha.	37,800.00
3	2007-2008	R.W.C Cleaning	28 Ha.	29,400.00
4	2007-2008	R.W.C Cleaning	28 Ha.	29,400.00
5	2007-2008	R.W.C Cleaning	48 Ha.	50,400.00
6	2007-2008	R.W.C Cleaning	36 Ha.	37,800.00
7	2007-2008	R . Cleaning	36 Ha.	37,800.00
8	2007-2008	R . Cleaning	36 Ha.	37,800.00
9	2007-2008	R . Cleaning	36 Ha.	37,800.00
10	2007-2008	R . Cleaning	28 Ha.	29,400.00
11	2007-2008	R . Cleaning	28 Ha.	29,400.00
12	2007-2008	R . Cleaning	40 Ha.	42,000.00
13	2007-2008	R . Cleaning	52 Ha.	54,600.00
14	2007-2008	R . Cleaning	42 Ha.	44,100.00
15	2007-2008	R . Cleaning	37 Ha.	37,800.00
16	2007-2008	R . Cleaning	32 Ha.	33,600.00
17	2007-2008	R . Cleaning	50 Ha.	52,500.00
18	2007-2008	R . Cleaning	81 Ha.	56,700.00
19	2007-2008	Northern R.F Comp. No-1 Cleaning Pathargarh	132 Ha.	40,500.00
20	2007-2008	Northern R.F Udal Cleaning	155 Ha.	53,253.00
21	2007-2008	N.R.F Pathargarh Cleaning Coupe Comp No-1	131.13 Ha.	40,500.00
22	2007-2008	N.R.F Comp No-1 Cleaning Udal Comp No-1	81 Ha.	28,350.00
23	2007-2008	N.R.F Comp No-1 Cleaning Udal Comp No-1	155.55 Ha.	53,650.00
24	2007-2008	East Baruni R.F. SMC	80 Nos.	7,000.00
25	2007-2008	East Baruni R.F. Regeneration Cleaning	48 Ha.	50,400.00
26	2007-2008	East Baruni R.F. Regeneration Cleaning	52 Ha.	50,600.00
27	2007-2008	N.R.F. Comp No-1 Cleaning Pathargarh	87 Ha.	30,450.00
28	2007-2008	Ghosar R.F. Cleaning	45 Ha.	35,000.00
29	2007-2008	Ghosar R.F. Cleaning	55 Ha.	27,000.00
30	2007-2008	Ghosar R.F. Cleaning	45 Ha.	35,000.00

31	2007-2008	Ghosar R.F Cleaning	55 Ha.	42,000.00
32	2008-2009	N.R.F Comp No-3 & 4 Cleaning Coup Pathargarh (ii)	120 Ha.	42,000.00
33	2008-2009	N.R.F Comp No-3 & 4 Cleaning Coup Pathargarh (ii)	80 Ha.	28,000.00
34	2008-2009	N.R.F Comp No-3 & 4 Cleaning Coup Pathargarh (ii)	80 Ha.	28,000.00
35	2008-2009	N.R.F Comp No-3 & 4 Cleaning Coup Pathargarh (ii)	120 Ha.	42,000.00
36	2008-2009	N.R.F Comp No-3 & 4 Cleaning Coup Pathargarh (ii)	120 Ha.	42,000.00
37	2008-2009	N.R.F Comp No-3 & 4 Cleaning Coup Pathargarh (ii)	24 Ha.	8,400.00
38	2008-2009	N.R.F Comp No-3 & 4 Cleaning Coup Pathargarh (ii)	75 Ha.	25,620.00
39	2008-2009	N.R.F Comp No-3 & 4 Cleaning Coup Pathargarh (ii)	65 Ha.	23,100.00
40	2008-2009	N.R.F Comp No-3 & 4 Cleaning Coup Pathargarh (ii)	75 Ha.	25,620.00
41	2008-2009	N.R.F Comp No-3 & 4 Cleaning Coup Pathargarh (ii)	28 Ha.	9,800.00
42	2008-2009	N.R.F Comp No-13 Cleaning	60 Ha.	42,000.00
43	2008-2009	N.R.F Comp No-13 Cleaning	62 Ha.	43,680.00
44	2008-2009	N.R.F Comp No-13 Cleaning	60 Ha.	42,000.00
45	2008-2009	N.R.F Comp No-13 Cleaning	60 Ha.	42,220.00
46	2009-2010	N.R.F Comp No-5 Cleaning Pathargarh S.W.C – (iii)	115 Ha.	40,500.00
47	2009-2010	N.R.F Comp No-5 Cleaning Pathargarh S.W.C – (iii)	85 Ha.	29,250.00
48	2009-2010	N.R.F Comp No-5 Cleaning Pathargarh S.W.C – (iii)	57 Ha.	25,200.00

65	2011-2012	N.R.F Comp No-10 & 11 Cleaning	85.9 Ha.	39,600.00
		Pathargarh S.W.C – (vi)		
66	2011-2012	N.R.F Comp No-10 & 11 Cleaning	94 Ha.	42,300.00
		Pathargarh S.W.C – (vi)		
67	2012-2013	N.R.F Comp No-12 Cleaning	61.6 Ha.	28,480.00
		Pathargarh S.W.C – (vi)		
68	2012-2013	N.R.F Comp No-12 Cleaning	88.4 Ha.	40,885.00
		Pathargarh S.W.C – (vi)	.	
69	2012-2013	N.R.F Comp No-12 Cleaning	50 Ha.	37,500.00
		Pathargarh S.W.C – (vi)		
70	2012-2013	N.R.F Comp No-12 Cleaning	45 Ha.	33,750.00
		Pathargarh S.W.C – (vi)		
71	2012-2013	N.R.F Comp No-12 Cleaning	57.2 Ha.	42,900.00
		Pathargarh S.W.C – (vi)		
72	2012-2013	N.R.F Comp No-12 Cleaning	61.2 Ha.	45,900.00
		Pathargarh S.W.C – (vi)		
73	2013-2014	N.R.F Comp No-16 & 17 Cleaning	52 Ha.	39,000.00
		Pathargarh S.W.C – (vii)	21 Nos.	
74	2013-2014	N.R.F Comp No-16 & 17 Cleaning	52 Ha.	39,000.00
		Pathargarh S.W.C – (vii)	20 Nos.	
75	2013-2014	N.R.F Comp No-16 & 17 Cleaning	52 Ha.	39,000.00
		Pathargarh S.W.C – (vii)	150 Nos.	
76	2014-2015	Nil	Nil	Nil
77	2015-2016	Nil	Nil	Nil

CAMPA

SL No.	Year	Item of Work	Quantity (In No)	Amount
1	2010-2011	Guja R.F. Cleaning	33 Ha.	59,130.00
2	2010-2011	Guja R.F. Cleaning	25 Ha.	44,640.00
3	2010-2011	Guja R.F. Cleaning	33 Ha.	53,730.00
7	2011-2012	Guja R.F. Cleaning	50 Ha.	85,320.00
10	2012-2013	Nil	Nil	Nil
11	2013-2014	Nil	Nil	Nil
12	2014-2015	N.R.F. Patharagad SWC VIII Cleaning & SMC	62.5 Ha. 90 Nos.	1,25,000.00
13	-do-	-do-	62.5 Ha. 90 Nos.	1,25,000.00
14	-do-	-do-	62.5 Ha. 90 Nos.	1,25,000.00
15	-do-	-do-	62.5 Ha. 90 Nos.	1,25,000.00
16	-do-	-do-	75 Ha. 110 Nos.	1,50,000.00
17	-do-	-do-	75 Ha. 110 Nos.	1,50,000.00
18	-do-	N.R.F. Compt. No-13,14 Patharagad SWC VIII Cleaning & SMC	87.1 Ha. 115 Nos.	1,74,200.00
19	-do-	-do-	87.1 Ha. 105 Nos.	1,74,200.00
20	-do-	-do-	87.1 Ha. 100 Nos.	1,74,200.00
21	-do-	-do-	87.1 Ha. 110 Nos.	1,74,200.00
22	-do-	-do-	87.1 Ha. 104 Nos.	1,74,200.00
23	2015-2016	Nil	Nil	Nil

ANNEXURE-IX

ANNEXURE-IX

Information on Silvicultural Operation Carried out in Bamboo Coupe in Dhandatopa Range

From the Year 2005-06 to 2016-17

Sl. No.	Year	Name of the Scheme	Forest Block	Comptt. No.	Area in Ha	Treated No. of Bamboo Clumps	Expenditure	Remarks
1	2005-06	12th FC	Hatidhara (N) R.F.	20, 21 & 22 B/c- 'C'		890	9,975.00	
		-do-	-do-	B/c- 'C'		1115	12,547.50	
		-do-	-do-	B/c- 'C'		1140	12,757.50	
		-do-	-do-	B/c- 'C'	158	1300	14,595.00	
		-do-	-do-	B/c- 'C'	59	1635	18,375.00	
		-do-	-do-	B/c- 'C'	70	1960	22,050.00	
		-do-	-do-	B/c- 'C'	52.5	1470	16,537.00	
		-do-	-do-	B/c- 'C'	52.5	1470	16,537.00	
		-do-	-do-	B/c- 'C'	33	935	10,500.00	
		-do-	-do-	B/c- 'C'	39	1110	12,495.00	
		-do-	-do-	B/c- 'C'	40	1115	12,547.50	
		-do-	-do-	B/c- 'C'	39	1110	12,495.00	
		-do-	-do-	B/c- 'C'	40	1125	12,600.00	
		-do-	-do-	B/c- 'C'	40	1125	12,600.00	
		-do-	-do-	B/c- 'C'	40	1115	12,547.50	
		-do-	-do-	B/c- 'C'	39	1110	12,442.50	
		-do-	-do-	B/c- 'C'	40	1125	12,600.00	
		-do-	-do-	B/c- 'C'	40	1125	12,600.00	
		-do-	-do-	B/c- 'C'	40	1125	12,600.00	
		-do-	-do-	B/c- 'C'	40	1120	12,547.50	
		-do-	-do-	B/c- 'C'	43	1200	12,600.00	
		-do-	-do-	B/c- 'C'	55	1570	15,330.00	
		-do-	-do-	B/c- 'C'	41	1165	12,915.00	
		-do-	-do-	B/c- 'C'	42	1195	13,230.00	
		-do-	-do-	B/c- 'C'	42	1180	12,967.50	
		-do-	-do-	B/c- 'C'	40	1130	12,705.00	
		-do-	-do-	B/c- 'C'	19	530	7,932.50	
				Total	**1144**	**32190**	**359,629.00**	
2	2006-07	2406 N.P Bamboo Silvicultural oparetion	Hatidhara(I	14	20	2225	24,970.00	
				Total	**20**	**2225**	**24,970.00**	
3	2007-08	2406 N.P Bamboo Silvicultural oparetion	-do-	14	20	720	9,940.00	
		-do-	-do-	18	20	720	9,940.00	
				Total	**40**	**1440**	**19,880.00**	

4	2008-09	2406 N.P Bamboo Silvicultural oparetion	Hatidhara F	17	41.66	1500	17,500.00	
		-do-	-do-	17	58.34	2100	24,500.00	
		-do-	-do-	17	50	1800	20,720.00	
		-do-	-do-	18	100	3600	41,790.00	
		-do-	-do-	18	48.33	1740	20,300.00	
		-do-	-do-	17	78	2808	32,760.00	
		-do-	-do-	18	100.83	3630	42,350.00	
		-do-	-do-	17	142	5112	59,500.00	
		-do-	-do-	16	39.5	1422	16,590.00	
		-do-	-do-	18	81	2916	34,020.00	
		-do-	-do-	16	150	5418	63,210.00	
		-do-	-do-	18	19	684	7,980.00	
		-do-	-do-	19	48	1728	20,160.00	
		-do-	-do-	19	84	3024	35,280.00	
		-do-	-do-	19	57.5	2070	24,150.00	
		-do-	-do-	19	158.66	5712	66,640.00	
		-do-	-do-	15	170	3600	70,560.00	
		-do-	-do-	15	170	3700	71,750.00	
				Total	**1596.82**	**52564**	**669,760.00**	
5	2009-10	2406 N.P Bamboo Silvicultural oparetion	Hatidhara F	Coupe-D	239	8600	107,640.00	
		-do-	-do-	-do-	80	2880	45,360.00	
		-do-	-do-	-do-	78	2800	44,550.00	
		-do-	-do-	-do-	90	3240	53,460.00	
		-do-	-do-	-do-	93	3360	61,560.00	
				Total	**580**	**20880**	**312,570.00**	
6	2010-11	13th FC	Hatidhara F	21	167	4160	90,000.00	
		S.S.O Bamboo	-do-	1	23	460	12,420.00	
		-do-	-do-	1	60	1200	32,400.00	
		2406 State Plan S.S.O Bamboo	-do-	1	50	1000	27,000.00	
		-do-	-do-	1	50	1000	27,000.00	
		Departmental Working in Bamboo	-do-	5	65	1300	34,920.00	
		S.S.O Bamboo	-do-	5	50	1000	27,000.00	
		Campa	-do-	8	48	900	42,570.00	
				Total	**513**	**11020**	**293,310.00**	
7	2011-12	S.S.O Bamboo	Hatidhara F	17	110	1100	58,500.00	
		-do-	-do-	17	90	900	49,500.00	
		-do-	-do-	17	54	540	28,800.00	
		-do-	-do-	17	48	480	25,920.00	
		-do-	-do-	18	44	430	23,760.00	
		-do-	-do-	19	55	700	29,520.00	
		Campa	-do-	8	8.2	200	7,380.00	
		Campa	-do-	8	8.2	200	7,380.00	
				Total	**417.4**	**4550**	**230,760.00**	

8	2012-13	S.S.O Bamboo	Hatidhara F	21	99	1782	89,100.00	
		-do-	-do-	21 & 20	101	1818	90,900.00	
		-do-	-do-	21	86	860	77,400.00	
		-do-	-do-	20	64	640	57,600.00	
		Campa	-do-	16	36	1080	33,300.00	
		Campa	-do-	15	77	2310	71,125.00	
		Campa	-do-	15	34	850	50,400.00	
		Campa	-do-	15	32.4	960	48,600.00	
		Campa	-do-	16	33.6	1020	50,400.00	
		Campa	-do-	17	66	2310	99,000.00	
				Total	**629**	**13630**	**667,825.00**	
9	2013-14	Campa	Hatidhara F	17	45	1575	67,500.00	
		-do-	-do-	16	60	1800	90,000.00	
		-do-	-do-	17	45	1350	67,500.00	
		-do-	-do-	6	12	336	18,000.00	
		-do-	-do-	1	32.7	915	19,050.00	
		-do-	-do-	5	13.1	367	19,650.00	
		-do-	-do-	1	22.3	624	33,450.00	
		-do-	-do-	2	33.9	949	50,850.00	
		-do-	-do-	3	28.6	800	42,900.00	
		-do-	-do-	5	20	560	30,000.00	
		-do-	-do-	1	35.2	985	52,800.00	
		-do-	-do-	2	17.6	492	26,400.00	
		-do-	-do-	3	17.6	492	26,400.00	
		-do-	-do-	4	35.2	985	52,800.00	
		-do-	-do-	5	17.6	492	26,400.00	
		-do-	-do-	6	17.6	492	26,400.00	
		-do-	-do-	6	17.6	492	26,400.00	
		-do-	-do-	7	25.6	716	38,400.00	
		-do-	-do-	7	25.6	726	38,400.00	
		-do-	-do-	1	36.16	1012	29,250.00	
				Cost of Stone boulder 116.01 Cum.			25,000.00	
		-do-	-do-	3	36.16	1012	29,250.00	
				Cost of Stone boulder 97.45Cum.			21,000.00	
		-do-	-do-	4	33.5	938	29,250.00	
				Cost of Stone boulder 97.45Cum.			21,000.00	
		-do-	-do-	4	36.16	1012	29,250.00	
				Cost of Stone boulder 116.01Cum.			25,000.00	
		-do-	-do-	5	30.81	770	20,550.00	
				Cost of Stone boulder 77.34Cum.			16,668.00	
		-do-	-do-	6	29.11	756	27,000.00	
				Cost of Stone boulder 77.34Cum.			16,668.00	
		-do-	-do-	7	20.11	540	13,500.00	

10	2014-15	Campa	Hatidhara I	2	65.9	1845	98,850.00	
		-do-	-do-	2	66.6	1864	99,900.00	
		-do-	-do-	1	26.7	747	40,050.00	
		-do-	-do-	6	25	700	37,500.00	
		-do-	-do-	5	35	980	52,500.00	
		-do-	-do-	3	100	2800	150,000.00	
		-do-	-do-	1	27.6	772	41,400.00	
		-do-	-do-	2	27.6	772	41,400.00	
		-do-	-do-	3	27.6	772	41,400.00	
		-do-	-do-	4 & 5	4.94	139	41,400.00	
		-do-	-do-	5	27.6	772	41,400.00	
		-do-	-do-	6	27.6	772	41,400.00	
		-do-	-do-	7	32.6	912	41,900.00	
		-do-	-do-	5	33.33	933	50,000.00	
		-do-	-do-	2	6	168	9,000.00	
		-do-	-do-	8	6.6	186	10,000.00	
		-do-	-do-	8	18.9	529	28,350.00	
		-do-	-do-	8	18.9	529	28,350.00	
		-do-	-do-	8	16.67	466	25,000.00	
		-do-	-do-	8	0.53	15	2,300.00	
		-do-	-do-	8	75.8	2123	113,700.00	
		-do-	-do-	14	8.3	232	12,450.00	
		-do-	-do-	14	13.4	375	20,100.00	
		-do-	-do-	14	8.3	232	12,450.00	
		-do-	-do-	14	13.4	375	20,100.00	
		-do-	-do-	14	8.3	232	12,450.00	
		-do-	-do-	14	8.3	232	12,450.00	
		-do-	-do-	8	10	280	15,000.00	
		-do-	-do-	14	16.66	466	25,000.00	
		-do-	-do-	14	78.75	2199	117,865.00	
		-do-	-do-	8	4.8	1310	70,200.00	
		-do-	-do-	8	9.93	278	14,906.00	
		-do-	-do-	8	33.33	933	50,000.00	
		-do-	-do-	8	16.66	466	25,000.00	
		-do-	-do-	9	0.09	3	139	
		-do-	-do-	8	6.7	187	10,050.00	
		-do-	-do-	8	86.1	2410	129,150.00	
		-do-	-do-	8	52.9	1481	79,350.00	
		-do-	-do-	14	113.8	3186	170,700.00	
		-do-	-do-	14	100	2800	150,000.00	
		-do-	-do-	8	20	564	30,000.00	
		-do-	-do-	14	30.9	865	46,350.00	
		-do-	-do-	14	0.07	2	105	
				Total	**1312.16**	**37904**	**2,059,476.00**	

11	2015-16	Campa	Hatidhara I	11	100	2500	200,000.00	
		-do-	-do-	11	100	2500	200,000.00	
		-do-	-do-	11	100	2500	200,000.00	
		-do-	-do-	11	150	3750	300,000.00	
		-do-	-do-	12	150	3750	300,000.00	
		-do-	-do-	10,11,12 & 13	2000	5000	400,000.00	
		-do-	-do-	13	150	3750	300,000.00	
		-do-	-do-	13	150	3750	300,000.00	
				Total	**2900**	**27500**	**2,200,000.00**	
				ABSTRACT				
		Year	**Area in Ha.**	**Treated No. of Bamboo Clumps**	**Expenditure**			
		2005-06	1144	32190	359,629.00			
		2006-07	20	2225	24,970.00			
		2007-08	40	1440	19,880.00			
		2008-09	1596.82	52564	669,760.00			
		2009-10	580	20880	312,570.00			
		2010-11	513	11020	293,310.00			
		2011-12	417.4	4550	230,760.00			
		2012-13	629	13630	667,825.00			
		2013-14	744.21	21188	1,082,150.00			
		2014-15	1312.16	37904	2,059,476.00			
		2015-16	2900	27500	2,200,000.00			
		Total	**9896.59**	**225091**	**7,920,330.00**			

Information On Silvicultural Operation Carried out in Bamboo Coupe Athhmalik Range								
From the Year 2005-06 to 2016-2017								
Sl.No	Year	Name of the Scheme	Forest Block	Compt No	Area in Hect	Treated No of Bamboo	Expenditure	Remarks
1	2005-2006	Bamboo Silviculter operation	Haldhara R.F	"B/C "A"	70	1960	22,050.00	
	2005-2006	Bamboo Silviculter operation	Haldhara R.F	"B/C "A"	80	2240	25,200.00	
				Total-	150	4200	47,250.00	
2	2006-2007	CAMPA	Haldhara R.F	49	.....	635	7,150.00	
	2006-2007	CAMPA	Haldhara R.F	49	.....	1585	17,820.00	
				Total-		2220	24,970.00	
3	2007-2008	.....	.....	.....	.....	.....	Nil	
4	2008-2009	Bamboo Silviculter operation	Haldhara R.F	32	.....	665	14,960.00	
	2008-2009	- do-	- do-	34	110	2100	46,200.00	
	2008-2009	- do-	- do-	34	65	2299	27,300.00	
	2008-2009	- do-	- do-	34	75	2299	31,500.00	
	2008-2009	- do-	- do-	34	100	3301	42,000.00	
	2008-2009	- do-	- do-	35	132	3620	55,440.00	
	2008-2009	- do-	- do-	35	144	3839	60,480.00	
	2008-2009	- do-	- do-	39	160.3	4300	67,340.00	
	2008-2009	- do-	- do-	39	85.7	1699	35,910.00	
	2008-2009	- do-	- do-	36	148	3929	61,880.00	
	2008-2009	- do-	- do-	36	147	3920	61,880.00	
	2008-2009	- do-	- do-	35 & 36	112.1	2995	47,110.00	
	2008-2009	- do-	- do-	37	80	2150	33,600.00	
	2008-2009	- do-	- do-	38	131.1	3665	57,680.00	
	2008-2009	- do-	- do-	38	203	5435	85,540.00	
				Total-	1693.2	46116	728,840.00	
5	2009-2010	Bamboo Silviculter operation	Haldhara R.F	28	150	4000	61,000.00	
	2009-2010	- do-	- do-	28	132	3520	71,280.00	
	2009-2010	- do-	- do-	28	138	3680	74,520.00	
	2009-2010	- do-	- do-	29	142	3920	79,560.00	
	2009-2010	- do-	- do-	29	143	3813	77,220.00	
	2009-2010	- do-	- do-	29 &30	90	2417	48,420.00	
	2009-2010	- do-	- do-	30	37	1000	19,980.00	
	2009-2010	CAMPA	- do-	31	103.8	2800	56,092.00	
	2009-2010	- do-	- do-	31	96.2	2600	52,000.00	
	2009-2010	- do-	- do-	32	12.5	350	7,000.00	
				Total-	1044.5	28100	567,072.00	
6	2010-2011	Bamboo Silviculter operation	Haldhara R.F	50	117	3110	63,000.00	
	2010-2011	- do-	- do-	50	83	2240	45,000.00	

7	2011-2012	Bamboo Silviculter operation	Haldhara R.F	38	169	2670	91,260.00	
	2011-2012	- do-	- do-	38	144	2330	77,760.00	
	2011-2012	- do-	- do-	39	87	1300	46,980.00	
	2011-2012	CAMPA	- do-	40	40	1052	21,600.00	
	2011-2012	CAMPA	- do-	40	52.2	2493	46,980.00	
	2011-2012	CAMPA	- do-	40	38.5	1519	34,920.00	
	2011-2012	CAMPA	- do-	43	50	1570	45,000.00	
	2011-2012	CAMPA	- do-	43	50.4	1581	45,360.00	
	2011-2012	CAMPA	- do-	44	60	1665	54,000.00	
	2011-2012	CAMPA	- do-	44	50	1550	45,000.00	
	2011-2012	CAMPA	- do-	38	50	1560	45,000.00	
	2011-2012	CAMPA	- do-	39	50	1580	45,000.00	
	2011-2012	CAMPA	- do-	39	50	1580	45,000.00	
				Total-	**891.4**	**22990**	**643,860.00**	
8	2012-2013	Bamboo Silviculter operation	Haldhara R.F	29	124	2500	1,11,000	
	2012-2013	- do-	- do-	28	160	3300	1,44,000	
	2012-2013	- do-	- do-	32	40	700	36,000.00	
	2012-2013	- do-	- do-	28	20	1400	63,000.00	
	2012-2013	- do-	- do-	32	70	1400	62,400.00	
	2012-2013	CAMPA	- do-	34	36	469	33,300.00	
	2012-2013	CAMPA	- do-	34	42	851	38,850.00	
	2012-2013	CAMPA	- do-	34	24	480	22,200.00	
	2012-2013	CAMPA	- do-	34	36	2200	54,000.00	
	2012-2013	CAMPA	- do-	37	60	3500	90,000.00	
	2012-2013	CAMPA	- do-	37	48	1500	72,000.00	
	2012-2013	CAMPA	- do-	44	27	1408	40,860.00	
	2012-2013	CAMPA	- do-	43	18.7	560	16,830.00	
	2012-2013	CAMPA	- do-	43 & 44	132	3338	1,22,100	
				Total-	**837.7**	**23626**	**529,440.00**	
9	2013-2014	Bamboo Silviculter operation CAMPA	Haldhara R.F	37	50	1600	25,000.00	
	2013-2014	- do-	- do-	38	50	1700	75,000.00	
	2013-2014	- do-	- do-	38	50	1700	75,000.00	
	2013-2014	- do-	- do-	38	17.2	560	25,500.00	
	2013-2014	- do-	- do-	45	50	1250	75,000.00	
	2013-2014	- do-	- do-	46	75	1575	1,12,500	
	2013-2014	- do-	- do-	45	50	1350	75,000.00	
				Total-	**342.2**	**10055**	**350,500.00**	
10	2014-2015	Bamboo Silviculter operation CAMPA	Haldhara R.F	46	75	1875	1,12,500	
	2014-2015	- do-	- do-	45 & 48 & 49	50	1300	75,000.00	
	2014-2015	- do-	- do-	49	100	2500	1,50,000	
	2014-2015	- do-	- do-	49	100	2882	1,50,000	
	2014-2015	- do-	- do-	43	80	2000	1,20,000	
	2014-2015	- do-	- do-	43	77.5	1940	1,16,250	
	2014-2015	- do-	- do-	43	124.2	3110	186,300	
	2014-2015	- do-	- do-	43 & 44	67.5	1700	101,250.00	
	2014-2015	- do-	- do-	44	143.1	3598	2,14,650	
	2014-2015	- do-	- do-	44	64.8	1630	97,200.00	
	2014-2015	- do-	- do-	44	50	1250	75,000.00	
	2014-2015	- do-	- do-	40	93	2331	1,39,350	
				Total-	**1025.1**	**26116**	**348,450.00**	

12	2016-2017	Bamboo Silviculter operation	HatidharaR.F	40	48.1	1203	96,200.00	
	2016-2017	- do-	- do-	40	48.1	1203	86,800.00	
	2016-2017	- do-	- do-	40	43.1	1075	86,000.00	
	2016-2017	- do-	- do-	40	38.7	968	77,400.00	
	2016-2017	- do-	- do-	40	25.8	645	51,600.00	
				Total-	**203.8**	**5094**	**400,000.00**	

ABSTRACT

Year	Area in Hect	Treated No of Bamboo Clumps	Expenditure
2005-2006	150	4200	47250
2006-2007	78	2220	24970
2007-2008	Nil	Nil	Nil
2008-2009	1693.2	46116	728840
2009-2010	1044.5	28100	557072
2010-2011	430	11506	227700
2011-2012	891.4	22960	643860
2012-2013	837.7	23636	529440
2013-2014	342.2	10065	360500
2014-2015	1025.1	26116	348450
2015-2016	950	22600	970,000
2016-2017	Nil	Nil	Nil
G.Total-	**7442.1**	**197531**	**4438082**

ANNEXURE-X

Abstract of NTFP Items of Athmallik Division																			
Name of the Block	Comp. N	Grid No.	NTFP Available in K.G																
			Sal	Chara	Kendu	Jamun	Mahula		Kumbhi	Harida	Bahada	Amla	Kusum	Simili	Mango		Bhalia	Bela	Dantari
			Seed	Seed	Fruit	Berry	Flower	Seed	Bark	Fruit	Fruit	Fruit	Seed	Cotton	Fruit	Kernel	Fruit	Fruit	Fruit
Dantarikhol	2	343	2	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	344	0	5	14	16	0	0	0	0	3	2	0	0	0	0	0	0	0
	2	345	3	6	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0
	2	348	6	4	0	6	0	0	3	0	0	2	0	0	0	0	0	0	0
	3	333	0	0	0	0	17	6	2	0	0	2	0	0	0	0	0	0	0
	3	334	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	23	3	0	20	0	0	0	0	0	0	0	3	0	0	0	0	0	0
	5	455	0	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	329	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	9	0
	6	330	3	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0
	7	323	10	0	4	20	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	324	2	5	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0
	7	325	2	1	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0
	8	328	0	0	13	0	0	0	0	0	0	0	7	0	0	0	0	14	0
			31	26	70	42	17	6	9	0	3	10	56	0	0	0	0	23	0
East Baruni	1	347	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	348	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0
	1	349	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	0
	1	351	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	40	5	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	352	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	336	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	337	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	339	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	29	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	332	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	322	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	21	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	326	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	317	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	335	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
			10	49	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0

Kutulsingha	3	24	0	5	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0
	3	451	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	468	0	0	0	0	0	0	0	0	50	0	0	0	0	0	0	0	0
	4	452	0	0	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	454	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0
	6	439	0	5	0	0	50	20	0	0	0	0	0	0	0	0	0	0	0
	7	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	511	2	0	0	0	2	1	0	0	0	0	7	0	0	0	0	0	0
	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	28	0	5	30	0	70	25	0	0	0	0	0	0	0	0	0	0	0
	4	27	0	2	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	438	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			15	70	210	0	122	46	0	10	60	0	7	0	0	0	4	0	0
West Baruni	1	311	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	312	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0
	2	314	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	313	0	8	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
	3	319	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	320	0	3	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nuanaon	1	32	208	1019	2900	07	2440	920	28	100	600	0	140	0	0	0	40	200	0
	1	392	12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	393	22	4	0	0	200	40	0	0	0	0	0	0	0	0	0	0	0
	1	394	2	8	0	0	50	20	0	0	0	0	0	0	0	0	0	0	0
	1	395	9	8	0	0	100	25	0	0	0	0	0	0	0	0	0	0	0
	2	402	16	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	403	0	0	5	0	25	10	0	0	0	0	0	0	0	0	5	0	0
	2	404	3	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	389	0	0	30	0	0	0	0	0	40	0	0	0	0	0	0	0	0
	4	370	9	13	0	0	20	4	0	0	0	0	0	0	0	0	0	0	0
	4	372	12	11	0	0	20	5	0	0	0	0	0	0	0	0	0	0	0
	3	387	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	388	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	371	3	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	366	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			90	82	65	0	415	104	0	0	40	0	0	0	0	0	5	0	0

Handapa	1	30	9	4	25	0	30	9	0	0	0	0	0	0	0	0	0	0	0
	1	278	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	279	14	0	0	0	62	30	0	0	0	0	0	0	0	0	7	0	0
	2	278	34	0	30	0	42	30	0	0	0	0	0	0	0	0	42	0	0
	2	277	33	2	0	0	0	0	0	5	10	5	0	0	0	0	0	0	12
	3	35	41	0	30	0	31	10	0	0	0	0	40	0	0	0	0	0	0
	3	36	37	0	0	0	50	10	0	0	0	0	0	0	0	0	0	0	2
	3	281	41	0	0	0	80	30	0	0	30	0	22	0	0	0	0	0	0
	4	283	12	0	0	0	5	2	0	0	0	0	0	0	0	0	0	0	0
	4	284	17	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	285	44	2	0	0	30	10	0	0	0	0	0	0	0	0	0	0	0
	4	286	56	2	0	0	50	10	0	0	0	0	0	0	0	0	0	0	0
	5	292	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	293	41	0	20	30	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	295	32	0	15	85	65	25	0	0	0	0	0	0	0	0	0	0	0
	6	296	21	5	55	0	35	10	0	0	0	0	0	0	0	0	0	0	0
	6	297	10	5	0	15	10	5	0	0	0	0	0	0	0	0	0	0	0
	6	298	27	5	0	20	70	15	0	0	0	0	0	0	0	0	0	0	0
	7	288	76	0	12	14	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	289	64	4	8	0	0	0	0	0	0	0	0	0	0	0	2	0	0
	7	290	37	0	25	0	225	50	0	0	0	0	0	0	0	0	0	0	0
	7	291	83	14	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			540	42	175	164	490	127	0	0	0	0	0	0	0	0	2	0	0
Ghosar	1	301	20	5	0	0	15	5	3	0	0	0	0	0	0	0	0	0	0
	2	7	14	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	3	1	5	4	21	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	300	0	3	6	0	40	13	2	0	0	0	0	0	0	0	0	0	0
			35	19	10	21	55	18	5	0	0	0	0	0	0	0	0	0	0
Bijamaliha	1	310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	308	0	7	0	0	0	0	8	0	15	0	0	0	0	0	0	0	0
	1	309	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	11	0	0	0	0	8	0	15	0	0	0	0	0	0	0	0
Dangjani	1	299	0	0	50	0	50	15	2	0	0	0	0	0	0	0	0	0	0
Bindhyabasini	1	39	0	6	70	0	0	0	0	0	0	0	0	0	0	0	0	90	0
			0	6	120	0	50	15	2	0	0	0	0	0	0	0	0	90	0
	1	277	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	0
	1	228	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	80	0
	1	229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0
	1	230	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0
			0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	210	0

Barkimurdi	1	327	0	0	0	0	70	15	0	0	0	0	50	0	0	0	0	0	0
	2	19	5	0	60	40	20	6	0	0	0	0	0	0	0	0	0	0	0
	3	342	0	0	60	0	75	30	0	0	0	0	0	0	0	0	0	0	0
			5	0	120	40	165	51	0	0	0	0	50	0	0	0	0	0	0
Mahendrapur	1	479	0	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0	0
	1	481	0	4	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0
	1	469	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
			0	4	0	0	0	0	4	0	21	2	0	0	0	0	0	0	0
Kadalimunda	1	11	0	1	5	0	35	12	0	0	0	0	0	0	0	0	4	0	0
	1	306	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	10	0
			0	3	9	0	35	12	0	0	0	0	0	0	0	0	4	10	0
Guja	1	302	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	10	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0
	1	303	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	305	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0
Kusumkuhuri	2	639	0	2	140	0	0	0	2	0	0	0	20	0	0	0	0	0	0
	2	640	0	5	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
			0	7	140	0	0	0	4	0	0	0	20	0	0	0	0	0	0

Abstract of NTFP Items of Athmalik Division

Name of the Block	Comp. No.	Grid No.	NTFP Available in K.G																
			Sal	Chara	Kendu	Jamun	Mahula		Kumbhi	Harida	Bahada	Amla	Kusum	Simili	Mango		Bhalia	Bela	Dantari
			Seed	Seed	Fruit	Berry	Flower	Seed	Bark	Fruit	Fruit	Fruit	Seed	Cotton	Fruit	Kernel	Fruit	Fruit	Fruit
Taleipathar	1	420	3	0	0	10	55	40	1	60	0	0	18	0	0	0	1	0	0
	1	431	34	3	0	0	70	10	1	30	60	0	0	0	0	0	7	0	0
	1	6	25	8	0	0	55	67	0	0	0	0	0	0	0	0	1	0	0
	1	419	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	2	409	8	3	17	0	35	42	2	0	0	0	0	0	0	0	0	0	0
	2	406	0	10	45	0	35	42	0	0	0	0	11	0	0	0	0	0	0
	2	407	3	11	10	0	125	170	1	0	0	0	0	0	0	0	0	0	0
	2	408	15	19	0	30	0	0	1	0	0	10	0	0	0	0	2	0	0
	3	390	39	2	60	5	15	18	0	0	15	0	0	0	0	0	0	0	0
	4	17	0	1	0	0	50	75	3	0	2	0	0	0	0	0	4	0	0
	4	374	27	0	0	0	120	85	0	0	0	0	0	0	0	0	10	0	0
	4	375	21	12	20	0	55	20	0	10	0	0	0	0	0	0	0	0	0
	4	376	13	11	140	0	218	175	1	0	0	0	0	0	0	0	0	0	0
	5	368	4	3	0	0	20	10	0	0	0	0	0	0	0	0	0	0	0
	5	367	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	369	5	2	0	0	60	20	0	0	2	0	0	0	0	0	0	0	0
	5	13	18	0	0	9	40	20	0	0	0	0	0	0	0	0	0	0	0
	6	354	17	3	0	0	124	100	0	0	40	0	0	0	0	0	0	0	0
	6	5	0	0	0	0	10	4	8	0	0	0	0	0	0	0	40	0	0
	6	357	1	0	0	0	0	0	0	0	0	3	40	0	0	0	3	0	0
	6	355	4	4	0	0	40	20	0	0	0	0	0	0	0	0	0	0	0
	7	9	4	0	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	359	0	1	0	0	13	2	0	0	0	0	0	0	0	0	2	0	0
	7	358	0	4	11	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	7	360	6	4	2	0	10	3	0	0	0	0	0	0	0	0	4	0	0
	8	365	0	7	3	0	20	6	0	0	0	0	0	0	0	0	15	0	0
	8	363	4	16	0	0	0	0	0	0	0	2	0	0	0	0	8	0	0
	8	362	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	8	364	1	7	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0
	9	401	13	4	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9	400	12	0	6	0	0	0	2	0	0	0	2	0	0	0	0	0	0
	10	405	36	5	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0
	11	397	25	31	15	15	14	20	0	0	0	0	0	0	0	0	0	0	0
	11	398	12	0	22	20	35	4	0	0	0	0	0	0	0	0	0	0	0
	11	399	38	0	25	10	70	78	1	0	0	0	0	0	0	0	0	0	0
	12	423	29	0	8	18	30	11	0	0	0	0	0	0	0	0	0	0	0
	13	411	8	2	50	0	40	13	0	35	0	0	22	0	0	0	7	0	0
	13	412	34	9	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0
	13	413	3	7	0	75	25	0	0	0	0	0	0	0	0	0	0	0	0
	13	414	27	0	35	85	0	0	0	0	0	0	0	0	0	0	0	0	0
	13	410	24	0	50	0	0	0	0	0	0	0	0	0	0	0	40	0	0

13	415	29	8	25	0	0	0	0	0	0	0	7	0	0	0	0	0	0
14	377	39	0	0	0	60	30	0	0	0	0	0	0	0	0	0	0	0
14	382	17	3	0	0	15	5	0	0	0	0	8	0	0	0	8	0	0
14	378	8	1	60	0	92	30	0	0	0	0	0	0	0	0	0	0	0
14	379	2	0	0	0	200	50	0	0	0	0	0	0	0	0	0	0	0
14	380	9	2	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
14	381	26	5	0	0	40	8	1	0	0	0	0	0	0	0	0	0	0
15	384	18	0	0	0	90	15	0	0	0	0	0	0	0	0	0	23	0
15	385	38	0	65	0	20	5	0	0	0	0	0	0	0	0	0	0	0
15	386	34	0	0	0	65	22	0	0	7	0	0	0	0	0	0	0	0
16	428	0	8	0	40	0	0	1	0	100	0	0	0	0	0	0	0	0
16	425	0	9	57	25	65	19	0	0	0	0	0	0	0	0	0	0	0
16	426	0	4	0	25	20	7	1	0	0	0	0	0	0	0	0	0	0
17	429	0	0	0	0	15	5	0	7	20	0	0	0	0	0	0	0	0
17	430	0	2	0	0	40	15	0	0	20	0	5	0	0	0	0	0	0
18	442	88	0	0	0	30	37	2	0	30	0	0	0	0	0	0	0	0
18	444	0	0	75	25	0	0	0	0	0	0	7	0	0	0	0	14	0
18	443	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	225	0
19	445	0	0	0	0	30	10	0	10	50	0	0	0	200	20	0	0	0
19	446	3	0	0	0	50	10	0	5	9	0	0	0	0	0	0	0	0
19	450	2	0	35	15	35	10	0	7	0	0	0	5	0	0	0	0	0
19	448	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	447	14	3	20	0	50	10	0	0	0	0	0	0	0	0	0	0	0
19	449	7	4	8	0	85	25	0	0	0	0	0	0	0	0	0	5	0
20	458	9	0	60	0	150	37	2	0	0	0	0	0	0	0	0	0	0
20	456	15	7	50	0	40	13	2	0	0	4	0	0	0	0	0	0	0
20	457	0	0	215	0	75	20	0	5	0	0	0		0	0	10	0	0
21	431	28	0	0	30	125	100	1	0	0	0	0	0	0	0	0	0	0
21	432	20	0	110	80	175	53	1	0	0	0	0	0	0	0	0	0	0
22	416	42	0	0	0	0	0	0	0	15	0	10	0	0	0	0	0	0
22	418	34	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0
22	417	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	436	3	0	0	0	130	40	0	0	35	2	0	0	0	0	0	0	0
23	435	0	0	0	0	40	15	0	0	0	0	15	0	0	0	0	0	0
23	434	0	0	40	0	85	26	0	0	60	4	0	0	0	0	0	0	0
24	440	0	0	0	55	0	0	0	0	0	4	0	0	0	0	4	0	0
Total		1009	245	1380	595	3206	1672	42	174	475	29	146	5	200	20	166	267	0

ANNEXURE-XI

VSS OF ATHMALLIK FOREST DIVISION.

Sl. No.	Range	Section	Name of the VSS	G.P.	Forest area assigned (Ha.)			Remarks
					R.F	K.F	Total	
1	2	3	4	5	6	7	8	9
1	Athmallik	Athmallik	Hariharpur	Nuagoan	0	28	28	
2			Puleswar	NAC,Athmallik	0	25	25	
3			Rangapur	Aida	0	41.54	41.54	
4			Kundapur	Aida	0	62.3	62.3	
5			Padmapokhori	NAC,Athmallik	0	49.25	49.25	
6			Jadupur	Nagaon	0	60	60	
7			Dudhianali	Nagaon	0	74	74	
8			Sidhapur	NAC,Athmallik	0	106	106	
9			Nugaon	Nuagoan	0	28.1	28.1	
10		Manitri	Deulabeda	Manatri	0	40	40	
11			Rajing	Manatri	0	96.59	96.59	
12			Hingamandal	Manatri	0	65.44	65.44	
13			Gopalpur	Manatri	0	68	68	
14			Mahendrapur	Manatri	0	56.6	56.6	
15			Kusupur	Manitri	0	10.5	10.5	
16			Nuagarh	Nagaon	0	49.43	49.43	
17		Pataka	Pakaka Dahirnal	Luhasinga	0	77	77	
18			Kusumkuhuri	Luhasinga	0	12.7	12.7	
19			Kendupati	Luhasinga	0	67	67	
20			Lirbadihi	Luhasinga	159	22	181	Kusumkuhuri R.F.
21			Rathipur	Jamdoli	0	27	27	
22			Kutugoan	Aida	0	46.3	46.3	
23			Badabandha	Aida	0	21.64	21.64	
24	Dhandatopa	Dhandatopa	Baliadhara	Thakurgarh	0	41	41	
25			Purunapani	Thakuragarh	0	20	20	
26			Alekhapur	Thakurgarh	0	20	20	
27			Sadanandapur	Thakurgarh	11	9	20	Hatidhara R.F.
28			Basudevpur	Tahakurgarh	29.64	0	29.64	Hatidhara R.F.
29			Aamsama	Thakurgarh	127.13	0	127.13	Hatidhara R.F.
30			Dhandatopa	Thakurgarh	0	46	46	
31			Kutufisinga	Mainura	0	37.9	37.9	
32			Hatasimili	Thakurgarh	0	53.64	53.64	

41	Handapa	Handapa	Bidising	Handapa	0	80	80	
42			Solanda	Can-Boinda	0	101	101	
43			Chakundamunda	Handapa	0	150	150	
44			Chuliapur	Kataranga	0	50	50	
45			Pratapur	Handapa	0	200	200	
46			Nunukapasi	Nunukapasi	0	100	100	
47			Anadamunda	Nunukapasi	0	80	80	
48			Khandabar	Jamunali	0	50	50	
49			Kadalimunda	Nunukapasi	100	0	100	Kadalimunda R.F.
50			Badibahal	Jamunali	0	80	80	
51			Jamunali	Jamunali	100	60	160	Kadalimunda R.F.
52			Golasar	Jamunali	0	100	100	
53			Padmapur	Kenteikolia	0	174	174	
54			Madhupur	Handapa	0	150	150	
55			Ichhapur	Kenteikolia	60	100	160	Handapa R.F.
56			Kanteikolia	Kenteikolia	100	0	100	Handapa R.F.
57			Anlabereni	Kanteikolia	0	100	100	
58			Asrubahal	Jamunali	0	80	80	
59		Urkula	Tentulipathar	Krutibaspur	0	20	20	
60			Jamujhari	Urkula	60	0	60	Bankimundi R.F.
61			Gahanpur	Urkula	0	50	50	
62			Dambbahali	Kurumtap	60.1	0	60.1	Bankimundi R.F.
63			Tileswar	Krutibaspur	0	100	100	
64			Nakchi	Nakchi	0	200	200	
65			Mandam	Nakchi	0	80	80	
66			Kamarei	Nakchi	0	50	50	
67			Ranibhuin	Nakchi	60	0	60	Dandarugudi R.F.
68			Pagabandhha	Nakchi	40	0	40	Dandarugudi R.F.
69			Madhupur	Nakchi	40	30	70	Kholadangiani R.F.
70			Nuabhuin	Handapa	0	100	100	
71			Kholadangiani	Nakchi	60	0	60	Kholadangiani R.F.
72			Makadachua	Nakchi	40	30	70	Dandarugudi R.F.
73			Udal	Nakchi	30	0	30	Nerthern R.F.
74			Takaba	Nakchi	0	80	80	

93	Bamur	Kishorenagar	Kardingibahal	Himitira	20	0	20	Ghosar R.F.
94			Khariakani	Himitira	40	0	40	Ghosar R.F.
95			Chintamanipur	Kishornagar	50	0	50	Ghosar R.F.
96			Brahamnipali	Uskapali	0	100	100	
97			Dohali	Dhaurapali	0	100	100	
98			Sahadevbandhupali	Bamur	0	60	60	
99			Khandahata	Kishornagar	0	50	50	
100			Pipalbahal	Dhaurapali	0	10	10	
101			Badibahal	Uskapali	0	100	100	
102			Gargudabahal	Uskapali	0	60	60	
103			Dalimura	Uskapali	0	62.96	62.96	
104			Talpadar	Uskapali	0	47.52	47.52	
105			Karamalakata	Uskapali	0	40	40	
106			Uskapali	Uskapali	20	0	20	Bindhyabasini R.F.
107			Jhinkibahal	Uskapali	0	80	80	
108			Baija	Dhaurapali	0	60	60	
109			Dadarpali	Uskapali	0	78.7	78.7	
110		Bamur	Susab	Ambapal	0	22.09	22.09	
111			Dalpaka	Bamur	0	100	100	
112			Rangamatia	Bamur	0	40	40	
113			Pathargarh	Bamur	19	0	19	Narthen R.F.
114			Rengalbeda	Dhaurapali	0	30	30	
115			Phasipal	Bamur	0	30	30	
116			Haripur	Bamur	0	60	60	
117			Bhangamunda	Bamur	0	100	100	
118			Kutasinga	Bamur	50	80	130	Narthern R.F.
119			Bamur Chasa Sahi	Bamur	0	25	25	
120			Dangapal	Bamur	0	70	70	
121			Naktinali	Bamur	0	58.02	58.02	
122			Bairagipali	Bamur	60	50	110	Kishoreban R.F.
123			Bamur Tentulisahi	Bamur	40	0	40	Kishoreban R.F.
124		Kadulimunda	Tentalapani	Kadulimunda	50	0	50	East Baruni R.F.
125			Bhejidihi	Tusar	0	97.13	97.13	
126		Sargipali	Phuljhari	Angapada	0	145.1	145.1	
127			Dhadarpal	Dhadarpal	170	30	200	Ghosar R.F.
128			Brundabanapar	Ambapal	0	100	100	

141		Madhapur	Gadadharpur	Madhapur	0	192	192	
142			Manarbeda	Kandhapada	0	17	17	
143			Digipadar	Madhhapur	0	25	25	
144			Nuagoan	Madhapur	47	0	47	Naagoan R.F.
145			Madanpur	Madhhapur	0	16.5	16.5	
146			Sargiseni	Madhapur	50	5.6	55.6	Naagoan R.F.
147			Sorishpanka	Madhapur	40	2	42	Naagoan R.F.
148			Kundanali	Kundanali	0	134.75	134.75	
149			Kudugoan	Nilakantapada	0	51	51	
150			Chandrapur	Nilakanthpada	0	151	151	
151			Bijipur	Madhapur	0	63	63	
152		Kiakata	Dhuliapada	Kiakata	0	40	40	
153			Tasarbeda	Kiakata	0	50	50	
154			Hatupada	Kiakata	0	95.04	95.04	
155			Maa Narayani	Kiakata	32.68	167.32	200	West Barunu R.F.
156			Shri Jagannath	Kiakata	30	7	37	West Barunu R.F.
157	Madhapur		Maa Dasabhuja	Kiakata	32	8.5	40.5	West Barunu R.F.
158			Daultpur	Basudevpur	0	87.6	87.6	
159			Subarnapur	Basudevpur	160	40	200	East Barunu R.F.
160			Kiakata	Kiakata	0	98.6	98.6	
161			Raghunath (Kadapada)	Kiakata	0	35.7	35.7	
162			Mangalpur, Kadapada	Kiakata	160	40	200	East Barunu R.F.
163			Khajurijharan	Tusar	46	34	80	East Barunu R.F.
164			Nuapada	Kiakata	50	0	50	West Barunu R.F.
165		Dekrud	Ghosarakhol	Raniakata	0	60	60	
166			Goratopa	Raniakata	0	120	120	
167			Raibahal	Raniakata	0	46	46	
168			Taldar	Raniakata	0	20	20	

ANNEXURE – XII

EXTRAORDINARY

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FOREST & ENVIRONMENT DEPARTMENT

RESOLUTION

The 9th September, 2011

Sub: Joint Forest Management Resolution, 2011

1. Introduction:

Forests are one of the complex eco-systems of our planet. The role of forests in

Conservation of environment and economic prosperity of mankind is well established. Economic growth and environment protection are inextricably linked. For surviving on the earth human beings will have to live in harmony with nature. The need for conservation of environment and protection of forests and wildlife has been enshrined in our Constitute on. Orissa has 61018 Sq. kms of forest area which is 39.18% of the geographical area of the State. The existing forest cover of 31.38 % of its geographical area plays a very signify cantrole in the socio-economic and cultural life of the people of the State. However, over the past few decades, the forests of Orissa are under heavy biotic pressure. The rich biodiversity of the State faces the risk of depletion. Man-animal conflict is on the rise. Hence, conservation and development of the forest eco-systems of Orissa is a priority of the State Government.

The National Forest Policy, 1988 envisaged co-operation of the people in conservation and development of forests. In keeping with this policy Government of Orissa adopted the Joint Forest Management (JFM) approach and sought community participation for protection, regeneration and management of the forest wealth. JFM has not only been a tool for forest regeneration, but also a means of employment generation and social empowerment of the forest-fringe dwellers.

The State Government enacted the Orissa Village Forest Rules, 1985 which envisaged preparation of a Management Plan for every village forest and soughtco-operation of the community in protection of these forests. In 1988, the State Government passed a resolution to formally introduce a Scheme of Protection of peripheral Reserve Forest areas

with participation of the adjoining villagers by forming a Village Level Forest Protection Committee. The scope of this resolution was enlarged in1990 to include the Protected Forests. To make the forest-people interface more effective, the Government of Orissa in Forest & Environment Department issued a Resolution dated3.7.1993. This resolution dealt, in a fairly exhaustive manner, the involvement of all local communities in protection of adjoining forests, formation of Van Samrakshyana Samiti(V.S.S.), duties and responsibilities of the V.S.S. and their Executive Committees and the role of Forest Department and Gram Panchayats, preparation of Joint Forest Management plans, usufruct benefits for the V.S.S. and provisions of MoU etc. Since these Resolutionsin the past did not cover the Mangrove Wetlands and the Protected Areas (PA) of the State, i.e. National parks and Sanctuaries, and participatory modes of management are needed there too, the 2008 Resolution was issued to extend the participatory approach toall types of forests. Eco-development was adopted as a strategy in order to improve the livelihood of local people and thereby secure their support for conservation.

Participatory Forest Management in JFM mode is an evolving concept encompassing ecological socio-cultural and economic dimensions. People have played an important role in protection and regeneration of forests all over the state of Orissa. Villagers have either formed V.S.Ss as per JFM Resolution or Community Forest Management Groups outside the existing JFM framework. It is desirable that associations of people, whether formed under Government resolutions, or by peoples' own initiative, with the forest conservation as the principal and core objective, are allowed to function smoothly.

Panchayat Extension to Scheduled Area (PESA) Act, 1996, which is applicable to scheduled areas, lays down as follows: "Every Gram Sabha shall be competent to safeguard and preserve the traditions and customs of the people, their cultural identity, community resources and the customary mode of dispute resolution; Every Gram Sabhashall approve the plans, programmers' and projects for social and economic development before such plans, programmers' and projects are taken up for implementation by the Panchayat at the village level and be responsible for the identification or selection of persons as beneficiaries under the poverty alleviation and other programmes."

This Actvests the ownership of Minor Forest Produce (MFP) on Gram Panchayats in Scheduled areas. The decision of Government of Orissa to do away with the monopolies in collection and trading in 69 items of MFP is in consonance with the spirit of PESA Act.

The community forest resource has been defined under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (popularly known as Forest Rights Act). As per the said Act, community forest resource means customary common forest land within the traditional and customary boundary of the village and seasonal use of the landscape in case of pastoral communities etc. The Minor forest produce has been defined under the Forest Rights Act which includes all non-timber forest produce of plant origin such as bamboo, brushwood, stumps, cane, tassar, cocoons,honey, wax, lac, tendu or kenduleaf, medicinal plants and herbs, roots, tubers and the like.It be mentioned here that in case of Kendu Leaf, the current policy of Government is to discharge certain responsibilities with a view to protecting the livelihood of forest dependent communities while providing management inputs to facilitate a scale of operation required for adequate value realization and sustainable management process.

Under the Forest Rights Act, the Gram Sabha is to initiate the process of determining the individual and community forest right. Therefore the enactment of FRA provides an opportunity not only to strengthen the existing Participatory Forest conservation and management initiatives but to promote such initiatives in the areas which are devoid of such institutional arrangements. With the changing scenario of Forest Management, increasing awareness among people and experiences gained from the past management practices; it is now felt necessary that the resolution on Joint Forest Management, 2008 is revised.

2. Selection of Area:

(i) The forests of the State to be covered under this Resolution shall be grouped into the following two categories:

(a) Reserved Forests, Protected forests, Village forests, Revenue forests etc. not covered under Protected Areas.

(b) Protected Areas (National Park and Sanctuaries) excluding Core Areas, and Mangrove Wetlands. The Committee constituted for the first category of forests will be known as Vana Surakshya Samiti (VSS) while the Committee constituted for the second category will be known as Eco-development Committee (EDC).

ii) While deciding the extent of area to be assigned, the Palli Sabha shall consult the Forest Range Officer concerned and take into account the area customarily being protected and used by the community, the number of adjacent villages, their claims, if any, and users' regime. In case a group of villages decide to constitute one VSS jointly, they may do so. The local Forester will provide the technical input and facilitate the process of identification of the forest area to be managed by the committee.

(iii) In case any change is required in the extent of forest area assigned to the existing VSS formed under the JFM Resolution, 2008, the same can be done in consultation with the village community and the local forest department officials not below the rank of a Forest Range Officer.

3. Constitution of VSS/EDC:

(i) Ordinarily there will be one VSS/EDC for a single village. One VSS may also cover more than one village or there may be more than one committee in a village especially large in size. Other Forest Protection groups, if any would also be covered under this Resolution.

(ii) All adults of the village will be the members of the VSS/EDC. They may pay an enrolment fee determined by the General Body (GB) of VSS/EDC.

(iii) The Palli Sabha shall send its Resolution to the Range Officer concerned regarding constitution of VSS / EDC for his record and communication to the DFO concerned for registration at the Division level.

4. Constitution of the Executive Committee (EC):

(i) The Palli Sabha shall elect the Chairperson, the Vice-Chairperson, the Secretary and the Treasurer and a minimum of other 11 (eleven) members to constitute the Executive Committee. At least 50% of the members of the EC shall be women. The number of SC & ST members in the Executive Body shall be in proportion to their membership in VSS / EDC. There should also be representation from the group of community, who do not have any livelihood support other than depending on the forests.

(ii) Either the Chairperson or Vice-Chairperson shall be a woman.

(iii) The composition of the EC shall be as follows:

1. Chairperson	1 Elected Member
2. Vice-Chairperson	1 Elected Member
3. Secretary	1 Elected Member
4. Treasurer	1 Elected Member
5. Ward Member (s)	concerned *Ex officio* Member (s)
6. Members 1	1 Elected Members
7. Local Forest Guard	1 *Ex officio* Member

(iv) The Range Officer concerned will act as the Returning Officer for conducting the election of the EC. It shall be the responsibility of the Returning Officer to ensure that the representation in the EC is in accordance with reservation specified in Para-i above.

(v) The EC will have tenure of 3 years at a time.

5. Meeting:

(i) General Body (GB)

(a) The GB meeting of the VSS / EDC shall be held at least once in every six months. It can also be called as and when required.

(b) The Secretary with the approval of the Chairperson will convene the meeting of the GB. Ordinarily a 15 days' notice would be necessary for convening themeeting. A copy of the notice will be sent to the Gram Panchayat.

(c) The Chairperson and in his absence the Vice-Chairperson shall preside over the meetings.

(d) 50% of the members of the VSS / EDC will constitute the quorum for the GB. At least one third of the members present should be women.

(e) Under special circumstances, a special meeting of the VSS/EDC can beconvened provided at least one third of the members agree to convene sucha meeting and make such a request to the Chairperson in writing. Where theChairperson does not convene the meeting, the Secretary shall convene theGB meeting with the approval of the Vice-Chairperson. In all such cases, a 3days' notice would be necessary indicating the purpose of the said meeting. The decision in such meeting shall be taken by a minimum of 2/3rd members of VSS / EDC.

(f) The Secretary shall record the proceedings and get them approved by Chairperson. A copy of the proceedings would be either pasted in a register or preserved in a guard file

. A copy of the Resolution will be forwarded to the Forest Range Office and the Gram Panchayat under the signature of the Secretary.

(g) The Executive Committee shall be elected by GB at least one month before expiry of its tenure.

(ii) Executive Committee (EC)

(a) EC would meet as often as possible and necessary, but not less than once in two months.

(b) The meeting will be presided over by the Chairperson and in his absence by the Vice- Chairperson.

(b) The quorum for any meeting of the EC shall be 50% of its membership, out of which at least one-third shall be women.

6. Duties and responsibilities of VSS / EDC:

(i) The members of the VSS / EDC shall individually and collectively protect the forest, wildlife and biodiversity.

(ii) The VSS / EDC shall put in necessary efforts so that adjoining catchments area, water resources and other ecologically sensitive areas are protected.

(iii) The VSS/ EDC shall place adequate emphasis on plantation of indigenous medicinal and NTFP species in the forests as well as outside the forest area adjoining the village

(iv) The VSS / EDC shall ensure that the decisions taken in the Palli Sabha to regulate access to community forest resources and stop any activity which adversely affects the wildlife, forests and the biodiversity, are complied with.

(v) The General Body of the VSS /EDC shall have the powers to remove and/or substitute any elected member of the EC by a two third majority of the members if the concerned member does not discharge his/her duties satisfactorily.

7. **Duties and responsibilities of the Executive Committee (EC):**

(i) The EC shall carry out the day-to-day business of the VSS / EDC as per provisions of the Resolution. The EC shall prepare the Micro Plan and Annual Work Plan for the assigned forest area and integrate other developmental activities outside the forest area associated with the forest based livelihood system and get it approved by the VSS / EDC after technical scrutiny by the Forest Range Officer concerned.

The EC shall be responsible for managing and implementing the Micro Plan and Annual Plan and other decisions of the General Body of VSS / EDC.

(ii) The EC shall be responsible for protection of the forests assigned to the VSS / EDC and extend their assistance to the Forest Department for apprehending the offenders who commit forest offences. If the members of the VSS / EDC play a significant role in detection of forest offence and seizure of the forest produce within their village limits, they will be entitled for a fixed percentage of the value of the forest produce (except in case of WL Trophies) so seized as per procedure laid down in Para. - 11(iii).

(iii) The EC in consultation with the GB shall evolve methodology on all issues relating to membership, conflict resolution, prevention of encroachment, exercise of customary rights and use of the permissible forest resources such as NTFP including Bamboo.

(iv) The EC shall be responsible to account for and manage the funds and other resources received from the Government, other agencies and funds internally generated, if any. For this purpose a joint account called VSS account/EDC account shall be opened in any commercial, rural or Co-operative Bank recognised by the RBI or in any post office, which shall be operated, jointly by the Secretary and the Treasurer of the VSS / EDC. Utilization Certificate relating to the expenditure incurred shall be jointly signed by the Chairperson and the Secretary and submitted to the authorities concerned.

(v) The EC shall be responsible for managing funds received by VSS / EDC by maintaining and operating VSS / EDC account as per the procedure detailed in Annexure A.

(vi) The EC shall try to establish marketing linkage for various NTFP items and other micro-enterprise products for securing better returns for the members. The Forest Department will provide necessary support in this regard.

(vii) Annual account of VSS / EDC shall be placed before the GB for its approval.

8. Role of Palli Sabha: As per the 73rd Amendment of the Constitution, certain powers and responsibilities have been vested on the PRIs. Therefore it is necessary to define the relationship between village level institution like VSS / EDC and the PRI and establish a linkage with the Palli Sabha.

(i) Regarding protection and conservation of forest, wildlife and environment, the EC shall work as a Sub-Committee of Palli Sabha.

(ii) If the work of the EC of any VSS / EDC is found to be detrimental to forest conservation and against the larger and long term interests of the people, the VSS / EDC may recommend for dissolving and reconstituting the EC. The Palli Sabha, on receipt of such recommendation may enquire into the matter and forward its findings to the Divisional Forest Officer for necessary action. The Divisional Forest Officer, after examining the merit will dissolve the EC and advise the GB of VSS / EDC for its reconstitution. Such dissolution will be formally placed by the DFO before the District Level Steering Committee in its next meeting for information.

9. Role of the Forest Department:

(i) To register the VSS / EDCs and maintain close liaison with them.

(ii) To support the VSS / EDCs in identifying and apprehending the forest offender(s).

(iii) To take action as per law in cases where VSS / EDC members have handed

over the offender(s) and forest produce involved in the offence.

(iv) To assist in capacity building of VSS / EDC members on different aspects of

forest management, planning, silviculture, nursery technology, forest laws, accounting,

book keeping, micro-enterprise development, value addition and processing of NTFPs etc.

(v) To provide technical help to the VSS / EDCs in preparation and implementation of the Micro plan/ annual work programme.

(vi) To invite suggestion from the VSS / EDCs while preparing the Working Plan /

Management Plan of the concerned Forest Area / Protected Area.

(vii) To sign Memorandum of Understanding with the VSS / EDCs and ensure sharing of benefit as per norms in vogue.

(viii) To establish co-ordination with other departments/agencies for successful implementation of the micro plans and related area development programmes.

(ix) To facilitate the process of discharging the duties and resolving the conflicts by the ECs.

10. Micro Plan:*(i)* After constitution of the EC, as soon as possible, a Micro Plan shall be prepared by the members of the Committee through a participatory process involving VSS Members and with the technical input provided by the field officers of the Forest Department.

(ii) The Micro Plan shall be prepared for conservation and sustainable management of the assigned forests while integrating other developmental activities outside the forest area associated with the forest based livelihood system, with participation and involvement of line departments, wherever necessary.

(iiI) The Micro Plan will primarily prescribe afforestation with priority for plantation of indigenous medicinal and NTFP species, soil and moisture conservation measures and activities to be undertaken for livelihood support of the forest dependent communities. It may also incorporate formation of SHGs and micro-enterprises that could be undertaken based on locally available resources and may include activities such as:– eco-tourism, farm forestry, Agro forestry, Silvi-pasture development, promotion of fuel-efficient devices, animal husbandry, pisciculture, bee keeping, mushroom cultivation, tassar/lac cultivation etc.

*iv)*The Micro Plan shall indicate the choice of species in different plantation schemes and models. It shall contain a detailed silvicultural operations plan, which shall be consistent with the prescriptions of the overall working plan covering the area or the Wildlife Management Plan of the Protected Area.

(v) The Micro Plan so prepared shall be in consonance with the existing laws of the land.

(vi) The Micro Plan shall also detail out the various NTFP items that can be collected. This shall be done with due regard to the carrying capacity, productivity and biodiversity of the local eco-system.

(vii) The draft Micro Plan prepared by the EC, will be scrutinized by the Forest Range Officer from the technical, financial and legal point of view. After that the same shall be placed before the GB for deliberation and approval.

11. Usufruct sharing:

(i) The VSS / EDC shall be entitled to the usufructuary benefits from the assigned forests as under:—

(a) Usufructs like fallen leaves, fodder grasses, thatch grass, broom grass, fencing materials, brushwood, fallen lops, tops and twigs to be used as fuel shall be available to the members free of cost.

(b) All intermediate yields in the shape of small wood, poles, firewood etc as may be obtained as a result of silvicultural operations and bamboo harvested in VSS / EDC assigned area shall be made available to the VSS / EDC members in a manner as may be decided by EC. If sold at a price, the funds so obtained shall be deposited in the VSS / EDC account.

(a) In case of Kendu leaves and specified forest produce other than bamboo, if any, the VSS will have the right to collect the same from the assigned forest but these items will be disposed of as per the prevailing provisions of Government and practices.

(b) While maintaining the forest cover in perpetuity, if any major harvest or final felling occurs in the assigned forest, the same shall be taken up by the forest department as per the prescription of the working plan/ duly approved micro plan. In case of natural calamities, harvesting of wind-fallen trees shall be treated as final harvest. Priority will be given to the members of the VSS /EDC for salvaging and harvesting work. Valuation of the produce so obtained shall be done and information shared with the VSS /EDC and the produce will besold / disposed of by the forest department or by agents of the forest department. The VSS / EDC will receive 50% share of the sale price after deduction of proportionate harvesting cost and this will be deposited in the “VSS account”. The VSS may also opt for 50% of the forest produce so.

Harvested if it is for their *bonafide* domestic use and they agree to pay the proportionate cost of harvesting.

(a) In case of village woodlots created and maintained by the VSS / EDC on non forest land, all usufructs including interim and rotational harvests shall go to the VSS / EDC.

(b) In the event of a natural calamity occurring in the village there may be a demand for house building materials and other forest produce from the assigned forest. In such cases, the VSS / EDC may go for harvesting the required quantity of timber or other forest produce as a deviation to the Micro Plan, with due approval of the Divisional Forest Officer concerned.

(ii) The EC shall be responsible for the distribution of the usufructuary benefits equitably among the members of the VSS. Need of the group or community, who do not have any livelihood support other than depending on the forests, should be specially considered

(iii) In cases where member/ a group of members of the VSS /EDC play a major role in the collection of intelligence, detection and seizure of illegal forest produce in transit the concerned VSS/EDC shall be entitled to the prescribed percentage of the sale price of the forest produce as per Rule 4 (3) of the Orissa Rewards for Detection of Forest Offences Rules, 2004. Such amount shall be deposited by the DFO in the "VSS account/ EDC account" after disposal of the seized produce following due procedure of law.

12. Transit of harvested forest product:

All forest produce requiring permits for transit as per provisions of Orissa Timber and Other Produce Transit Rules, 1980 shall be removed from the assigned forest area in accordance with a permit to be issued jointly by the President and the Secretary in the prescribed format (Form-4). The permit shall be valid only within the limits of the area to which the VSS members belong. A record will be maintained to this effect by the VSS / EDC and the Secretary will keep the local Forest Range Officer informed of the same on a quarterly asis. In case of transportation outside the above limit, the permit will be issued by the competent forest officer on receipt of application from VSS / EDC.

13. Conflict Resolution:

(i) In case of intra village conflict in matters of implementation of Joint Forest Management, the Executive Committee of the VSS/ EDC shall endeavor to amicably resolve the conflict. If it fails to resolve the conflict, it shall bring the same to the notice of the Palli Sabha and try to sort out the issue. If the conflict still remains, the same would be

Referred to the Sub Divisional Level Steering Committee formed in the line of the SDLC under FRA, 2006 and their decisions would be final.

(ii) In case of inter village conflict; the same would be referred to the Sub Divisional Level Steering Committee and their decisions would be final.

14. Memorandum of Understanding (MoU):

(i) To ensure smooth working relationship between the Forest Department and the VSS / EDC and also to bring in a sense of ownership, empowerment and accountability a MoU shall be signed between the FD and VSS / EDC delineating the duties and responsibilities of the parties concerned.

(ii) The Chairperson of the VSS will sign the MoU on behalf of the VSS while the Range Officer concerned will sign the same on behalf of Forest Department. Other members at the EC will also be signatory to the MoU as witness while the concerned local forest officials such as:— the Forester and Forest Guard will sign the MoU as witness.

(iii) The MoU shall be in the prescribed form (Form-5)

15. Steering Committee:

(i) There shall be Steering Committees at the Sub Division Level, District Level and at the State Level.*(ii)* Sub Division Level Steering Committee (SDLC): This committee shall comprise of the following members:—

(a) Sub Collector : Chairperson

(b) Assistant Conservator of Forests: Member Convener

(c) An Officer of the Tribal Welfare Department: Member

in-charge of the Sub-Division

(d) Sub Divisional Police Officer (SDPO): Member

(e) Forest Ranger concerned: Member

(f) Tahashildar concerned: Member

(g) Chairperson of the Panchayat Samiti concerned Member.

(h) Zilla Parishad member: Member

(i) Two Chairpersons/Vice-Chairpersons of: Member

VSS/EDC (to be nominated by the DFO)

(iii) The SDLC will be responsible to resolve all cases of intra village and inter village conflicts as referred to them in regards to smooth functioning of VSS / EDC.12

(iv) The SDLC will meet at least once in every quarter and shall facilitate functioning of the VSS / EDC and provide necessary support and guidance to them.

(v) The SDLC will facilitate the VSS / EDC for protection and sustainable management of forests, forest based livelihood and holistic development of the villages.

(vi) The SDLC may invite the representatives of the committees concerned and other such peoples' representatives, reputed persons / organizations working in the field of forest management to their meetings as per requirement.

(vii) District Level Steering Committee (DLSC): This committee shall comprise of the following members:—

(a) District Collector : Chairperson

(b) Divisional Forest Officers : Member

(Territorial and Wildlife)

(c) ADM dealing with land matters : Member

(d) Deputy Director (Agriculture) : Member

(e) Chief District Veterinary Officer : Member

(f) PD, DRDA : Member

(g) PA, ITDA : Member

(h) District Welfare Officer : Member

(i) Deputy Director Horticulture : Member

(j) Soil Conservation Officer : Member

(k) 5 VSS (Chairperson/ Vice-Chairperson : Member

(at least 2 women) (to be nominated by the DFO)

(viii) The DFO concerned having the jurisdiction over the district headquarters will be the Member Convener of the meetings of DLSC.

(ix) The tenure of the non-official members will be three years.

(x) The DLSC may co-opt NGOs or other experts as members with credibility and experience of working on forest related issues.

(xi) The DLSC will meet at least once in six months and shall facilitate functioning of the VSS / EDC and provide necessary support and guidance to them.

(xii) The DLSC will oversee protection and sustainable management of forests, forest based livelihood and holistic development of the villages.

(viii) The DFO concerned having the jurisdiction over the district headquarters will be the Member Convener of the meetings of DLSC.

(ix) The tenure of the non-official members will be three years.

(x) The DLSC may co-opt NGOs or other experts as members with credibility and experience of working on forest related issues.

(xi) The DLSC will meet at least once in six months and shall facilitate functioning of the VSS / EDC and provide necessary support and guidance to them.

(xii) The DLSC will oversee protection and sustainable management of forests, forest

based livelihood and holistic development of the villages.

(xiii) State Level Steering Committee (SLSC): The constitution of the State Level

Steering Committee shall be as under:—

1. Minister (Forest) : Chairperson

2. Chief Secretary : Vice-Chairperson

3 . Principal Secretary, F & E Department : Member

4. Principal CCF (O) : Member

5. PCCF (WL) : Member

6 . 2 D.F.Os./One RCCF from field to be : Member

nominated by PCCF (O) on rotation basis

7 . S ecretary, Revenue Department : Member

8. Secretary, Rural Development Department : Member

9 . S e cretary, Home Department : Member

10. Secretary, PR Department : Member

1 1 . Secretary, SC & ST Department : Member

12. Chief Conservator of Forests (Central) : Member

13. Director, Orissa Watershed : Member

Development Mission

14. Two representatives of : Member

Civil Society Organisations / Experts

to be nominated by F&E Department

1 5 . Special Secretary, F& E Department : Member

16. Chairpersons of two VSS / EDC

t o b e nominated by the PCCF (O) : Member

17. CCF (Plan, Programme & Afforestation),

Office of PCCF, Orissa : Member-Convener

(xiv) The non-official members of the State Level Steering Committee will have tenure of three years.

(xv) The Committee shall meet at least once in a year to guide the process of participatory forest management.

(xvi) Changes in the Resolution, if any shall be placed before the SLSC for approval and recommendation to Government.

16. Repeal and Savings:

This supersedes Forest & Environment Department Resolution No.17454-1FAffn.

17/2008/F&E., dated the 22nd October, 2008. However, all VSSs already formed under provisions of Forest & Environment Department Resolutions made earlier will be treated as VSS formed under this Resolution.

ORDER

Ordered that the Resolution be published in the Extraordinary issue of the *Orissa Gazette.*

By order of the Governor

AUROBINDO BEHERA

Principal Secretary to Government

ANNEXURE-XIII

STATUS OF EMPOWERMENT OF VSS OF ATHMALLIK FOREST DIVISION.

Sl no.	Name of the Range	Name of the Section	Name of the VSS	Area in Ha.	Status of empowerment		
1	2	3	4	5	6	7	8
1	Athmallik	Athmallik	Nagaon	28.1			Poor
2			Hariharpur	28			Poor
3			Padmapokhori	49.25		Manageable	Poor
4			Puleswar	25			
5			Jadupur	60	Active		
6			Dudhianali	74	Active		
7			Sidhapur	106		Manageable	
8			Rangapur	41.54			Poor
9			Kundapur	62.3		Manageable	
10		Manitri	Deulabeda	40			Poor
11			Gopalpur	68		Manageable	
12			Kusupur	10.5			Poor
13			Mahendrapur	56.6		Manageable	
14			Nuagarh	49.43			Poor
15			Rajing	96.59	Active		
16			Hingamandal	65.44			Poor
17		Pataka	Pataka Dahimal	77	Active		
18			Limbadihi	181			Poor
19			Rathipur	27		Manageable	
20			Kusumkuduri	12.7			Poor
21			Kendupati	67	Active		
22			Kutagaon	46.3			Poor
23			Badabandha	21.64			Poor
24	Dhandatopa	Dhandatopa	Bailadhara	41		Manageable	
25			Punnapani	20			Poor
26			Alekhapur	20		Manageable	
27			Sadanandapur	20	Active		
28			Basudevpur	29.64	Active		
29			Aamasama	127.13			Poor
30			Kutalisinga	37.9		Manageable	
31			Hatasimili	53.64			Poor
32			Dhandatopa	46		Manageable	
33		Maimara	Taranda	65	Active		
34			Dhatikibahal	100			Poor
35			Korab	40		Manageable	
36			Bipradiha	41		Manageable	
37		Paiksahi	Kenchuanali	101.6			Poor
38			Kantapada	48	Active		
39		Ambsamunda	Hinjagola	26.7	Active		
40			Chintamanipur	20.24			Poor

41	Handapa	Handapa	Padmapur	174			Poor
42			Solanda	101		Manageable	
43			Madhupur	150			Poor
44			Namukapasi	100		Manageable	
45			Anadamunda	80			Poor
46			Bidisinga	80			Poor
47			Jamunali	160		Manageable	
48			Golasar	100			Poor
49			Asrubahal	80			Poor
50			Badbahal	80			Poor
51			Pratappur	200	Active		
52			Ichhapur	160			Poor
53			Kadalimunda	100		Manageable	
54			Anlabereni	100			Poor
55			Khandabar	50		Manageable	
56			Chakundamunda	150	Active		
57			Chulapur	50			Poor
58			Kanteikolia	100			Poor
59		Urukula	Tentulipathar	20			Poor
60			Nakchi	200	Active		
61			Mandamba	80			Poor
62			Kamarei	50		Manageable	
63			Takaba	80	Active		
64			Pagabandhha	40			
65			Madhupur	70			Poor
66			Nuabhuin	100	Active		
67			Kholadangiani	60			
68			Mankadachua	70			Poor
69			Jamujhuri	60		Manageable	
70			Ghanpur	50			Poor
71			Damabahali	60.1			Poor
72			Udal	30	Active		
73			Ranibhuin	60			Poor
74			Tileswar	100		Manageable	
75		Charkhaman	Rajanpal	200			Poor
76			Laxmipriyapur	80	Active		
77			Kholaregeda	200			Poor
78			Gandurijhuan	200		Manageable	
79			Kundali	127.51			Poor
80			Charkhuan	100	Active		
81			Baliamba	181		Manageable	
82			Uchhabali	100		Manageable	
83		Pedipathar	Batrakhol	95	Active		
84			Tentuloi	130			
85			Barahan	36		Manageable	

86	Handapa	Pedipathar	Kuruntap	10			Poor
87			Henamara	118		Manageable	
88			Dhundi	62.53			Poor
89			Parbatipur	99.6	Active		
90			Garud	70		Manageable	
91			Bad-Govindapur	110		Manageable	
92			Laxmipur	101.4	Active		
93	Bamur	Bamur	Susab	22.09			Poor
94			Dalpaka	100	Active		
95			Rengalbeda	30			Poor
96			Naktimali	58.02	Active		
97			Phasipal	30		Manageable	
98			Haripur	60			Poor
99			Kutasinga	130			Poor
100			Bamur Chasa Sahi	105		Manageable	
101			Pathargarh	19			Poor
102			Dangapal	70			Poor
103			Bamur Tentulisahi	40		Manageable	
104			Bhangamunda	100	Active		
105			Bairagipali	110			Poor
106			Ranganatia	40		Manageable	
107		Kishorenagar	Kardingbahal	20			Poor
108			Uskapali	20			Poor
109			Brahmanipali	100			Poor
110			Himitira	60		Manageable	
111			Ghasar	100			Poor
112			Sandhapal	60			Poor
113			Badibahal	100			Poor
114			Gargadabahal	60		Manageable	
115			Dalimara	62.96			Poor
116			Talpadar	47.52			Poor
117			Khariakani	40			Poor
118			Karamulakata	40		Manageable	
119			Jhinkibahal	80			Poor
120			Dohali	100			Poor
121			Baija	60			Poor
122			Sahadevbandhupali	60		Manageable	
123			Khandahota	30	Active		
124			Chintamanipur	50	Active		
125			Pipalbahal	10			Poor
126			Dadanpali	78.7		Manageable	
127		Kadalimunda	Tentulapani	50			Poor
128			Bhejidihi	97.13			Poor
129		Sargipali	Champapur	60			Poor
130			Jharabereni	40			Poor

131	Bamur	Sargipali	Thelkanali	40			Poor
132			Phuljhari	145.1		Manageable	
133			Gurujanga	100			Poor
134			Khairamunda	60			Poor
135			Sindhamunda	20			Poor
136			Dhadapala	200		Manageable	
137			Parunapani	76	Active		
138			Gatikrushnapur	40			Poor
139			Brundabanapur	100			Poor
140			Arthapal	64			Poor
141	Madhapur	Madhapur	Gadadharpur	192			Poor
142			Manarbeda	17	Active		
143			Dijipadar	25		Manageable	
144			Kundamali	134.75		Manageable	
145			Chandarpur	151		Manageable	
146			Nuagaon	47			Poor
147			Madanpur	16.5			Poor
148			Sargiseni	55.6			Poor
149			Kadagaon	51	Active		
150			Sorishpanka	42			Poor
151			Bijipur	63	Active		
152		Kiakata	Dhuliapada	40			Poor
153			Tasarbeda	50			Poor
154			Daultpur	87.6		Manageable	
155			Hatuapada	95.04		Manageable	
156			Kiakata	98.6			Poor
157			Raghunath (Kadapada)	35.7			Poor
158			Mangalapur (Kadapada)	200		Manageable	
159			Khajurijharan	80	Active		
160			Ma Narayani	200			Poor
161			Subarnapur	200		Manageable	
162			Nuapada	50			Poor
163			Shri Jagannath	37			Poor
164			Ma Dasabhuja	40.5			Poor
165		Dakrud	Bhartapur	191	Active		
166			Goranpa	120		Manageable	
167			Ghosarakhol	60			Poor
168			Taldar	20			Poor
169			Rahuhal	46	Active		
170			Titirikata	172	Active		
Total				**13,121.19 Ha**			

Annexure-XIV

Settlement of Right to ST and other forest dwellers under Forest Right Act, 2006

SL NO	NAME OF THE BENIFICIARY	F H NAME	NAME OF THE GP	NAME OF THE VILLAGE	KHATA NO	PLOT NO	AREA
1	Debendra Nayak	Deleswar Nayak	Kuruntap	Damdarpur	46	541	0.2
2	Suresh Nayak	Gameswar Nayak	Kuruntap	Damdarpur	46	653	0.2
3	Chintamani Nayak	Debara Nayak	Kuruntap	Damdarpur	46	588/ 874	0.14
4	Balak Nayak	Anadi Nayak	Kuruntap	Damdarpur	46	632	0.09
5	Upendra Nayak	Anadi Nayak	Kuruntap	Damdarpur	46	632	0.09
6	Sujana Nayak	Indramani Nayak	Kuruntap	Damdarpur	46	588	0.3
7	Kaluchuran Nayak	Dilleswar Nayak	Kuruntap	Damdarpur	46	541	0.2
8	Gingadhar Nayak	Agadhu Nayak	Kuruntap	Damdarpur	46	588	0.2
9	Gayadhara Nayak	Agadhu Nayak	Kuruntap	Damdarpur	46	588	0.22
10	Suresh Bhoi	sribacha Bhoi	Thakurgarh	Takipather	48	165	0.35
11	Subash Bhoi	sribacha Bhoi	Thakurgarh	Takipather	48	165	0.3
12	Prakash Bhoi		Thakurgarh	Takipather	48	165	0.3
13	Kailash Bhoi	sribacha Bhoi	Thakurgarh	Takipather	48	165	0.3
14	Rabindra Biswal	Mantri Biswal	Thakurgarh	Takipather	48	165	1.54
15	Rabindra Biswal	Mantri Biswal	Thakurgarh	Takipather	48	172	1.12
16	Biswanatha Munda	Mangulu	Nigaon	Dudhiamali	15	172/1	0.1
17	Hrushi Munda	Benu	Nigaon	Dudhiamali	15	172/1	0.1
18	Parbati Munda	Dhruba Munda	Nigaon	Dudhiamali	15	172/1	0.1
19	Keshaba Munda	Mangulu	Nigaon	Dudhiamali	15	172/1	0.1
20	Jiban Munda	Trinath	Nigaon	Dudhiamali	15	172/1	0.1
21	Dasharathi Munda	Kalamni	Nigaon	Dudhiamali	15	172/1	0.1
22	Prasanna Munda	Kalamni	Nigaon	Dudhiamali	15	172/1	0.1
23	Rama Munda	Sovagini Munda	Nigaon	Dudhiamali	15	172/1	0.09
24	Lokanatha Munda	Chera Munda	Nigaon	Dudhiamali	15	172/1	0.08
25	Kameswar Munda	Hadibandhu Munda	Nigaon	Jadupur	27	172	0.08
26	Kurti Munda	Kishori Munda	Nigaon	Jadupur	27	29	0.1
27	Basanta Munda	Chaiti Munda	Nigaon	Jadupur	27	29	0.1
28	Sina Munda	Lachhman Munda	Nigaon	Jadupur	27	29	0.1
29	Paria Munda	Kishori Munda	Nigaon	Jadupur	27	29	0.207
30	Durjana Munda	Jagannath Munda	Purunamnatri	Hingmandal	54	1	2.1
31	Pradeep Munda	Narayan Munda	Purunamnatri	Hingmandal	54	129	2.5
32	Hari Munda	Jagannath Munda	Purunamnatri	Hingmandal	54	49	0.75
33	Hari Munda	Jagannath Munda	Purunamnatri	Hingmandal	54	52	0.27
34	Tirtha Munda	Jagannath Munda	Purunamnatri	Hingmandal	57	116/465	1.35
35	Purana Bhoi	Chandala Bhoi	Thakurgarh	Sadanandapur	24	243	0.45
36	Basanta Naik	Chasi Naik	Thakurgarh	Sadanandapur	24	69	1.16
37	Amulya Naik	Chasi Naik	Thakurgarh	Sadanandapur	24	69	1.16
38	Rabi Majhi	Chakra Majhi	Thakurgarh	Sadanandapur	24	69	1
39	Pradeep Bhoi	Chandala Bhoi	Thakurgarh	Sadanandapur	24	243	0.45
40	Drupada Bhoi	Chandala Bhoi	Thakurgarh	Sadanandapur	24	243	0.45

41	Dasarama Nayak	Bhakta Ch. Nayak	Anbasamunda	Hinjagola	12	75	3
42	Kartika Nayak	Akura Nayak	Anbasamunda	Hinjagola	40	62/1	1.5
43	Karunakar Nayak	Kamala Nayak	Anbasamunda	Hinjagola	40	30Jan	2
44	Chaitanya Nayak	Bira Nayak	Anbasamunda	Hinjagola	40	62/1	2.7
45	Bibhatsa Nayak	Bikram	Anbasamunda	Hinjagola	40	62	0.9
46	Purna Ch Nayak	Sriram	Thakurgarh	Anandapur	51	22	2
47	Bali Nayak	Gauda Nayak	Anbasamunda	Anandapur	51	555	2
48	Kalakar Bhoi	Rihas Bhoi	Anbasamunda	Anandapur	70	1723	0.57
49	Banabihari Nayak	Kartika Nayak	Anbasamunda	Anbasamunda	70	751/1	3.40
50	Keshaba Nayak	Kaira Nayak	Anbasamunda	Patharakhupa	52	901	2
51	Pabitra Nayak	Sudarsan Nayak	Anbasamunda	Chintamanipur	31	61	0.66
52	Pabitra Nayak	Sudarsan Nayak	Anbasamunda	Chintamanipur	31	36	1.53
53	Dasmanta Majhi	Gobinda Majhi	Anbasamunda	Chintamanipur	31	121	2.62
54	Golekh Majhi	Bisnab Majhi	Anbasamunda				
55	Kishori Nayak	Krupa Nayak	Anbasamunda	Nibadipur	12	108	1.8
56	Hatia Mirdha	Anama Mirdha	Jamudoli	Nikmara	9	74/172	0.04
57	Kubera Naik	Kunja Naik	Jamudoli	Nikmara	9	74/172	0.08
58	Suresh Dhury	Sundara Dhury	Jamudoli	Karadsinga	26	1/169	0.04
59	Gopala Behera	Panu Behera	Jamudoli	Karadsinga	26	1/170	1.04
60	Sanbaru Behera	Padu Behera	Jamudoli	Karadsinga	26	1/169	0.04
61	Paluni Behera	Jadu Behera	Jamudoli	Karadsinga	26	1/169	0.04
62	Guru Behera	Panu Behera	Jamudoli	Karadsinga	26	1/169	0.04
63	Bijaya Dhury	Sana Dhuri	Jamudoli	Karadsinga	26	1/169	0.04
64	Nanda Mirdha	Basu Mirdha	Jamudoli	Karadsinga	26	1/169	0.04
65	Manu Dhury	Khadu Dhury	Jamudoli	Karadsinga	26	1/169	0.04
66	Nara Dhury	Sundara Dhury	Jamudoli	Karadsinga	26	1/169	0.04
67	Jagadish Dhury	Sundara Dhury	Jamudoli	Karadsinga	26	1/169	0.04
68	Indamani Nayak	Arakhita Nayak	Jamudoli	Karadsinga	26	1/169	0.1
69	Prafulla Munda	Basu Mirdha	Jamudoli	Karadsinga	26	1/169	0.04
70	Sumati Munda	Hadi Munda	Jamudoli	Karadsinga	26	1/169	0.04
71	Nauttam Nayak	Kamala Nayak	Anbasamunda	Girida	27	48	A0.98Dec. J/2
72	Caitanya Pradhan	Judhisthir	Thakurgarh	JugiBadha	54	109	A0.50dec. J/2
73	Kartika Nayak	Gandharba	Thakurgarh	Cheraikhandi	19	354	A1.44dec. J/2
74	Suresh Ch Pradhan	Kumara	Anbasamunda	Phuluribandha	34	96	A1.0Dec. J/2
75	Nisha Pradhan	Kumara	Anbasamunda	Phuluribandha	34	96	A1.0Dec. J/2
76	Nabina Pradhan	Panchu	Anbasamunda	Phuluribandha	34	96	A1.0Dec. J/2
77	Niranjan Pradhan	Kumara	Anbasamunda	Phuluribandha	34	94	A1.04dec J/2
78	Prafulla Rout	Ananda	Thakurgarh	Anandapur	51	561	A1.0Dec. J/2
79	Antaryami Bhoi	Malia	Thakurgarh	Anandapur	51	480	A0.76dec J/2
80	Bhaskara Rout	Ananta	Thakurgarh	Anandapur	51	561	A1.0Dec. J/2

81	Bishu Ch Naik	Dinabandhu	Ambasamunda	Nahadippur	12	68	A1.80dec J/2
82	Subhadra Munda	Late / Dibya	Nagaon	San Dudhianali	15	1	A0. 10dec J/2
83	Hari Munda	Durjan	Nagaon	San Dudhianali	15	1	A0. 10dec J/2
84	Bindu Munda	Srinibash	Nagaon	San Dudhianali	15	1	A0. 30dec J/2
85	Bishnu Munda	Madhu	Nagaon	San Dudhianali	15	1	A0. 10dec J/2
86	Utam Gadtia	Narayan	Nagaon	San Dudhianali	15	1	A0. 10dec J/2
87	Bishnu Munda	Mohan	Nagaon	San Dudhianali	15	1	A0. 10dec J/2
88	Sambaru Munda	Puna	Nagaon	San Dudhianali	15	1	A0. 10dec J/2
89	Trinathu Majhi	Kumara	Nagaon	San Dudhianali	15	1	A0. 10dec J/2
90	Lochan Majhi	Kumara	Nagaon	San Dudhianali	15	1	A0. 10dec J/2
91	Bhimsen Malik	Raghunath	Nagaon	San Dudhianali	15	1	A0. 10dec J/2
92	Sapneswar Majhi	Kumara	Nagaon	San Dudhianali	15	1	A0. 10dec J/2
93	Budhu Munda	Puna	Nagaon	San Dudhianali	15	1	A0. 10dec J/2
94	Ananda Bhoi	Nita	Thakurgarh	Nua Arakhikuda	2	1	A2. 00dec J/2
95	Sujan Bhoi	Nita	Thakurgarh	Nua Arakhikuda	2	1	A2. 00dec J/2
96	Bharata Bhoi	Kulha	Thakurgarh	Nua Arakhikuda	2	1	A2. 00dec J/2
97	Madhu Bhoi	Pato	Sinhalh	Talcipather	48	165	A1.00dec J/2
98	Chaitanya Bhoi	Sankara	Sinhalh	Talcipather	48	165	A0.50dec J/2
99	Prafulla Rout	Dineswara	Sinhalh	Talcipather	48	165	A0.50dec J/2
100	Budhu Pradhan	Kasinath	Kachgaon	Bhagamunda	21	8	A2. 00dec J/2
101	Rabi Pradhan	Kasinath	Kachgaon	Bhagamunda	21	8	A2. 00dec J/2
102	Duryadhan pakri	Bada	Kachgaon	Bhagamunda	21	7	A2. 00dec J/2
103	Jaga Nayak	Laxman	Kachgaon	Kandhapali	8	73	A0.35dec J/2
104	Nimkar Nayak	Laxman	Kachgaon	Kandhapali	8	69	A0.50dec J/2
105	Bishikeshan Nayak	Bhakta Ch.	Ambasamunda	Hinjagola	12	75	A1.00dec J/2
106	Duryodhan Nayak	Bhakta Ch.	Ambasamunda	Hinjagola	12	75	A1.00dec J/2
107	Dasharan Nayak	Bhakta Ch.	Ambasamunda	Hinjagola	12	75	A1.00dec J/2
108	Basistha Nayak	Dinabandhu	Thakurgarh	Dinabandhupur	12	68	A1.00dec J/2
109	Dillip Ku. Singh	Gobinda Ch.	Thakurgarh	Dinabandhupur	12	68	A1.00dec J/2
110	Rasananda Nayak	Paramananda	Ambasamunda	Hinjagola	18	6/169	A1.00dec J/2
111	Mukunda Nayak	Binambara	Ambasamunda	Chintamanipur	18	106/165	A1.00dec J/2
112	Basanta Nayak	Binambara	Ambasamunda	Chintamanipur	31	121	A1.00dec J/2
113	Kumara Nayak	Netra	Ambasamunda	Chintamanipur	31	14	A1.00dec J/2
114	Upendra Behera	Kapila	Thakurgarh	Anandpur	51	22	A1.00dec J/2
115	Nanda Kishor Bhoi	Rajan	Thakurgarh	Anandpur	51	322	A1.00dec J/2
116	Lachhman Behera	Bimbadhar	Krutibaspur	Jarpada	36	126A	A.060 decJ/2
117	Lambodara Behera	Bimbadhar	Krutibaspur	Jarpada	36	126B	A.060 decJ/2
118	Ananga Kissan	Jagada	Nakchi	Karuntap	114	388/1	0.4
119	Niranjan Mirdha	Kunja Mirdha	Nakchi	Karuntap	114	388/1	0.4
120	Dukhu Mirdha	Kailashu	Nakchi	Karuntap	114	632/1	1
121	Madan Kissan	Puna	Nakchi	Karuntap	114	379/372	0.95
122	Biswanath Kissan	Nalala	Nakchi	Karuntap	114	32/1	0.20/2.95
123	Pabitra Gadtia	Sanu	Nakchi	Takaba	43	529	1.06
124	Kasal Tapan	Mohan	Nakchi	Takaba	46	50	1
125	Chitaranjan Pradhan	Sambaru		Mankaddhua	44	349	A0.50dec J/2
126	Bishikeshan Pradhan	Bhagaban		Mankaddhua	44	513	A1.00dec J/2
127	Tankadhar Pradhan	Sambaru		Mankaddhua	44	349	A0.50dec J/2
128	Dillip Kumar Bhoi	Ballantha		Karuntap	114	637/1	A1.00dec J/2
129	Thenguru Nayak	Bandhu		Karuntap	114	486	A.060 decJ/2
130	Madan Nayak	Kalandi		Karuntap	114	486/487	A1.00dec J/2
131	Sahadeb Nayak	Sukru		Karuntap	114	486	A1.00dec J/2
132	Kasturi Mirdha	Narayan		Karuntap	114	596	A0.22dec J/2

ANNEXURE-XV

The List of DFOs served in the Division right from the day of inforrmation of the Division

Sl No.	NAME OF THE DFO	FROM	TO
1	P.C.Bahinipati,OFS-I	21.12.1979	16.08.1982
2	S.C.Mohanty,OFS-I	17.08.1982	19.12.1982
3	N.C.Pattanaik,IFS	20.12.1982	01.03.1983
4	B.K. Kanungo,OFS-I	12.03.1983	13.07.1984
5	I/c N.C.Mohanty,OFS-II	14.07.1984	29.08.1984
6	S.S. Sivastava,IFS	30.08.1984	29.11.1986
7	S.C.Patra,IFS	30.11.1986	04.12.1986
8	K.M.Sethy,OFS-I	05.12.1986	09.11.1987
9	K.M.Sethy,IFS	10.11.1987	30.10.1989
10	A.K.Mohapatra(B),IFS	04.10.1989	16.08.1991
11	I/c B.B. Patel,OFS-I	17.08.1991	01.09.1991
12	J.D.Sharma,IFS	02.09.1991	08.06.1991
13	T.A.K. Sinha,IFS	09.10.1991	04.01.1992
14	I/c A.K.Satpathy,OFS-II	05.01.1992	10.01.1992
15	J.D.Sharma,IFS	11.01.1992	17.01.1992
16	T.A.K. Sinha,IFS	18.01.1992	11.03.1992
17	R.N.Maharana,OFS	12.03.1992	30.09.1994
18	Rajiv Kumar,IFS	01.10.1994	25.08.1996
19	B.K.Swain,IFS	25.08.1996	08.09.1996
20	Lingaraj Otta,IFS	08.09.1996	22.10.1997
21	OM Prakash Singh,IFS	22.10.1997	11.12.1998
22	D.Swain,IFS	11.12.1998	30.12.1998
23	Suresh Pant,IFS	30.12.1998	14.01.2000
24	T.A.K. Sinha,IFS	14.01.2000	30.01.2000
25	Suresh Pant,IFS	30.01.2000	04.08.2000
26	E.L.Yanger Aier,IFS	04.08.2000	11.09.2000
27	Suresh Pant,IFS	11.09.2000	27.09.2001
28	E.L.Yanger Aier,IFS	27.09.2001	10.12.2001
29	Suresh Pant,IFS	10.12.2001	23.08.2002
30	G.P.Sahoo,OFS-I	30.08.2002	30.04.2003
31	P.C.Mishra,OFS-I	30.04.2003	11.06.2004
32	A.Sethy,IFS	11.06.2004	17.08.2005
33	P.K.Jha,IFS	17.08.2005	24.08.2005
34	A.Sethy,IFS	24.08.2005	01.07.2008
35	I/c K.K.Satpathy,OFS-II	01.07.2008	18.07.2008
36	S.N.Jena,IFS	18.07.2008	28.10.2010
37	S.S.Mishra,OFS-I(SB)	28.10.2010	27.12.2010
38	S.N.Jena,IFS	27.12.2010	13.07.2011
39	I/c A.K.Dalai,OFS-I(JB)	13.07.2011	01.03.2012
40	S.S.Mishra,OFS-I (SB)	01.03.2012	31.12.2012
41	J.Mishra,OFS-I(SB)	31.12.2012	07.01.2013
42	S.K.Dalei,OFS-I(SB)	07.01.2013	22.06.2015
43	K.S.Pradeep,IFS	22.06.2015	03.09.2016
44	G.Panda,OFS-I(SB)	03.09.2016	13.10.2016
45	K.S.Pradeep,IFS	13.10.2016	15.09.2017
46	S.K Samantara,OFS-I(SB)	15.09.2017	01.07.2020
47	S.Anand,IFS	01.07.2020	Cont.

ANNEXURE-XVI

DETAILED SQUAD ENGAGED FOR PROTECTION IN ATHMALLIK DIVISION.

Year	Name of scheme	Name of Range	Total No of persons engaged in protection.
1	2	3	4
2006-07	78141-protection working Circle.	Dhandatopa	63 Nos.
		Madhapur	19 Nos.
		Handapa	16 Nos.
		Bamur	8 Nos.
		Athmallik	116 Nos.
	111-Departmental working of coupe and Depot-0922-22020.	Dhandatopa	2 Nos.
		Handapa	12 Nos.
		Bamur	02 Nos.
		Athmallik	02 Nos.
		Divisional Office	03 Nos.
2007-08	78141-protection working Circle.	Athmallik	08 Nos.
		Dhandatopa	48 Nos.
		Madhapur	03 Nos.
		Handapa	06 Nos.
		Bamur	02 Nos.
	22-2406-F & W L. C.S.P- State Sector - 01-fry-101-F.C.D.R- 0736-intigated Forest Protection.	Athmallik	06 Nos.
		Dhandatopa	01 Nos.
		Madhapur	02 Nos.
		Handapa	10 Nos.
	22-2406-F & W L. C.S.P- State Sector - 01-fry-101-F.C.D.R- 0361-Elephant management Protection.	Athmallik	03 Nos.
		Dhandatopa	139 Nos.
		Madhapur	151 Nos.
		Handapa	187 Nos.
	0345- Economic Plantation / RDF-22023	Athmallik	51 Nos.
		Dhandatopa	52 Nos.
	111-Departmental working of coupe and Depot-0922-22020.	Athmallik	21 Nos.
		Division Office	05 Nos.
		Madhapur	05 Nos.
		Handapa	08 Nos.
		Bamur	03 Nos.
	4406-Capital outlay (NP)-01-Fry.-800-O.C-0107-Comp. Affn. 78002-CATP Plantation	Madhapur	555 Nos.
		Handapa	265 Nos.
		Bamur	142 Nos.
	2406-Fry. & W L- State Plan-Sate Sector-01-Fry.-101-FCDR-7770-Strengthening and maintenance-P.W .C	Dhandatopa	01 No.
		Handapa	02 Nos.

	78141-protection working Circle.	Athmallik	10 Nos.
		Dhandatopa	52 Nos.
		Madhapur	05 Nos.
		Handapa	08 Nos.
		Bamur	05 Nos.
	22-2406-F & WL C.S.P- State Sector -01-fry-101-F.C.D.R-0736-intigated Forest Protection.	Athmallik	08 Nos.
		Dhandatopa	05 Nos.
		Madhapur	06 Nos.
		Handapa	09 Nos.
	111-Departmental working of coupe and Depot-0922-22020.	Athmallik	18 Nos.
		Division Office	04 Nos.
		Madhapur	06 Nos.
		Handapa	06 Nos.
		Bamur	05 Nos.
2008-09	4406-Capital outlay (NP)-01-Fry.-800-O.C-0107-Comp. Affn. 78002-CATP Plantation	Madhapur	450 Nos.
		Handapa	200 Nos.
		Bamur	120 Nos.
	2406-Fry. & WL-State Plan-Sate Sector-01-Fry.-101-FCDR-7770-Strengthening and maintenance-B.W.C	Athmallik	05 No.
		Dhandatopa	08 Nos.
	8443-Forest Deposit J.V.P. Plantation	Athmallik	290 Nos.
		Madhapur	320 Nos.
	78141-protection working Circle.	Athmallik	10 Nos.
		Dhandatopa	36 Nos.
		Madhapur	05 Nos.
		Handapa	08 Nos.
		Bamur	10 Nos.
	22-2406-F & WL C.S.P- State Sector -01-fry-101-F.C.D.R-0736-intigated Forest Protection.	Athmallik	15 Nos.
		Dhandatopa	05 Nos.
		Madhapur	04 Nos.
		Handapa	16 Nos.

2010-11	789-2118 intensive protection critically endangered squad	Dhandatopa	10 Nos.
	2314-Divisional Elephant Squad	Madhapur	4 Nos.
	Divisional elephant squad	Madhapur	16 Nos.
2011-12	789-2118 intensive protection critically endangered squad	Dhandatopa	46 Nos.
	22-2406-F & WL.State Plan 01-fry-101-2556 -13th F.C.78378-000-P.W.C Building Cadre of community-youth for forest protection.	Dhandatopa	20 Nos.
		Handapa	30 Nos.
	22-2406-F & WLState Plan 01-fry-101-2556 -13th F.C.78378-000-P.W.C Building Cadre of community-youth for forest protection.	Dhandatopa	33 Nos.
		Handapa	85 Nos.
		Athmallik	35 Nos.
2012-13	789-2118 intensive protection critically endangered squad	Athmallik	5 Nos
		Madhapur	8 Nos.
	Incentive bases prevention and control of fire	Dhandatopa	10 Nos.
		Madhapur	8 Nos.
		Bamur	8 Nos.
		Athmallik	10 Nos.
	Stall feeding and control grazing	Athmallik	10 Nos.
	789-2118 intensive protection critically endangered squad	Handapa	10 Nos.
		Dhandatopa	75 Nos.
	796-2399-Intesification of forest management forest protection squad	Athmallik	5 Nos.
	2743-management and Dev. of Elephant corridor-20002-OC.	Madhapur	36 Nos.
2013-14	22-2406-F & WL.State Plan 01-fry-101-2556 -13th F.C.78378-000-P.W.C Building Cadre of community-youth for forest protection	Athmallik	2 Nos.
		Handapa	10 Nos.
		Dhandatopa	8 Nos.
	Incentive bases prevention and control of Forest fire	Dhandatopa	10 Nos.
		Madhapur	20 Nos.
	111- Incentive bases on prevention and control of fire	Athmallik	20 Nos.
		Dhandatopa	20 Nos.
		Handapa	20 Nos.
	789-2118 intensive protection critically endangered squad	Dhandatopa	3 Nos.

ANNEXURE XVII

UID Points of Athmalik Forest for Preparation of Revised WP

XGrd	YGrd	UID	BLKNAME	COMP	DIVISION	RECCEE	FLOT_ID	LAT	LONG
878032.6163	2313855.932	327	BANKI M.N.D	1	ATHAMALIK	8	ATHA_BANKI_M1_1	21.8871567	84.6326452
878183.3726	2314710.307	19	BANKI M.N.D	2	ATHAMALIK	8	ATHA_BANKI_M2_1	21.8940169	84.634486
878110.5164	2312954.108	342	BANKI M.N.D	3	ATHAMALIK	9	ATHA_BANKI_M3_1	21.8782872	84.6334867
880865.0301	2317081.51	308	BIJAMALIA	1	ATHAMALIK	5	ATHA_BIJAMA_1_1	21.9208718	84.3730179
851333.7388	2316615.616	309	BIJAMALIA	1	ATHAMALIK	5	ATHA_BIJAMA_1_2	21.9168612	84.3771893
851347.9306	2317629.435	310	BIJAMALIA	1	ATHAMALIK	8	ATHA_BIJAMA_1_3	21.9252788	84.3775273
857474.0342	2329191.759	39	BINDHABASIN	1	ATHAMALIK	5	ATHA_BINDHB_1_1	21.9286761	84.4387598
856704.3192	2329776.591	227	BINDHABASIN	1	ATHAMALIK	5	ATHA_BINDHB_1_2	21.9300581	84.4314786
855778.8192	2328613.648	228	BINDHABASIN	1	ATHAMALIK	5	ATHA_BINDHB_1_3	21.9192581	84.4224972
855186.9667	2329821.01	229	BINDHABASIN	1	ATHAMALIK	5	ATHA_BINDHB_1_4	21.930467	84.4167855
854708.2772	2329192.268	231	BINDHABASIN	1	ATHAMALIK	6	ATHA_BINDHB_1_5	21.9295788	84.4121237
880386.6308	2313062.098	340	DANDARBINDHA	1	ATHAMALIK	8	ATHA_DANDAR_1_1	21.8790872	84.7388731
881258.3298	2312951.828	349	DANDARBINDHA	2	ATHAMALIK	4	ATHA_DANDAR_2_1	21.875748	84.7493692
880928.6163	2311122.448	344	DANDARBINDHA	2	ATHAMALIK	4	ATHA_DANDAR_2_2	21.8952869	84.7480646
880612.2961	2312079.823	345	DANDARBINDHA	2	ATHAMALIK	8	ATHA_DANDAR_2_3	21.8980129	84.7405354
881169.1312	2312702.842	333	DANDARBINDHA	3	ATHAMALIK	8	ATHA_DANDAR_3_1	21.8734191	84.7557845
881088.1693	2312863.646	334	DANDARBINDHA	3	ATHAMALIK	8	ATHA_DANDAR_3_2	21.8881206	84.7562006
880628.864	2314411.079	29	DANDARBINDHA	4	ATHAMALIK	8	ATHA_DANDAR_4_1	21.8886636	84.7735516
881034.6103	2314018.231	329	DANDARBINDHA	6	ATHAMALIK	1	ATHA_DANDAR_6_1	21.8851367	84.7569829
880487.7891	2313710.364	330	DANDARBINDHA	6	ATHAMALIK	4	ATHA_DANDAR_6_2	21.8825389	84.752326
888810.9791	2314690.777	328	DANDARBINDHA	7	ATHAMALIK	4	ATHA_DANDAR_7_1	21.8917930	84.7373153
886513.011	2313523.147	324	DANDARBINDHA	7	ATHAMALIK	5	ATHA_DANDAR_7_2	21.8801566	84.742838
880489.5993	2314809.407	325	DANDARBINDHA	7	ATHAMALIK	8	ATHA_DANDAR_7_3	21.8869544	84.7029288
878812.7653	2314113.214	328	DANDARBINDHA	8	ATHAMALIK	8	ATHA_DANDAR_8_1	21.8867353	84.7266725
854706.3377	2311578.07	347	EASTBARN	1	ATHAMALIK	5	ATHA_EASTB_1_1	21.8705127	84.4091045
854301.7393	2311780.042	348	EASTBARN	1	ATHAMALIK	5	ATHA_EASTB_1_2	21.8724126	84.4047375
853911.7401	2311995.809	349	EASTBARN	1	ATHAMALIK	4	ATHA_EASTB_1_3	21.8742698	84.4008991
852956.2367	2312237.818	351	EASTBARN	1	ATHAMALIK	8	ATHA_EASTB_1_4	21.8768587	84.388419
854317.1214	2311131.413	2	EASTBARN	2	ATHAMALIK	8	ATHA_EASTB_2_1	21.8665717	84.4036649
852883.3045	2311707.737	41	EASTBARN	2	ATHAMALIK	5	ATHA_EASTB_2_2	21.8721226	84.3910695
852043.087	2311723.673	352	EASTBARN	2	ATHAMALIK	5	ATHA_EASTB_2_3	21.8722766	84.3855157
849732.1962	2313303.572	335	EASTBARN	3	ATHAMALIK	5	ATHA_EASTB_3_1	21.8870147	84.3611489
851774.4666	2312459.479	336	EASTBARN	3	ATHAMALIK	5	ATHA_EASTB_3_2	21.8790147	84.3805962
851257.1715	2312804.218	337	EASTBARN	3	ATHAMALIK	8	ATHA_EASTB_3_3	21.8822175	84.375684
851227.1228	2313508.045	339	EASTBARN	3	ATHAMALIK	8	ATHA_EASTB_3_4	21.8887655	84.3669874
851824.469	2313352.219	29	EASTBARN	4	ATHAMALIK	8	ATHA_EASTB_4_1	21.8870634	84.3810847

85088.4911	231361.8001	332	EASTBARN	4	ATHAMNATIK	8	ATHA_EASTB_4_2	218863341	84372203
86205.3648	231973.731	301	GHOSAR	1	ATHAMNATIK	8	ATHA_GHOSAR_1_1	219366842	84483023
86903.6683	231846.3977	7	GHOSAR	2	ATHAMNATIK	7	ATHA_GHOSAR_2_1	219388285	84406458
86023.2977	231978.1.551	3	GHOSAR	3	ATHAMNATIK	8	ATHA_GHOSAR_3_1	219422882	84518865
86377.7791	231885.23	301	GHOSAR	3	ATHAMNATIK	8	ATHA_GHOSAR_3_2	21940364	84512881
84771.8627	231781.0529	10	GULIA	1	ATHAMNATIK	8	ATHA_GULIA_1_1	21928048	84342725
84266.1526	231801.088	302	GULIA	1	ATHAMNATIK	5	ATHA_GULIA_1_2	219386698	84342341
84815.0.686	231841.9517	303	GULIA	1	ATHAMNATIK	5	ATHA_GULIA_1_3	219345887	84347089
84707.2.869	231851.7546	305	GULIA	1	ATHAMNATIK	8	ATHA_GULIA_1_4	219345615	84336767
85251.0891	232418.413	31	HANDAPA	1	ATHAMNATIK	5	ATHA_HANDAP_1_1	219776116	84326061
88847.5.968	232534.823	276	HANDAPA	1	ATHAMNATIK	5	ATHA_HANDAP_1_2	219865764	84339671
88725.1.874	232601.31	277	HANDAPA	1	ATHAMNATIK	4	ATHA_HANDAP_1_3	219382771	84328767
88635.4279	232513.23	278	HANDAPA	1	ATHAMNATIK	8	ATHA_HANDAP_1_4	21987397	84348749
88458.812	232598.66	279	HANDAPA	1	ATHAMNATIK	8	ATHA_HANDAP_1_5	219852673	84341304
88092.5334	232473.048	35	HANDAPA	3	ATHAMNATIK	1	ATHA_HANDAP_3_1	219825067	84301769
88412.9172	232629.285	36	HANDAPA	3	ATHAMNATIK	8	ATHA_HANDAP_3_2	219934138	84638807
88436.5305	232520.198	281	HANDAPA	3	ATHAMNATIK	4	ATHA_HANDAP_3_3	219830353	84660621
88482.1.624	232549.668	283	HANDAPA	4	ATHAMNATIK	5	ATHA_HANDAP_4_1	219724376	84301462
88397.2.132	232820.016	284	HANDAPA	4	ATHAMNATIK	5	ATHA_HANDAP_4_2	219705843	84602625
88501.245	232429.849	285	HANDAPA	4	ATHAMNATIK	1	ATHA_HANDAP_4_3	219776.551	84703865
88574.4395	232501.633	286	HANDAPA	4	ATHAMNATIK	8	ATHA_HANDAP_4_4	219868.279	84704760
88715.148	232397.814	292	HANDAPA	5	ATHAMNATIK	5	ATHA_HANDAP_5_1	219729.9118	84708754
88036.0018	232368.169	293	HANDAPA	5	ATHAMNATIK	5	ATHA_HANDAP_5_2	219685637	84711412
88618.8074	232677.281	295	HANDAPA	5	ATHAMNATIK	8	ATHA_HANDAP_5_3	219642.9784	84713090
88798.5018	232519.649	296	HANDAPA	6	ATHAMNATIK	5	ATHA_HANDAP_6_1	219625.326	84728464
88851.1475	232383.366	297	HANDAPA	6	ATHAMNATIK	8	ATHA_HANDAP_6_2	219682.7129	84735349
88841.8.091	232728.111	298	HANDAPA	6	ATHAMNATIK	8	ATHA_HANDAP_6_3	21964282	84734487
88886.9.918	232403.908	288	HANDAPA	7	ATHAMNATIK	4	ATHA_HANDAP_7_1	219774915	84739798
88402.9884	232372.104	289	HANDAPA	7	ATHAMNATIK	4	ATHA_HANDAP_7_2	219703886	84740809
88853.9779	232451.066	291	HANDAPA	7	ATHAMNATIK	5	ATHA_HANDAP_7_3	219863.561	84739041
88776.0.61	232643.637	291	HANDAPA	7	ATHAMNATIK	8	ATHA_HANDAP_7_4	219726746	84728434
85341.2802	230806.181	467	HATIEHARA	1	ATHAMNATIK	5	ATHA_HATIEH_1_1	21787337	84604662
85748.3467	230416.755	468	HATIEHARA	1	ATHAMNATIK	5	ATHA_HATIEH_1_2	217472646	84606268
88106.391	230415.925	21	HATIEHARA	10	ATHAMNATIK	5	ATHA_HATIEH_10_1	217661694	84689226
88218.2369	229719.213	541	HATIEHARA	11	ATHAMNATIK	5	ATHA_HATIEH_11_1	217353978	84660842
88094.3554	229811.746	541	HATIEHARA	11	ATHAMNATIK	1	ATHA_HATIEH_11_2	217321969	84654862
88138.6672	229639.414	542	HATIEHARA	11	ATHAMNATIK	2	ATHA_HATIEH_11_3	217366687	84691247
88777.0836	229718.579	543	HATIEHARA	11	ATHAMNATIK	8	ATHA_HATIEH_11_4	217485622	84665304
88272.0813	229423.511	540	HATIEHARA	12	ATHAMNATIK	5	ATHA_HATIEH_12_1	217282822	84674085
88376.6316	229368.021	55	HATIEHARA	12	ATHAMNATIK	5	ATHA_HATIEH_12_2	217226054	84682166
88378.962	229257.85	551	HATIEHARA	12	ATHAMNATIK	2	ATHA_HATIEH_12_3	217266302	84628807

882215.3014	2296387.415	552	HATEHARA	12	ATHAMALUK	1	ATHA_HATEH_12_4	20.72805953	84.66917266
882028.0976	2295676.119	553	HATEHARA	12	ATHAMALUK	8	ATHA_HATEH_12_5	20.72168384	84.66722368
883793.6423	2294827.229	572	HATEHARA	13	ATHAMALUK	5	ATHA_HATEH_13_1	20.71366737	84.6838602
882273.5498	2295062.171	573	HATEHARA	13	ATHAMALUK	1	ATHA_HATEH_13_2	20.71809745	84.66944273
883151.4903	2293456.112	574	HATEHARA	13	ATHAMALUK	4	ATHA_HATEH_13_3	20.70043542	84.6775072
882324.6149	2294613.809	575	HATEHARA	13	ATHAMALUK	8	ATHA_HATEH_13_4	20.71204399	84.66983466
885172.5181	2296344.544	546	HATEHARA	14	ATHAMALUK	5	ATHA_HATEH_14_1	20.7270654	84.69750794
885522.7345	2295725.626	547	HATEHARA	14	ATHAMALUK	5	ATHA_HATEH_14_2	20.72141235	84.70072849
884811.4488	2297074.239	548	HATEHARA	14	ATHAMALUK	2	ATHA_HATEH_14_3	20.73371953	84.69420672
888913.1239	2299078.19	512	HATEHARA	15	ATHAMALUK	5	ATHA_HATEH_15_1	20.75093855	84.73396446
88957.809	2297001.471	513	HATEHARA	15	ATHAMALUK	5	ATHA_HATEH_15_2	20.74018988	84.74007468
889990.2619	2299606.18	514	HATEHARA	15	ATHAMALUK	5	ATHA_HATEH_15_3	20.7554743	84.74446689
889538.4185	2299008.29	515	HATEHARA	15	ATHAMALUK	8	ATHA_HATEH_15_4	20.75017782	84.7399428
889849.6484	2296948.571	4	HATEHARA	16	ATHAMALUK	5	ATHA_HATEH_16_1	20.73168726	84.73579666
889345.3907	2295089.805	545	HATEHARA	16	ATHAMALUK	5	ATHA_HATEH_16_2	20.72300163	84.73742291
888654.4968	2294896.631	15	HATEHARA	17	ATHAMALUK	5	ATHA_HATEH_17_1	20.71489035	84.73058223
887288.2136	2296007.833	560	HATEHARA	17	ATHAMALUK	5	ATHA_HATEH_17_2	20.72389181	84.71771122
887537.3304	2296721.684	561	HATEHARA	17	ATHAMALUK	4	ATHA_HATEH_17_3	20.7299768	84.72025623
888135.6729	2295587.206	562	HATEHARA	17	ATHAMALUK	8	ATHA_HATEH_17_4	20.71962323	84.72574049
887527.3526	2295182.111	579	HATEHARA	18	ATHAMALUK	5	ATHA_HATEH_18_1	20.71609683	84.71982112
887271.7234	2294272.788	580	HATEHARA	18	ATHAMALUK	5	ATHA_HATEH_18_2	20.70795061	84.71717101
884828.1307	2293968.799	581	HATEHARA	19	ATHAMALUK	5	ATHA_HATEH_19_1	20.70671411	84.69368676
883320.6488	2294092.523	582	HATEHARA	19	ATHAMALUK	1	ATHA_HATEH_19_2	20.70713942	84.67926694
884340.3132	2293589.267	583	HATEHARA	19	ATHAMALUK	8	ATHA_HATEH_19_3	20.70239216	84.68802894
873478.5808	2302094.238	459	HATEHARA	2	ATHAMALUK	5	ATHA_HATEH_2_1	20.78048566	84.62499823
876189.1756	2303086.685	460	HATEHARA	2	ATHAMALUK	5	ATHA_HATEH_2_2	20.78969427	84.6129434
876996.9653	2301041.487	461	HATEHARA	2	ATHAMALUK	1	ATHA_HATEH_2_3	20.77108576	84.62015353
877693.6088	2302547.908	462	HATEHARA	2	ATHAMALUK	4	ATHA_HATEH_2_4	20.78453311	84.62715785
876968.7337	2301630.08	463	HATEHARA	2	ATHAMALUK	2	ATHA_HATEH_2_5	20.77640327	84.62000944
885023.1983	2292359.173	599	HATEHARA	20	ATHAMALUK	5	ATHA_HATEH_20_1	20.6911598	84.69520403
885094.4778	2293321.05	600	HATEHARA	20	ATHAMALUK	5	ATHA_HATEH_20_2	20.69081847	84.69609748
884064.9253	2292698.723	601	HATEHARA	20	ATHAMALUK	1	ATHA_HATEH_20_3	20.69441854	84.68609552
884464.8061	2291170.522	608	HATEHARA	21	ATHAMALUK	5	ATHA_HATEH_21_1	20.68055639	84.68899384
885511.1257	2291051.197	609	HATEHARA	21	ATHAMALUK	5	ATHA_HATEH_21_2	20.67926527	84.69099325
885205.0558	2291286.853	610	HATEHARA	21	ATHAMALUK	5	ATHA_HATEH_21_3	20.6814532	84.69671214
885596.1863	2292221.339	611	HATEHARA	21	ATHAMALUK	1	ATHA_HATEH_21_4	20.68979898	84.70066441
884217.2875	2291069.411	612	HATEHARA	21	ATHAMALUK	4	ATHA_HATEH_21_5	20.67969546	84.68728012
885886.1362	2291817.873	613	HATEHARA	21	ATHAMALUK	8	ATHA_HATEH_21_6	20.68610116	84.70335437
886551.3421	2290230.473	14	HATEHARA	22	ATHAMALUK	8	ATHA_HATEH_22_1	20.67165057	84.7003801
886851.476	2289577.031	622	HATEHARA	22	ATHAMALUK	4	ATHA_HATEH_22_2	20.66569636	84.7121123

885968.8525	2286991.94	625	HATIBHARA	22	ATHAWALLIK	4	ATHA_HATIBH_22_3	20.66661488	84.70398655
885699.9351	2290680.918	624	HATIBHARA	22	ATHAWALLIK	5	ATHA_HATIBH_22_4	20.67548286	84.7030005
887199.5929	2289446.443	625	HATIBHARA	22	ATHAWALLIK	1	ATHA_HATIBH_22_5	20.66444695	84.71541879
885640.2064	2288117.124	18	HATIBHARA	28	ATHAWALLIK	5	ATHA_HATIBH_28_1	20.65278197	84.7001884
885246.5895	2289413.709	634	HATIBHARA	28	ATHAWALLIK	4	ATHA_HATIBH_28_2	20.66455433	84.69670072
884783.427	2288817.65	635	HATIBHARA	28	ATHAWALLIK	4	ATHA_HATIBH_28_3	20.65928091	84.69884985
885279.2972	2288710.638	636	HATIBHARA	28	ATHAWALLIK	8	ATHA_HATIBH_28_4	20.65820794	84.69680051
886446.7217	2288708.337	637	HATIBHARA	28	ATHAWALLIK	8	ATHA_HATIBH_28_5	20.6680087	84.70517014
883933.372	2288741.363	626	HATIBHARA	29	ATHAWALLIK	5	ATHA_HATIBH_29_1	20.66876426	84.68397273
885629.9966	2289743.318	627	HATIBHARA	29	ATHAWALLIK	5	ATHA_HATIBH_29_2	20.66785818	84.68128421
883280.2076	2289032.071	628	HATIBHARA	29	ATHAWALLIK	4	ATHA_HATIBH_29_3	20.6661544	84.6778645
884730.54	2289838.145	630	HATIBHARA	29	ATHAWALLIK	8	ATHA_HATIBH_29_4	20.66848757	84.69184902
878085.6241	2301578.908	488	HATIBHARA	3	ATHAWALLIK	1	ATHA_HATIBH_3_1	20.77571546	84.62070768
877947.0086	2300848.577	490	HATIBHARA	3	ATHAWALLIK	2	ATHA_HATIBH_3_2	20.76464885	84.62911321
883404.4086	2291328.961	615	HATIBHARA	30	ATHAWALLIK	5	ATHA_HATIBH_30_1	20.68220253	84.67946775
882795.6754	2290898.78	616	HATIBHARA	30	ATHAWALLIK	8	ATHA_HATIBH_30_2	20.67844812	84.6735414
882741.1668	2289598.474	617	HATIBHARA	30	ATHAWALLIK	7	ATHA_HATIBH_30_3	20.66673387	84.67273679
882120.7837	2289892.681	631	HATIBHARA	31	ATHAWALLIK	1	ATHA_HATIBH_31_1	20.66951388	84.66886693
881307.4786	2290036.149	632	HATIBHARA	31	ATHAWALLIK	8	ATHA_HATIBH_31_2	20.66895585	84.65887881
882600.6395	2288757.04	633	HATIBHARA	31	ATHAWALLIK	8	ATHA_HATIBH_31_3	20.65917305	84.67120815
880950.5973	2290568.777	618	HATIBHARA	32	ATHAWALLIK	2	ATHA_HATIBH_32_1	20.67584852	84.6557907
882138.4082	2290304.681	620	HATIBHARA	32	ATHAWALLIK	9	ATHA_HATIBH_32_2	20.67322506	84.66711477
881629.2144	2290797.358	621	HATIBHARA	32	ATHAWALLIK	9	ATHA_HATIBH_32_3	20.67799544	84.65188244
882554.5615	2292414.801	603	HATIBHARA	33	ATHAWALLIK	1	ATHA_HATIBH_33_1	20.69216778	84.67156038
881560.3691	2291798.71	604	HATIBHARA	33	ATHAWALLIK	1	ATHA_HATIBH_33_2	20.68881523	84.66389979
881328.4262	2292207.535	605	HATIBHARA	33	ATHAWALLIK	2	ATHA_HATIBH_33_3	20.69054907	84.65976573
883379.3497	2292007.299	606	HATIBHARA	33	ATHAWALLIK	8	ATHA_HATIBH_33_4	20.68832482	84.6787853
882795.2968	2291764.008	607	HATIBHARA	33	ATHAWALLIK	9	ATHA_HATIBH_33_5	20.68625014	84.67372588
881099.8504	2292805.201	595	HATIBHARA	34	ATHAWALLIK	5	ATHA_HATIBH_34_1	20.69067974	84.64801364
879662.6922	2292913.631	596	HATIBHARA	34	ATHAWALLIK	6	ATHA_HATIBH_34_2	20.69725309	84.6439556
881087.7875	2292856.275	597	HATIBHARA	34	ATHAWALLIK	4	ATHA_HATIBH_34_3	20.69665154	84.64801702
881382.4896	2293222.906	581	HATIBHARA	35	ATHAWALLIK	5	ATHA_HATIBH_35_1	20.69969439	84.6905837
881158.4537	2293504.33	582	HATIBHARA	35	ATHAWALLIK	5	ATHA_HATIBH_35_2	20.70227749	84.68841774
882289.5821	2293843.286	583	HATIBHARA	35	ATHAWALLIK	4	ATHA_HATIBH_35_3	20.70510308	84.6993144
882384.7213	2293882.507	585	HATIBHARA	35	ATHAWALLIK	8	ATHA_HATIBH_35_4	20.69641906	84.67016441
881061.8704	2294915.081	564	HATIBHARA	36	ATHAWALLIK	5	ATHA_HATIBH_36_1	20.71518152	84.6901303
879572.0215	2296348.226	565	HATIBHARA	36	ATHAWALLIK	5	ATHA_HATIBH_36_2	20.72824527	84.64382804
881107.4462	2295511.878	567	HATIBHARA	36	ATHAWALLIK	8	ATHA_HATIBH_36_3	20.72089085	84.6883639
880465.9301	2294236.303	568	HATIBHARA	37	ATHAWALLIK	5	ATHA_HATIBH_37_1	20.7080191	84.65193024
879602.0498	2294563.581	570	HATIBHARA	37	ATHAWALLIK	1	ATHA_HATIBH_37_2	20.71214599	84.64373045

879863.807	2295601633	571	HATEIHARA	37	ATHAMALLIK	6	AITHA_HATEIH_37_3	20.71928027	84.64641139
877638.5017	2294099857	586	HATEIHARA	38	ATHAMALLIK	5	AITHA_HATEIH_38_1	20.70836182	84.62481153
878839.0474	2293554.705	587	HATEIHARA	38	ATHAMALLIK	5	AITHA_HATEIH_38_2	20.70820389	84.63620035
877904.5828	2294509.643	589	HATEIHARA	38	ATHAMALLIK	1	AITHA_HATEIH_38_3	20.71200358	84.62744976
878798.8481	2294435.747	590	HATEIHARA	38	ATHAMALLIK	4	AITHA_HATEIH_38_4	20.71115618	84.6360048
878613.386	2295706.554	576	HATEIHARA	39	ATHAMALLIK	5	AITHA_HATEIH_39_1	20.72265348	84.63450096
878159.0106	2295529.847	578	HATEIHARA	39	ATHAMALLIK	6	AITHA_HATEIH_39_2	20.72015203	84.63010774
879406.7851	2302613.616	464	HATEIHARA	4	ATHAMALLIK	5	AITHA_HATEIH_4_1	20.78477734	84.6435952
879812.2335	2302544.034	465	HATEIHARA	4	ATHAMALLIK	4	AITHA_HATEIH_4_2	20.78406722	84.64747218
878686.3198	2302618.936	466	HATEIHARA	4	ATHAMALLIK	8	AITHA_HATEIH_4_3	20.78497199	84.63669227
876831.206	2296059.64	554	HATEIHARA	40	ATHAMALLIK	5	AITHA_HATEIH_40_1	20.72620015	84.61738944
879097.854	2296307.689	555	HATEIHARA	40	ATHAMALLIK	5	AITHA_HATEIH_40_2	20.72797604	84.63927426
876361.3366	2296255.2	556	HATEIHARA	40	ATHAMALLIK	5	AITHA_HATEIH_40_3	20.72805622	84.61303229
876672.6712	2296862.9	557	HATEIHARA	40	ATHAMALLIK	5	AITHA_HATEIH_40_4	20.7334736	84.61614602
877754.1571	2296705.912	558	HATEIHARA	40	ATHAMALLIK	6	AITHA_HATEIH_40_5	20.7318394	84.62648008
877227.5675	2298216.319	528	HATEIHARA	42	ATHAMALLIK	5	AITHA_HATEIH_42_1	20.7455664	84.62175686
877599.9479	2297876.326	529	HATEIHARA	42	ATHAMALLIK	5	AITHA_HATEIH_42_2	20.7424251	84.6252357
876958.1178	2298061.668	530	HATEIHARA	42	ATHAMALLIK	6	AITHA_HATEIH_42_3	20.74429864	84.61568039
876321.5605	2299084.779	531	HATEIHARA	42	ATHAMALLIK	9	AITHA_HATEIH_42_4	20.75358102	84.61325757
875846.9816	2298568.683	533	HATEIHARA	43	ATHAMALLIK	5	AITHA_HATEIH_43_1	20.74902262	84.60859713
876396.283	2297252.075	534	HATEIHARA	43	ATHAMALLIK	4	AITHA_HATEIH_43_2	20.73703885	84.6135809
874496.913	2297771.86	535	HATEIHARA	44	ATHAMALLIK	4	AITHA_HATEIH_44_1	20.74210857	84.5954039
875097.3674	2297153.273	536	HATEIHARA	44	ATHAMALLIK	4	AITHA_HATEIH_44_2	20.73640986	84.60110813
873758.2621	2297520.481	539	HATEIHARA	44	ATHAMALLIK	8	AITHA_HATEIH_44_3	20.7399895	84.58834924
872883.2203	2298950.898	524	HATEIHARA	45	ATHAMALLIK	5	AITHA_HATEIH_45_1	20.75306431	84.5802648
873293.5076	2299074.556	525	HATEIHARA	45	ATHAMALLIK	4	AITHA_HATEIH_45_2	20.7540974	84.5842441
873093.8972	2298401.066	526	HATEIHARA	45	ATHAMALLIK	8	AITHA_HATEIH_45_3	20.7488164	84.5821674
872922.9258	2297895.451	527	HATEIHARA	45	ATHAMALLIK	9	AITHA_HATEIH_45_4	20.74173452	84.58037835
875239.4697	2300304.713	505	HATEIHARA	46	ATHAMALLIK	1	AITHA_HATEIH_46_1	20.76480086	84.61314436
874614.9948	2300803.031	470	HATEIHARA	47	ATHAMALLIK	1	AITHA_HATEIH_47_1	20.76941982	84.59726338
874487.8834	2301625.083	471	HATEIHARA	47	ATHAMALLIK	2	AITHA_HATEIH_47_2	20.77885953	84.59622031
874089.0747	2302372.172	472	HATEIHARA	47	ATHAMALLIK	5	AITHA_HATEIH_47_3	20.78349501	84.60118607
873141.1464	2300234.16	499	HATEIHARA	48	ATHAMALLIK	1	AITHA_HATEIH_48_1	20.76458538	84.5830039
873489.4668	2300292.357	501	HATEIHARA	48	ATHAMALLIK	1	AITHA_HATEIH_48_2	20.76804044	84.58636255
872381.6485	2299862.967	501	HATEIHARA	48	ATHAMALLIK	5	AITHA_HATEIH_48_3	20.76638978	84.5756931
874132.152	2300091.145	503	HATEIHARA	48	ATHAMALLIK	8	AITHA_HATEIH_48_4	20.76880242	84.59254579
874093.1292	2300017.762	504	HATEIHARA	48	ATHAMALLIK	8	AITHA_HATEIH_48_5	20.77146111	84.59236538
871366.657	2300260.481	492	HATEIHARA	49	ATHAMALLIK	5	AITHA_HATEIH_49_1	20.77489547	84.56621338
871178.2162	2300784.77	493	HATEIHARA	49	ATHAMALLIK	5	AITHA_HATEIH_49_2	20.76994201	84.56436584
871776.813	2301109.527	494	HATEIHARA	49	ATHAMALLIK	4	AITHA_HATEIH_49_3	20.77275252	84.5701145

873113.3488	2301009.942	496	HATIDHARA	49	ATHAMALLIK	9	ATHA_HATIDH_49_4	20.77248887	84.5829031
872680.1981	2300231.064	497	HATIDHARA	49	ATHAMALLIK	9	ATHA_HATIDH_49_5	20.76464988	84.5785900
872546.4199	2300777.947	498	HATIDHARA	49	ATHAMALLIK	8	ATHA_HATIDH_49_6	20.76960833	84.5774236
879354.8156	2300219.557	482	HATIDHARA	5	ATHAMALLIK	5	ATHA_HATIDH_5_1	20.76319941	84.6425828
880089.627	2299999.882	483	HATIDHARA	5	ATHAMALLIK	5	ATHA_HATIDH_5_2	20.76106881	84.6495801
880531.962	2301657.788	484	HATIDHARA	5	ATHAMALLIK	5	ATHA_HATIDH_5_3	20.77592862	84.6541808
881084.4568	2301919.221	485	HATIDHARA	5	ATHAMALLIK	4	ATHA_HATIDH_5_4	20.77835704	84.6500569
878784.1161	2300742.218	486	HATIDHARA	5	ATHAMALLIK	1	ATHA_HATIDH_5_5	20.76802862	84.637224
878834.8951	2300201.492	487	HATIDHARA	5	ATHAMALLIK	8	ATHA_HATIDH_5_6	20.76314225	84.6375942
879873.5524	2301329.868	488	HATIDHARA	5	ATHAMALLIK	8	ATHA_HATIDH_5_7	20.773106	84.6477968
873649.6384	2302253.668	473	HATIDHARA	50	ATHAMALLIK	1	ATHA_HATIDH_50_1	20.7826956	84.5883165
871310.3491	2302319.957	474	HATIDHARA	50	ATHAMALLIK	5	ATHA_HATIDH_50_2	20.78376137	84.5658982
873089.1731	2302152.571	475	HATIDHARA	50	ATHAMALLIK	2	ATHA_HATIDH_50_3	20.78389628	84.5820205
873654.2438	2301510.345	476	HATIDHARA	50	ATHAMALLIK	8	ATHA_HATIDH_50_4	20.77599134	84.5882021
872073.1134	2302169.784	477	HATIDHARA	50	ATHAMALLIK	8	ATHA_HATIDH_50_5	20.7822548	84.5731808
879563.0728	2298666.953	516	HATIDHARA	6	ATHAMALLIK	5	ATHA_HATIDH_6_1	20.75186162	84.6443084
879208.1331	2299788.417	517	HATIDHARA	6	ATHAMALLIK	8	ATHA_HATIDH_6_2	20.75934143	84.6410832
878961.3042	2298126.877	506	HATIDHARA	7	ATHAMALLIK	4	ATHA_HATIDH_7_1	20.74440851	84.6383578
879260.3646	2297556.628	507	HATIDHARA	7	ATHAMALLIK	4	ATHA_HATIDH_7_2	20.73920547	84.6410167
878484.9918	2298317.719	508	HATIDHARA	7	ATHAMALLIK	5	ATHA_HATIDH_7_3	20.74622614	84.6338383
877749.023	229596.41	509	HATIDHARA	7	ATHAMALLIK	8	ATHA_HATIDH_7_4	20.75900617	84.6270629
879711.4836	2297022.406	518	HATIDHARA	8	ATHAMALLIK	1	ATHA_HATIDH_8_1	20.73429637	84.6453105
880698.1189	2298216.413	519	HATIDHARA	8	ATHAMALLIK	2	ATHA_HATIDH_8_2	20.74486234	84.655026
882413.4417	2298387.679	520	HATIDHARA	9	ATHAMALLIK	5	ATHA_HATIDH_9_1	20.74605502	84.6715074
881004.9213	2298673.007	521	HATIDHARA	9	ATHAMALLIK	2	ATHA_HATIDH_9_2	20.74891702	84.6580670
890782.8448	2318940.597	11	KADALIMUNDA	1	ATHAMALLIK	4	ATHA_KADALI_1_1	20.9206338	84.7563338
892430.8222	2318435.905	306	KADALIMUNDA	1	ATHAMALLIK	8	ATHA_KADALI_1_2	20.92473425	84.7720349
873133.1634	2321035.771	299	KHOLDANGIANI	1	ATHAMALLIK	8	ATHA_KHOLDA_1_1	20.95217641	84.5873861
881310.7693	2288276.626	639	KUSUMKUHUR	2	ATHAMALLIK	4	ATHA_KUSUMK_2_1	20.65510574	84.6587461
882094.4329	228676.24	640	KUSUMKUHUR	2	ATHAMALLIK	9	ATHA_KUSUMK_2_2	20.64051484	84.6650076
887021.4448	230076.18	511	KUTULSINGHA	1	ATHAMALLIK	8	ATHA_KUTUL_1_1	20.76033069	84.7160513
886311.2473	2301243.08	12	KUTULSINGHA	2	ATHAMALLIK	8	ATHA_KUTUL_2_1	20.77099077	84.7095001
885212.0655	2303207.899	24	KUTULSINGHA	3	ATHAMALLIK	8	ATHA_KUTUL_3_1	20.78894402	84.6993940
884663.0705	2303249.961	451	KUTULSINGHA	3	ATHAMALLIK	5	ATHA_KUTUL_3_2	20.78943682	84.6941302
886394.246	2303405.349	27	KUTULSINGHA	4	ATHAMALLIK	4	ATHA_KUTUL_4_1	20.79047939	847107291
886908.2153	230615.02	28	KUTULSINGHA	4	ATHAMALLIK	5	ATHA_KUTUL_4_2	20.78331183	847125662
886977.1651	2303364.516	452	KUTULSINGHA	4	ATHAMALLIK	5	ATHA_KUTUL_4_3	20.78899012	84.7163531
885913.7376	2304080.275	454	KUTULSINGHA	4	ATHAMALLIK	5	ATHA_KUTUL_4_4	20.79666065	84.7065061
888361.0223	2303291.654	455	KUTULSINGHA	5	ATHAMALLIK	5	ATHA_KUTUL_5_1	20.78004496	84.7296058
886673.0117	2304360.307	438	KUTULSINGHA	6	ATHAMALLIK	5	ATHA_KUTUL_6_1	20.79003217	84.7136968

886000.23	2304805.654	439	KUTUL SINGHA	6	ATHAMALLIK	8	ATHA_KUTUL_6_2	20.8004824	84.7072376
886105.3695	2304943.463	38	KUTUL SINGHA	7	ATHAMALLIK	8	ATHA_KUTUL_7_1	20.8044082	84.7083424
885750.868	2302863.106	478	KUTUL SINGHA	NRSC-2	ATHAMALLIK	8	ATHA_KUTUL_NRSC-2_1	20.7857234	84.7044844
866409.6634	2308617.99	479	MAHENDRAPUR	1	ATHAMALLIK	8	ATHA_MAHEND 1_1	20.7784013	84.5187545
868275.1121	2300116.789	481	MAHENDRAPUR	1	ATHAMALLIK	8	ATHA_MAHEND 1_2	20.7644945	84.5363279
863645.5054	2303319.923	469	MAHENDRAPUR	2	ATHAMALLIK	8	ATHA_MAHEND 2_1	20.7939010	84.5117818
847842.1702	2314181.552	322	MANGALPUR	5	ATHAMALLIK	9	ATHA_MANGAL_5_1	20.8952903	84.3431828
846368.5019	2314632.04	21	MANGALPUR	6	ATHAMALLIK	9	ATHA_MANGAL_6_1	20.8996303	84.3291367
846282.7496	2313793.402	326	MANGALPUR	6	ATHAMALLIK	9	ATHA_MANGAL_6_2	20.8920815	84.3281366
847669.6584	2315145.909	316	MANGALPUR	7	ATHAMALLIK	5	ATHA_MANGAL_7_1	20.9040159	84.3420076
846145.3061	2315292.086	317	MANGALPUR	7	ATHAMALLIK	5	ATHA_MANGAL_7_2	20.9056260	84.3271563
860447.1956	2333879.887	68	NORTHERN	1	ATHAMALLIK	5	ATHA_NORTHE_1_1	21.0705390	84.4682713
862105.2151	2334751.931	69	NORTHERN	1	ATHAMALLIK	5	ATHA_NORTHE_1_2	21.0780772	84.4843862
860001.6335	2333716.953	70	NORTHERN	1	ATHAMALLIK	5	ATHA_NORTHE_1_3	21.0689802	84.4726037
860020.4384	2334284.128	71	NORTHERN	1	ATHAMALLIK	4	ATHA_NORTHE_1_4	21.0740918	84.4729003
861655.7895	2334325.634	72	NORTHERN	1	ATHAMALLIK	8	ATHA_NORTHE_1_5	21.074321	84.4797880
868079.5332	2333160.372	101	NORTHERN	10	ATHAMALLIK	5	ATHA_NORTHE_10_1	21.0613397	84.5126202
866066.0973	2333022.009	102	NORTHERN	10	ATHAMALLIK	5	ATHA_NORTHE_10_2	21.0668095	84.5220783
866019.8266	2332440.338	103	NORTHERN	10	ATHAMALLIK	1	ATHA_NORTHE_10_3	21.0564530	84.5215025
866726.4118	2332364.526	104	NORTHERN	10	ATHAMALLIK	8	ATHA_NORTHE_10_4	21.0556285	84.5282825
865908.0666	2332112.293	105	NORTHERN	10	ATHAMALLIK	8	ATHA_NORTHE_10_5	21.0535786	84.5173886
867332.6776	2331770.345	168	NORTHERN	11	ATHAMALLIK	5	ATHA_NORTHE_11_1	21.0604489	84.5339804
865400.0131	2331278.298	169	NORTHERN	11	ATHAMALLIK	5	ATHA_NORTHE_11_2	21.0460966	84.5153090
865701.0836	2331607.958	170	NORTHERN	11	ATHAMALLIK	4	ATHA_NORTHE_11_3	21.0490198	84.5182713
866713.9127	2331908.333	172	NORTHERN	11	ATHAMALLIK	8	ATHA_NORTHE_11_4	21.048721	84.5270994
864971.2901	2331458.216	173	NORTHERN	11	ATHAMALLIK	8	ATHA_NORTHE_11_5	21.0478045	84.5112285
863389.5772	2330039.342	191	NORTHERN	12	ATHAMALLIK	5	ATHA_NORTHE_12_1	21.0353209	84.4957390
865159.7117	2329966.419	192	NORTHERN	12	ATHAMALLIK	5	ATHA_NORTHE_12_2	21.0343132	84.5127227
866328.5643	2329480.262	193	NORTHERN	12	ATHAMALLIK	5	ATHA_NORTHE_12_3	21.0296962	84.5238175
866408.4394	2331216.671	194	NORTHERN	12	ATHAMALLIK	1	ATHA_NORTHE_12_4	21.0453407	84.5249452
866764.0647	2330510.774	195	NORTHERN	12	ATHAMALLIK	8	ATHA_NORTHE_12_5	21.0389029	84.5282499
869468.0393	2329013.326	31	NORTHERN	13	ATHAMALLIK	8	ATHA_NORTHE_13_1	21.025758	84.5530252
868266.0155	2330094.874	33	NORTHERN	13	ATHAMALLIK	5	ATHA_NORTHE_13_2	21.0348520	84.5425794
868674.2195	2329669.891	214	NORTHERN	13	ATHAMALLIK	5	ATHA_NORTHE_13_3	21.0309378	84.5464834
866759.4913	2329136.656	215	NORTHERN	13	ATHAMALLIK	5	ATHA_NORTHE_13_4	21.0265035	84.5282881
869302.5317	2328853.964	216	NORTHERN	13	ATHAMALLIK	2	ATHA_NORTHE_13_5	21.0180241	84.5530160
867797.0151	2328525.823	217	NORTHERN	13	ATHAMALLIK	8	ATHA_NORTHE_13_6	21.0228138	84.5379626
871337.6684	2326435.334	238	NORTHERN	14	ATHAMALLIK	5	ATHA_NORTHE_14_1	21.0012319	84.5713073
871138.172	2328829.645	240	NORTHERN	14	ATHAMALLIK	5	ATHA_NORTHE_14_2	21.0228641	84.5690583
870396.3784	2327958.363	241	NORTHERN	14	ATHAMALLIK	8	ATHA_NORTHE_14_3	21.0151564	84.5629419

886000.23	230450.5654	439	KUTUL SINGHA	6	ATHAMALLIK	8	ATHA_KUTUL_6_2	20.80048243	84.7072376
886105.3695	230494.3463	38	KUTUL SINGHA	7	ATHAMALLIK	8	ATHA_KUTUL_7_1	20.80440828	84.7083424
885750.868	230286.3.06	478	KUTUL SINGHA	NRSC-2	ATHAMALLIK	8	ATHA_KUTUL_NRSC-2_1	20.78572348	84.7044844
866409.6634	230861799	479	MAHENDRAPUR	1	ATHAMALLIK	8	ATHA_MAHEND 1_1	20.77840139	84.5187545
868278.1121	230016.769	481	MAHENDRAPUR	1	ATHAMALLIK	8	ATHA_MAHEND 1_2	20.76449456	84.5363279
865645.5084	230331.9923	469	MAHENDRAPUR	2	ATHAMALLIK	8	ATHA_MAHEND 2_1	20.79900101	84.5117818
847842.1702	231418.1552	322	MANGALPUR	5	ATHAMALLIK	9	ATHA_MANGAL_5_1	20.89529038	84.3431828
846368.5019	23146.32.04	21	MANGALPUR	6	ATHAMALLIK	9	ATHA_MANGAL_6_1	20.89963086	84.3291267
846282.7496	231379.3.402	326	MANGALPUR	6	ATHAMALLIK	9	ATHA_MANGAL_6_2	20.89208152	84.3281366
847699.6584	231584.5.909	316	MANGALPUR	7	ATHAMALLIK	5	ATHA_MANGAL_7_1	20.90401597	84.342007
846145.3061	231529.2.886	317	MANGALPUR	7	ATHAMALLIK	5	ATHA_MANGAL_7_2	20.90662603	84.3271563
860447.1966	233387.9.887	68	NORTHERN	1	ATHAMALLIK	5	ATHA_NORTHE_1_1	21.07053907	84.4682713
862105.2151	233475.1.931	69	NORTHERN	1	ATHAMALLIK	5	ATHA_NORTHE_1_2	21.07807728	84.4843862
860901.6335	233371.6.953	70	NORTHERN	1	ATHAMALLIK	5	ATHA_NORTHE_1_3	21.06898123	84.4726037
860920.4354	233428.4.128	71	NORTHERN	1	ATHAMALLIK	4	ATHA_NORTHE_1_4	21.07409182	84.4726033
861655.7893	233432.5.624	72	NORTHERN	1	ATHAMALLIK	8	ATHA_NORTHE_1_5	21.0743212	84.4799788
865079.5332	233366.0.372	101	NORTHERN	10	ATHAMALLIK	5	ATHA_NORTHE_10_1	21.06613.397	84.5126280
866066.0973	233302.2.009	102	NORTHERN	10	ATHAMALLIK	5	ATHA_NORTHE_10_2	21.06668599	84.5220783
866019.8266	233244.0.338	103	NORTHERN	10	ATHAMALLIK	1	ATHA_NORTHE_10_3	21.05645.306	84.5215025
866726.4118	233236.4.526	104	NORTHERN	10	ATHAMALLIK	8	ATHA_NORTHE_10_4	21.05562833	84.5282853
865598.0666	233211.2.293	105	NORTHERN	10	ATHAMALLIK	8	ATHA_NORTHE_10_5	21.05357865	84.5173886
867332.6726	233177.0.345	168	NORTHERN	11	ATHAMALLIK	5	ATHA_NORTHE_11_1	21.05014859	84.5339804
865400.0131	233127.8.298	169	NORTHERN	11	ATHAMALLIK	5	ATHA_NORTHE_11_2	21.04609669	84.5153000
865701.0836	233160.7.958	170	NORTHERN	11	ATHAMALLIK	4	ATHA_NORTHE_11_3	21.0460008	84.5182713
866713.9127	233159.8.333	172	NORTHERN	11	ATHAMALLIK	8	ATHA_NORTHE_11_4	21.048721	84.5279904
864971.2931	233145.8.216	173	NORTHERN	11	ATHAMALLIK	8	ATHA_NORTHE_11_5	21.04780453	84.5112285
863389.5772	230039.242	191	NORTHERN	12	ATHAMALLIK	5	ATHA_NORTHE_12_1	21.03532091	84.4957339
865159.7117	232966.419	192	NORTHERN	12	ATHAMALLIK	5	ATHA_NORTHE_12_2	21.03431325	84.5127227
866328.5643	232948.0.262	193	NORTHERN	12	ATHAMALLIK	5	ATHA_NORTHE_12_3	21.02969623	84.5238475
866404.4394	233216.671	194	NORTHERN	12	ATHAMALLIK	1	ATHA_NORTHE_12_4	21.04534079	84.5240452
866364.0647	233051.0.774	195	NORTHERN	12	ATHAMALLIK	8	ATHA_NORTHE_12_5	21.03890296	84.5283499
869468.0393	232913.326	31	NORTHERN	13	ATHAMALLIK	8	ATHA_NORTHE_13_1	21.0257588	84.553925
868265.0155	233009.4.874	33	NORTHERN	13	ATHAMALLIK	5	ATHA_NORTHE_13_2	21.03485.202	84.5425794
868674.2195	232966.9.891	214	NORTHERN	13	ATHAMALLIK	5	ATHA_NORTHE_13_3	21.03093.739	84.5464193
866799.4913	232936.6.586	215	NORTHERN	13	ATHAMALLIK	5	ATHA_NORTHE_13_4	21.02650.355	84.5282881
869392.5317	232825.3.964	216	NORTHERN	13	ATHAMALLIK	2	ATHA_NORTHE_13_5	21.01802.411	84.5530160
867797.0151	232952.5.823	217	NORTHERN	13	ATHAMALLIK	8	ATHA_NORTHE_13_6	21.02981.388	84.537962
871337.6684	232643.5.324	238	NORTHERN	14	ATHAMALLIK	5	ATHA_NORTHE_14_1	21.00623.193	84.5713073
871138.172	232882.9.645	240	NORTHERN	14	ATHAMALLIK	5	ATHA_NORTHE_14_2	21.02286.419	84.5690658
870396.3784	232795.8.361	241	NORTHERN	14	ATHAMALLIK	8	ATHA_NORTHE_14_3	21.01515.647	84.5625941

871756.28	2327458.176	232	NORTHERN	15	ATHAMALLIK	5	ATHA_NORTHE_15_1	21.0103714	84.57554738
871508.9729	2329170.894	233	NORTHERN	15	ATHAMALLIK	5	ATHA_NORTHE_15_2	21.0258676	84.57340268
872660.6876	2328123.798	234	NORTHERN	15	ATHAMALLIK	5	ATHA_NORTHE_15_3	21.0161910	84.5843767
873123.9817	2328469.108	235	NORTHERN	15	ATHAMALLIK	4	ATHA_NORTHE_15_4	21.0192110	84.5889008
871502.2119	2328441.429	236	NORTHERN	15	ATHAMALLIK	8	ATHA_NORTHE_15_5	21.0165843	84.5732542
872348.2737	2328773.921	237	NORTHERN	15	ATHAMALLIK	8	ATHA_NORTHE_15_6	21.0221170	84.5815164
870087.9608	2330231.413	201	NORTHERN	16	ATHAMALLIK	5	ATHA_NORTHE_16_1	21.0355396	84.5687644
867906.8025	2330759.906	203	NORTHERN	16	ATHAMALLIK	1	ATHA_NORTHE_16_2	21.0409178	84.5392706
869060.7029	2330890.906	204	NORTHERN	16	ATHAMALLIK	4	ATHA_NORTHE_16_3	21.0373620	84.5902859
870075.4372	2330894.745	205	NORTHERN	16	ATHAMALLIK	8	ATHA_NORTHE_16_4	21.0353889	84.559091
870706.2891	2331555.038	148	NORTHERN	17	ATHAMALLIK	5	ATHA_NORTHE_17_1	21.0475291	84.5663337
870577.0284	2331013.972	149	NORTHERN	17	ATHAMALLIK	5	ATHA_NORTHE_17_2	21.0426757	84.564985
868731.7602	2331370.812	150	NORTHERN	17	ATHAMALLIK	5	ATHA_NORTHE_17_3	21.0462651	84.5473357
871041.9388	2332755.268	151	NORTHERN	17	ATHAMALLIK	4	ATHA_NORTHE_17_4	21.0582848	84.5968260
868807.369	2330997.888	152	NORTHERN	17	ATHAMALLIK	8	ATHA_NORTHE_17_5	21.0428687	84.5488467
871443.4694	2331988.704	1	NORTHERN	18	ATHAMALLIK	1	ATHA_NORTHE_18_1	21.051290	84.5735183
872291.5805	2332457.716	109	NORTHERN	18	ATHAMALLIK	5	ATHA_NORTHE_18_2	21.0553485	84.581767
872140.7613	2331523.254	110	NORTHERN	18	ATHAMALLIK	5	ATHA_NORTHE_18_3	21.0469522	84.5801638
872064.8939	2331296.079	111	NORTHERN	18	ATHAMALLIK	4	ATHA_NORTHE_18_4	21.0447161	84.5889456
874780.0868	2328629.081	179	NORTHERN	19	ATHAMALLIK	5	ATHA_NORTHE_19_1	21.0293339	84.6050827
876663.7052	2330695.526	180	NORTHERN	19	ATHAMALLIK	5	ATHA_NORTHE_19_2	21.0385662	84.623826
875940.6126	2330210.308	181	NORTHERN	19	ATHAMALLIK	5	ATHA_NORTHE_19_3	21.0343388	84.6163314
873901.0871	2330326.662	182	NORTHERN	19	ATHAMALLIK	8	ATHA_NORTHE_19_4	21.0338041	84.5967667
874707.1838	2330823.211	183	NORTHERN	19	ATHAMALLIK	8	ATHA_NORTHE_19_5	21.040117	84.6046174
861255.9834	2331802.396	106	NORTHERN	2	ATHAMALLIK	5	ATHA_NORTHE_2_1	21.0516433	84.4756071
861603.894	2331734.324	107	NORTHERN	2	ATHAMALLIK	4	ATHA_NORTHE_2_2	21.050960	84.4780153
871601.2883	2329763.718	184	NORTHERN	20	ATHAMALLIK	5	ATHA_NORTHE_20_1	21.0319408	84.5745581
873141.0771	2329669.039	185	NORTHERN	20	ATHAMALLIK	5	ATHA_NORTHE_20_2	21.0302835	84.5823044
872348.8942	2330641.077	187	NORTHERN	20	ATHAMALLIK	5	ATHA_NORTHE_20_3	21.038954	84.5810527
873162.6628	2329944.944	188	NORTHERN	20	ATHAMALLIK	5	ATHA_NORTHE_20_4	21.0325120	84.5899143
873757.7578	2329439.653	190	NORTHERN	20	ATHAMALLIK	8	ATHA_NORTHE_20_5	21.0278345	84.5951979
872941.2774	2327516.422	267	NORTHERN	21	ATHAMALLIK	5	ATHA_NORTHE_21_1	21.0106569	84.5869404
872306.6734	2326107.033	268	NORTHERN	21	ATHAMALLIK	4	ATHA_NORTHE_21_2	20.9980757	84.5804224
874566.8236	2325949.776	242	NORTHERN	22	ATHAMALLIK	5	ATHA_NORTHE_22_1	20.9962992	84.602212
874371.5918	2326965.905	243	NORTHERN	22	ATHAMALLIK	5	ATHA_NORTHE_22_2	21.0064020	84.6005574
875200.3034	2328114.872	244	NORTHERN	22	ATHAMALLIK	5	ATHA_NORTHE_22_3	21.0155793	84.6096305
874087.6687	2327716.435	245	NORTHERN	22	ATHAMALLIK	5	ATHA_NORTHE_22_4	21.0222279	84.597993
874036.3339	2328152.02	246	NORTHERN	22	ATHAMALLIK	4	ATHA_NORTHE_22_5	21.0150813	84.6062165
875585.7496	2327678.518	247	NORTHERN	22	ATHAMALLIK	8	ATHA_NORTHE_22_6	21.0115807	84.6123722
875815.6573	2326661.806	248	NORTHERN	22	ATHAMALLIK	8	ATHA_NORTHE_22_7	21.0323659	84.614359

876078.8638	2325976.119	270	NORTHERN	23	ATHAPAPALUK	5	ATHA_NORTHE_23_1	20.99612858	84.61673746
876829.93	2326714.479	271	NORTHERN	23	ATHAPAPALUK	5	ATHA_NORTHE_23_2	21.00263319	84.62411094
876802.338	2325895.961	272	NORTHERN	23	ATHAPAPALUK	5	ATHA_NORTHE_23_3	20.99255261	84.62360179
875966.7767	2327944.951	273	NORTHERN	23	ATHAPAPALUK	5	ATHA_NORTHE_23_4	21.01390554	84.61608941
877141.6646	2327047.769	274	NORTHERN	23	ATHAPAPALUK	4	ATHA_NORTHE_23_5	21.00757827	84.6272204
876855.2675	2328224.386	26	NORTHERN	24	ATHAPAPALUK	5	ATHA_NORTHE_24_1	21.01624355	84.62468311
877983.0481	2329833.577	206	NORTHERN	24	ATHAPAPALUK	5	ATHA_NORTHE_24_2	21.0305228	84.63588621
877566.1981	2329575.072	207	NORTHERN	24	ATHAPAPALUK	5	ATHA_NORTHE_24_3	21.02827764	84.63179642
877352.8466	2329280.086	208	NORTHERN	24	ATHAPAPALUK	5	ATHA_NORTHE_24_4	21.02566123	84.62960241
877036.9736	2329087.801	209	NORTHERN	24	ATHAPAPALUK	4	ATHA_NORTHE_24_5	21.02399211	84.62661668
876419.7936	2328368.31	210	NORTHERN	24	ATHAPAPALUK	1	ATHA_NORTHE_24_6	21.01758547	84.6218312
877728.2767	2327881.316	211	NORTHERN	24	ATHAPAPALUK	8	ATHA_NORTHE_24_7	21.01297191	84.6329923
876879.2242	2328916.704	212	NORTHERN	24	ATHAPAPALUK	8	ATHA_NORTHE_24_8	21.03349004	84.62582806
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875765.2818	2331277.344	135	NORTHERN	25	ATHAPAPALUK	8	ATHA_NORTHE_25_2	21.04399101	84.61514879
874405.7886	2332302.077	136	NORTHERN	25	ATHAPAPALUK	8	ATHA_NORTHE_25_3	21.05351503	84.6020435
873234.6651	2332979.188	80	NORTHERN	26	ATHAPAPALUK	5	ATHA_NORTHE_26_1	21.05985952	84.59003983
874637.644	2332928.382	81	NORTHERN	26	ATHAPAPALUK	5	ATHA_NORTHE_26_2	21.05320251	84.59466501
874435.2827	2333708.499	82	NORTHERN	26	ATHAPAPALUK	4	ATHA_NORTHE_26_3	21.06619163	84.60263251
875306.1068	2333998.497	83	NORTHERN	26	ATHAPAPALUK	1	ATHA_NORTHE_26_4	21.06862877	84.61106182
875433.6405	2333429.572	84	NORTHERN	26	ATHAPAPALUK	8	ATHA_NORTHE_26_5	21.06347237	84.61216353
872888.9628	2332520.163	85	NORTHERN	26	ATHAPAPALUK	8	ATHA_NORTHE_26_6	21.0557904	84.38751938
877237.6821	2334528.662	64	NORTHERN	27	ATHAPAPALUK	5	ATHA_NORTHE_27_1	21.07301329	84.62973488
876687.1311	2334358.039	65	NORTHERN	27	ATHAPAPALUK	5	ATHA_NORTHE_27_2	21.07159402	84.62411999
876837.7065	2335174.787	66	NORTHERN	27	ATHAPAPALUK	1	ATHA_NORTHE_27_3	21.07882187	84.62601364
876129.454	2333982.511	67	NORTHERN	27	ATHAPAPALUK	8	ATHA_NORTHE_27_4	21.068316	84.6189682
877767.1728	2333179.62	113	NORTHERN	28	ATHAPAPALUK	5	ATHA_NORTHE_28_1	21.06073957	84.63452593
873469.6873	2331304.517	114	NORTHERN	28	ATHAPAPALUK	5	ATHA_NORTHE_28_2	21.04389251	84.61325748
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876141.2057	2331223.832	119	NORTHERN	28	ATHAPAPALUK	8	ATHA_NORTHE_28_5	21.04343725	84.61847911
875856.0938	2331990.018	120	NORTHERN	28	ATHAPAPALUK	8	ATHA_NORTHE_28_6	21.05080471	84.6159075
878002.8130	2331080.369	128	NORTHERN	29	ATHAPAPALUK	5	ATHA_NORTHE_29_1	21.04176146	84.63632025
878504.3546	2332001.041	129	NORTHERN	29	ATHAPAPALUK	5	ATHA_NORTHE_29_2	21.05085286	84.6413705
877995.4088	2331732.735	131	NORTHERN	29	ATHAPAPALUK	8	ATHA_NORTHE_29_3	21.04764558	84.63640113
862259.5603	2330611.742	22	NORTHERN	3	ATHAPAPALUK	2	ATHA_NORTHE_3_1	21.04971822	84.4859032
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862087.2506	2330691.865	76	NORTHERN	3	ATHAPAPALUK	5	ATHA_NORTHE_3_3	21.06210899	84.4838387
862525.8016	2330762.71	77	NORTHERN	3	ATHAPAPALUK	8	ATHA_NORTHE_3_4	21.04201672	84.4875602
877495.2464	2333424.183	16	NORTHERN	30	ATHAPAPALUK	1	ATHA_NORTHE_30_1	21.08103549	84.6324058

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879212.3089	2335135.354	62	NORTHERN	30	ATHAMALLIK	4	ATHA_NORTHE_30_4	21.0780767	84.6488403
878160.0306	2334576.454	63	NORTHERN	30	ATHAMALLIK	8	ATHA_NORTHE_30_5	21.0732543	84.6386066
879688.4587	2333856.118	73	NORTHERN	31	ATHAMALLIK	5	ATHA_NORTHE_31_1	21.0664431	84.6533164
880331.6422	2334068.371	74	NORTHERN	31	ATHAMALLIK	4	ATHA_NORTHE_31_2	21.0682238	84.6595733
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880306.0831	2332995.378	96	NORTHERN	32	ATHAMALLIK	5	ATHA_NORTHE_32_2	21.0585539	84.6588748
880478.6916	2332504.026	97	NORTHERN	32	ATHAMALLIK	5	ATHA_NORTHE_32_3	21.0540875	84.6604449
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881165.4379	2332134.966	123	NORTHERN	33	ATHAMALLIK	5	ATHA_NORTHE_33_3	21.0562978	84.6663632
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879976.8229	2330237.259	197	NORTHERN	34	ATHAMALLIK	5	ATHA_NORTHE_34_2	21.033751	84.6551041
879413.5531	2329815.614	198	NORTHERN	34	ATHAMALLIK	5	ATHA_NORTHE_34_3	21.0287540	84.6494476
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880200.5198	2327917.804	261	NORTHERN	35	ATHAMALLIK	8	ATHA_NORTHE_35_4	21.0127907	84.6567419
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880300.1964	2327061.36	263	NORTHERN	36	ATHAMALLIK	5	ATHA_NORTHE_36_2	21.0080474	84.6575106
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881822.7119	2328647.209	321	NORTHERN	37	ATHAMALLIK	5	ATHA_NORTHE_37_2	21.0271470	84.6726802
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881806.6157	2330243.834	138	NORTHERN	38	ATHAMALLIK	5	ATHA_NORTHE_38_2	21.0334318	84.6726797
881293.0374	2331089.005	139	NORTHERN	38	ATHAMALLIK	5	ATHA_NORTHE_38_3	21.0411594	84.6659395
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863326.9009	2333902.98	44	NORTHERN	4	ATHAMALLIK	5	ATHA_NORTHE_4_3	21.0701791	84.4859463

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884228.0806	2332909.762	142	NORTHERN	40	ATHAMALIK	5	ATHA_NORTHE_40_2	21.0569651	84.6965296
884481.0997	2329891.666	143	NORTHERN	40	ATHAMALIK	5	ATHA_NORTHE_40_3	21.0296986	84.6982674
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880824.405	2328122.764	251	NORTHERN	41	ATHAMALIK	8	ATHA_NORTHE_41_2	21.0128647	84.6915652
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884338.2151	2326773.039	264	NORTHERN	42	ATHAMALIK	4	ATHA_NORTHE_42_3	21.0066090	84.6962213
885339.1981	2327240.196	265	NORTHERN	42	ATHAMALIK	8	ATHA_NORTHE_42_4	21.0261196	84.7059368
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886788.3397	2329132.787	224	NORTHERN	43	ATHAMALIK	5	ATHA_NORTHE_43_3	21.0223720	84.7202466
886396.6607	2329953.123	225	NORTHERN	43	ATHAMALIK	4	ATHA_NORTHE_43_4	21.0285168	84.716688
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888961.9029	2330991.267	175	NORTHERN	44	ATHAMALIK	5	ATHA_NORTHE_44_2	21.0386706	84.7415670
887506.6302	2330855.119	176	NORTHERN	44	ATHAMALIK	2	ATHA_NORTHE_44_3	21.0386524	84.7275727
888308.5807	2330452.041	177	NORTHERN	44	ATHAMALIK	4	ATHA_NORTHE_44_4	21.0339470	84.735171
888957.6883	2330506.089	178	NORTHERN	44	ATHAMALIK	8	ATHA_NORTHE_44_5	21.0342970	84.7414170
886149.5868	2330653.575	159	NORTHERN	45	ATHAMALIK	5	ATHA_NORTHE_45_1	21.0362193	84.7144816
885367.4661	2330083.56	160	NORTHERN	45	ATHAMALIK	5	ATHA_NORTHE_45_2	21.0312436	84.706842
886045.9339	2331030.789	161	NORTHERN	45	ATHAMALIK	5	ATHA_NORTHE_45_3	21.0396419	84.7135705
887553.7044	2331410.45	162	NORTHERN	45	ATHAMALIK	8	ATHA_NORTHE_45_4	21.0423473	84.7281367
885689.0429	2332965.443	37	NORTHERN	46	ATHAMALIK	5	ATHA_NORTHE_46_1	21.0570706	84.7106734
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886588.8021	2332701.867	90	NORTHERN	46	ATHAMALIK	5	ATHA_NORTHE_46_4	21.0549595	84.7191588
884898.5522	2330649.15	91	NORTHERN	46	ATHAMALIK	5	ATHA_NORTHE_46_5	21.0364419	84.7024655
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885027.496	2331963.284	93	NORTHERN	46	ATHAMALIK	1	ATHA_NORTHE_46_7	21.0482636	84.7389669
888934.5975	2333308.88	34	NORTHERN	47	ATHAMALIK	5	ATHA_NORTHE_47_1	21.0595275	84.741826
888941.6353	2333740.415	86	NORTHERN	47	ATHAMALIK	5	ATHA_NORTHE_47_2	21.0634619	84.7419925
887800.7272	2333790.018	87	NORTHERN	47	ATHAMALIK	5	ATHA_NORTHE_47_3	21.0641506	84.7381046
863864.5786	2333121.5	53	NORTHERN	5	ATHAMALIK	5	ATHA_NORTHE_5_1	21.0630187	84.5022575
864837.9391	2334967.493	54	NORTHERN	5	ATHAMALIK	5	ATHA_NORTHE_5_2	21.0794796	84.5066077
863954.1104	2331281.741	55	NORTHERN	5	ATHAMALIK	5	ATHA_NORTHE_5_3	21.0464148	84.5044919
864732.2505	2334415.789	56	NORTHERN	5	ATHAMALIK	1	ATHA_NORTHE_5_4	21.0745250	84.5095828

868072.8699	2333964.037	57	NORTHERN	5	ATHAMALLIK	8	ATHA_NORTH_5_5	21.07038316	84.51273538
864706.0087	2333159.39	58	NORTHERN	5	ATHAMALLIK	8	ATHA_NORTH_5_6	21.06319599	84.5090001
863429.8807	2331853.443	59	NORTHERN	5	ATHAMALLIK	8	ATHA_NORTH_5_7	21.0567467	84.49680326
867164.2952	2333598.55	48	NORTHERN	6	ATHAMALLIK	5	ATHA_NORTH_6_1	21.06666963	84.53275241
865382.2971	2334797.01	49	NORTHERN	6	ATHAMALLIK	5	ATHA_NORTH_6_2	21.07783369	84.51588528
866888.3463	2334616.907	50	NORTHERN	6	ATHAMALLIK	4	ATHA_NORTH_6_3	21.07890512	84.53038805
865343.0179	2334330.845	51	NORTHERN	6	ATHAMALLIK	1	ATHA_NORTH_6_4	21.07363742	84.5154089
866445.137	2333299.226	52	NORTHERN	6	ATHAMALLIK	2	ATHA_NORTH_6_5	21.064114	84.52577906
867068.234	2335009.577	1	NORTHERN	7	ATHAMALLIK	5	ATHA_NORTH_7_1	21.07940854	84.53238978
867522.0318	2334734.712	41	NORTHERN	7	ATHAMALLIK	5	ATHA_NORTH_7_2	21.07684423	84.53643037
868996.339	2333380.436	25	NORTHERN	8	ATHAMALLIK	4	ATHA_NORTH_8_1	21.06433509	84.55030755
868226.3136	2333378.531	78	NORTHERN	8	ATHAMALLIK	5	ATHA_NORTH_8_2	21.06447299	84.54250911
869728.1755	2333194.357	79	NORTHERN	8	ATHAMALLIK	8	ATHA_NORTH_8_3	21.06250969	84.5572988
868044.2444	2331717.987	155	NORTHERN	9	ATHAMALLIK	5	ATHA_NORTH_9_1	21.04983302	84.54088614
868331.5633	2332017.641	156	NORTHERN	9	ATHAMALLIK	5	ATHA_NORTH_9_2	21.05308848	84.54362724
868881.927	2332563.322	157	NORTHERN	9	ATHAMALLIK	5	ATHA_NORTH_9_3	21.05969545	84.54873563
867804.5811	2331266.077	158	NORTHERN	9	ATHAMALLIK	8	ATHA_NORTH_9_4	21.04580689	84.53840634
860826.6057	2306249.431	32	NUAGAN	1	ATHAMALLIK	8	ATHA_NUAGAN_1_1	20.82026362	84.46616819
860419.5721	2305340.871	393	NUAGAN	1	ATHAMALLIK	5	ATHA_NUAGAN_1_2	20.8131480	84.4620762
861908.9086	2305217.738	395	NUAGAN	1	ATHAMALLIK	5	ATHA_NUAGAN_1_3	20.81174816	84.47633691
861228.0286	2305602.006	394	NUAGAN	1	ATHAMALLIK	4	ATHA_NUAGAN_1_4	20.8153463	84.4698851
861042.8878	2306730.721	395	NUAGAN	1	ATHAMALLIK	8	ATHA_NUAGAN_1_5	20.82556206	84.4683421
858825.9588	2305425.548	402	NUAGAN	2	ATHAMALLIK	5	ATHA_NUAGAN_2_1	20.8142201	84.4468066
859513.7767	2305809.822	403	NUAGAN	2	ATHAMALLIK	8	ATHA_NUAGAN_2_2	20.817553	84.453483
859741.843	2306845.539	404	NUAGAN	2	ATHAMALLIK	8	ATHA_NUAGAN_2_3	20.82685026	84.4558847
859951.4316	2307436.906	387	NUAGAN	3	ATHAMALLIK	4	ATHA_NUAGAN_3_1	20.8321440	84.4580173
859001.1531	2306676.306	388	NUAGAN	3	ATHAMALLIK	8	ATHA_NUAGAN_3_2	20.8254673	84.4487442
857722.6875	2306933.665	389	NUAGAN	3	ATHAMALLIK	8	ATHA_NUAGAN_3_3	20.8280352	84.4366319
859732.2718	2307635.371	370	NUAGAN	4	ATHAMALLIK	5	ATHA_NUAGAN_4_1	20.8339760	84.4559656
859040.3289	2307998.96	371	NUAGAN	4	ATHAMALLIK	5	ATHA_NUAGAN_4_2	20.837344	84.4409101
858963.2911	2307471.118	372	NUAGAN	4	ATHAMALLIK	8	ATHA_NUAGAN_4_3	20.8336433	84.4485443
859172.318	2308650.396	366	NUAGAN	5	ATHAMALLIK	8	ATHA_NUAGAN_5_1	20.8402302	84.4507024
873979.5254	2306066.657	6	TALAIPATHAR	1	ATHAMALLIK	4	ATHA_TALAIP_1_1	20.8170149	84.9222607
874507.406	2305380.899	419	TALAIPATHAR	1	ATHAMALLIK	5	ATHA_TALAIP_1_2	20.8107245	84.9721124
872858.3569	2305651.237	420	TALAIPATHAR	1	ATHAMALLIK	5	ATHA_TALAIP_1_3	20.8134939	84.981452
873354.1529	2304843.215	421	TALAIPATHAR	1	ATHAMALLIK	1	ATHA_TALAIP_1_4	20.8061076	84.9800536
863507.9363	2306030.381	405	TALAIPATHAR	10	ATHAMALLIK	7	ATHA_TALAIP_10_1	20.8187654	84.4988415
865304.7587	2306406.233	397	TALAIPATHAR	11	ATHAMALLIK	4	ATHA_TALAIP_11_1	20.8218224	84.9081994
865865.8871	2306389.105	398	TALAIPATHAR	11	ATHAMALLIK	5	ATHA_TALAIP_11_2	20.8215379	84.9145377
864204.5133	2306577.001	399	TALAIPATHAR	11	ATHAMALLIK	8	ATHA_TALAIP_11_3	20.8235589	84.9864002

864651.6194	2305448.866	423	TALAIPATHAR	12	ATHAMALLIK	7	ATHA_TALAIP_12_1	20.81329674	84.50269358
868721.9109	2304851.252	418	TALAIPATHAR	13	ATHAMALLIK	4	ATHA_TALAIP_13_1	20.80710491	84.54160925
868639.8202	2304391.266	411	TALAIPATHAR	13	ATHAMALLIK	4	ATHA_TALAIP_13_2	20.80297219	84.54072501
866522.7002	2305587.815	412	TALAIPATHAR	13	ATHAMALLIK	1	ATHA_TALAIP_13_3	20.81237818	84.5206281
867249.7448	2306998.505	413	TALAIPATHAR	13	ATHAMALLIK	5	ATHA_TALAIP_13_4	20.81864415	84.52775119
866687.6634	230629.7.218	414	TALAIPATHAR	13	ATHAMALLIK	2	ATHA_TALAIP_13_5	20.82054727	84.52240129
865818.8729	23056.38.57	415	TALAIPATHAR	13	ATHAMALLIK	7	ATHA_TALAIP_13_6	20.81470616	84.51592794
867996.2055	2306098.819	377	TALAIPATHAR	14	ATHAMALLIK	5	ATHA_TALAIP_14_1	20.81849935	84.53493143
867730.6258	2306893.547	378	TALAIPATHAR	14	ATHAMALLIK	5	ATHA_TALAIP_14_2	20.82211179	84.53244701
867409.9001	2307238.175	379	TALAIPATHAR	14	ATHAMALLIK	5	ATHA_TALAIP_14_3	20.82889254	84.52952717
866308.8977	2307449.765	380	TALAIPATHAR	14	ATHAMALLIK	5	ATHA_TALAIP_14_4	20.83101645	84.51909974
868274.3566	2306492.994	381	TALAIPATHAR	14	ATHAMALLIK	4	ATHA_TALAIP_14_5	20.82199911	84.53798253
869908.4573	2307508.853	382	TALAIPATHAR	14	ATHAMALLIK	8	ATHA_TALAIP_14_6	20.8021.525	84.52479156
868302.6098	2306854.336	384	TALAIPATHAR	15	ATHAMALLIK	5	ATHA_TALAIP_15_1	20.82325.409	84.53800937
869100.6967	2305893.013	385	TALAIPATHAR	15	ATHAMALLIK	5	ATHA_TALAIP_15_2	20.81642.425	84.54546225
867329.0887	2307506.208	386	TALAIPATHAR	15	ATHAMALLIK	8	ATHA_TALAIP_15_3	20.83222.667	84.52882036
865106.7105	2306810.937	425	TALAIPATHAR	16	ATHAMALLIK	4	ATHA_TALAIP_16_1	20.80102.578	84.50682311
864456.2662	23048.76.07	426	TALAIPATHAR	16	ATHAMALLIK	7	ATHA_TALAIP_16_2	20.80816.907	84.50078032
863481.0980	2304437.805	428	TALAIPATHAR	16	ATHAMALLIK	8	ATHA_TALAIP_16_3	20.80440.684	84.49125474
865949.6474	2304506.921	429	TALAIPATHAR	17	ATHAMALLIK	4	ATHA_TALAIP_17_1	20.8045.465	84.51494714
866114.0922	2304077.994	431	TALAIPATHAR	17	ATHAMALLIK	8	ATHA_TALAIP_17_2	20.80064.575	84.51643423
867889.6066	2304250.491	442	TALAIPATHAR	18	ATHAMALLIK	4	ATHA_TALAIP_18_1	20.80185.114	84.53349995
866992.2135	2302485.77	443	TALAIPATHAR	18	ATHAMALLIK	8	ATHA_TALAIP_18_2	20.78611.294	84.52452286
866844.5654	2303994.148	444	TALAIPATHAR	18	ATHAMALLIK	7	ATHA_TALAIP_18_3	20.79974.566	84.52342308
868337.9329	2302543.829	445	TALAIPATHAR	19	ATHAMALLIK	5	ATHA_TALAIP_19_1	20.78637.078	84.53744063
868427.1925	2302892.744	446	TALAIPATHAR	19	ATHAMALLIK	5	ATHA_TALAIP_19_2	20.78949.983	84.53836968
868842.6757	2303601.649	447	TALAIPATHAR	19	ATHAMALLIK	1	ATHA_TALAIP_19_3	20.79581.082	84.54258404
868065.393	23018.11.75	448	TALAIPATHAR	19	ATHAMALLIK	8	ATHA_TALAIP_19_4	20.77982.236	84.53467308
868350.8005	2303498.078	449	TALAIPATHAR	19	ATHAMALLIK	8	ATHA_TALAIP_19_5	20.79497.419	84.53776485
867539.8136	2303586.124	450	TALAIPATHAR	19	ATHAMALLIK	7	ATHA_TALAIP_19_6	20.7959.286	84.53008548
873105.6028	2306434.258	406	TALAIPATHAR	2	ATHAMALLIK	5	ATHA_TALAIP_2_1	20.82050.567	84.58399138
872671.8348	2306198.728	407	TALAIPATHAR	2	ATHAMALLIK	5	ATHA_TALAIP_2_2	20.81837.849	84.57977842
871958.3248	2305972.964	408	TALAIPATHAR	2	ATHAMALLIK	4	ATHA_TALAIP_2_3	20.81657.962	84.57289892
872505.1003	2305618.545	409	TALAIPATHAR	2	ATHAMALLIK	1	ATHA_TALAIP_2_4	20.81125.189	84.57805727
870601.0413	2302307.804	456	TALAIPATHAR	20	ATHAMALLIK	1	ATHA_TALAIP_20_1	20.78173.255	84.56208892
869831.3466	2302234.817	457	TALAIPATHAR	20	ATHAMALLIK	5	ATHA_TALAIP_20_2	20.7832.879	84.55169512
870856.6576	2303216.397	458	TALAIPATHAR	20	ATHAMALLIK	6	ATHA_TALAIP_20_3	20.79193.619	84.56173742
870769.4975	2303941.478	431	TALAIPATHAR	21	ATHAMALLIK	1	ATHA_TALAIP_21_1	20.79849.257	84.56105518
869090.5055	2304845.789	432	TALAIPATHAR	21	ATHAMALLIK	4	ATHA_TALAIP_21_2	20.80698.192	84.54514339
869671.3497	23051.83.69	416	TALAIPATHAR	22	ATHAMALLIK	5	ATHA_TALAIP_22_1	20.80991.388	84.55078584
870477.4358	2304897.107	417	TALAIPATHAR	22	ATHAMALLIK	5	ATHA_TALAIP_22_2	20.80336.928	84.55841419
870835.7887	2305518.068	418	TALAIPATHAR	22	ATHAMALLIK	8	ATHA_TALAIP_22_3	20.81269.753	84.56202528
871619.0722	2303629.623	434	TALAIPATHAR	23	ATHAMALLIK	5	ATHA_TALAIP_23_1	20.79351.068	84.5691368
872032.6843	2303229.192	435	TALAIPATHAR	23	ATHAMALLIK	5	ATHA_TALAIP_23_2	20.79181.686	84.57501832
872516.332	2304525.8	436	TALAIPATHAR	23	ATHAMALLIK	6	ATHA_TALAIP_23_3	20.80340.517	84.57831427
873675.9666	2303998.539	440	TALAIPATHAR	24	ATHAMALLIK	5	ATHA_TALAIP_24_1	20.79842.613	84.58891893
871243.333	2306801.962	398	TALAIPATHAR	3	ATHAMALLIK	4	ATHA_TALAIP_3_1	20.8205.872	84.56612196
869603.3384	23075.98.44	17	TALAIPATHAR	4	ATHAMALLIK	4	ATHA_TALAIP_4_1	20.8117.046	84.55064434
870348.7491	2307532.514	374	TALAIPATHAR	4	ATHAMALLIK	4	ATHA_TALAIP_4_2	20.83100.144	84.55586235
870556.6422	2307074.029	375	TALAIPATHAR	4	ATHAMALLIK	5	ATHA_TALAIP_4_3	20.82678.515	84.55967783
868558.2884	2307269.549	376	TALAIPATHAR	4	ATHAMALLIK	1	ATHA_TALAIP_4_4	20.82894.617	84.54054904
867871.8203	2308477.209	13	TALAIPATHAR	5	ATHAMALLIK	5	ATHA_TALAIP_5_1	20.8199.716	84.53421932
865741.9992	2308809.075	367	TALAIPATHAR	5	ATHAMALLIK	5	ATHA_TALAIP_5_2	20.84338.745	84.51385627
867411.782	2308572.557	368	TALAIPATHAR	5	ATHAMALLIK	4	ATHA_TALAIP_5_3	20.8191.209	84.52978392
867058.4349	2308191.575	369	TALAIPATHAR	5	ATHAMALLIK	1	ATHA_TALAIP_5_4	20.83756.294	84.52618416
863179.3489	2309645.155	5	TALAIPATHAR	6	ATHAMALLIK	8	ATHA_TALAIP_6_1	20.85143.126	84.48044421
865481.3846	2307581.916	354	TALAIPATHAR	6	ATHAMALLIK	4	ATHA_TALAIP_6_2	20.83238.116	84.51061933
863433.1841	2309109.085	355	TALAIPATHAR	6	ATHAMALLIK	4	ATHA_TALAIP_6_3	20.84654.676	84.49176596
864426.4867	2309127.806	357	TALAIPATHAR	6	ATHAMALLIK	1	ATHA_TALAIP_6_4	20.84655.884	84.50136225
862443.4848	2309503.913	9	TALAIPATHAR	7	ATHAMALLIK	8	ATHA_TALAIP_7_1	20.8103.013	84.48235447
863668.1363	2307166.872	358	TALAIPATHAR	7	ATHAMALLIK	4	ATHA_TALAIP_7_2	20.82598.404	84.49361748
862628.5178	2307972.106	359	TALAIPATHAR	7	ATHAMALLIK	4	ATHA_TALAIP_7_3	20.83644.972	84.48581143
862359.6259	2308549.063	360	TALAIPATHAR	7	ATHAMALLIK	5	ATHA_TALAIP_7_4	20.84757.166	84.48137145

ANNEXURE - XVIII			
MAP REFERENCE OF RESERVED FORESTS			
Block	Compt. No	Management 1: 25000	Working Plan 1:50000
Athamallik Range			
Kusum Kuhuri	1	73D/9SE	73D/9
	2	73D/9SE	73D/9
	3	73D/9SE	73D/9
Taleipathar	16	73D/9 S.W, 73D/5 S.E	73D/9
	17	73D/9 S.W	73D/9
	18	73D/9 S.W	73D/9
	19	73D/9 S.W	73D/9
	20	73D/9 S.W	73D/9
	21	73D/9 S.W	73D/9
Mahendrapur	1	73D/9SW	73D/9
	2	73D/9SW	73D/9
Dhandatopa Range			
Talaipathar	1	73D/9 S.W	73D/9
	2	73D/9 S.W	73D/9
	3	73D/9 S.W	73D/9
	4	73D/9 S.W	73D/9
	15	73D/9 S.W	73D/9
	22	73D/9 S.W	73D/9
	23	73D/9 S.W	73D/9
	24	73D/9 S.W	73D/9
Kutulsingha	1	73D/10 NE	73D/10
	2	73D/10 NE	73D/10
	3	73D/10 NE	73D/10
	4	73D/10 NE	73D/10
	5	73D/10 NE	73D/10
	6	73D/10 NE	73D/10
	7	73D/10 NE	73D/10
Dantarikhol	2	73D/9 SE	73D/13
	3	73D/13 N.W	73D/13
Madhapur Range			
Talaipathar	5	73D/9 SW	73D/9
	6	73D/9 SW, 73D/5 SE	73D/9, 73D/5
	7	73D/5 SE	73D/5
	8	73D/5 SE	73D/5
	9	73D/5 SE	73D/5
	10	73D/5 SE	73D/5
	11	73D/9 SW, 73D/5 SE	73D/9
	12	73D/9 SW, 73D/5 SE	73D/9
	13	73D/9 SW	73D/9
	14	73D/9 SW, 73D/5 SE	73D/9
East Baruni	1	73D/5 SE, 73D/5 NE	73D/5
	2	73D/5 SE	73D/5
	3	73D/5 SE, 73D/5 NE, 73D/5 NW	73D/5
	4	73D/5 NE, 73D/5 NW	73D/5
	5	73D/5 NW	73D/5
	6	73D/5 NW	73D/5
	7	73D/5 NW	73D/5
West Baruni	1	73D/5 NW	73D/5
	2	73D/5 NW	73D/5
	3	73D/5 NW	73D/5
Nuagan	1	73D/5 SE	73D/5
	2	73D/5 SE	73D/5
	3	73D/5 SE	73D/5
	4	73D/5 SE	73D/5
	5	73D/5 SE	73D/5

Handapa Range			
Northern	15	73C/12 SW	
	19	73C/12 SW	
	21	73D/9 NW, 73C/12 SW	73D/9
	22	73C/12 SW, 73D/9 NW	73D/9
	23	73C/12 SW, 73D/9 NW, NE, 73C/12 SE	73D/9
	24	73C/12 SW, SE	
	25	73C/12 SW	
	26	73C/12 SW	73D/9
	27	73C/12 SW, 73C/12 SE	
	28	73C/12 SW, 73C/12 SE	
	29	73C/12 SE	
	30	73C/12 SW, SE	
	31	73C/12 SE	
	32	73C/12 SE	
	33	73C/12 SE	
	34	73C/12 SE	
	35	73C/12 SE	
	36	73D/9 NE, 73C/12 SE	
	37	73C/12 SE	
	38	73C/12 SE	
	39	73C/12 SE	
	40	73C/12 SE	
	41	73C/12 SE	
	42	73C/12 SE, 73D/9 NE	73D/9
	43	73C/12 SE	
	44	73C/12 SE	
	45	73C/12 SE	
	46	73C/12 SE	
	47	73C/12 SE	
Handapa RF	1	73D/9 NE	73D/9
	2	73D/9 NE	73D/9
	3	73D/9 NE	73D/9
	4	73D/9 NE	73D/9
	5	73D/9 NE	73D/9
	6	73D/9 NE	73D/9
	7	73D/9 NE	73D/9
Dandarugudi RF	1	73D/9 NE, 73D/9 NW	73D/9
Kholdangiani	1	73D/9 NW	73D/9
Kadalimunda	1	73D/13 NW	73D/13
Dantarikhol	1	73D/9 NE, SE	73D/9
	4	73D/13 NW	73D/13
	5	73D/13 NW	73D/13
	6	73D/9 NE, 73D/13 NW	73D/13
	7	73D/9 NE	73D/9
	8	73D/9 NE	73D/9
Bankimundi	1	73D/9 NE, SE	73D/9
	2	73D/9 NE, SE	73D/9
	3	73D/9 NE	73D/9
Bamur Range			
Northern	1	73C/8 SE	
	2	73C/8 SE	
	3	73C/8 SE	
	4	73C/8 SE, 73C/12 SW	
	5	73C/8 SE, 73C/12 SW	
	6	73C/12 SW	
	7	73C/12 SW	
	8	73C/12 SW	
	9	73C/12 SW	
	10	73C/12 SW	
	11	73C/12 SW	
	12	73C/12 SW	
	13	73C/12 SW	
	14	73C/12 SW, 73D/9 NW	73D/9
	16	73C/12 SW	
	17	73C/12 SW	
	18	73C/12 SW	
	20	73C/12 SW	

Bindhyabasini	1	73C/8 SE	
Kishoreban	1	73C/8 SE, 73C/12 SW	73 C/8,C/12
Ghosar	1	73C/5 NE	73D/5
	2	73D/5 NE, 73D/9 NW	73D/5, 73D/9
	3	73D/9 NW	73D/9
Bijamalhia	1	73D/5 NE, 73D/5 NW	73D/5
Guja	1	73D/5 NW	73D/5

MAP REFERENCE OF PROTECTED FORESTS

Sl No.	P.F	Map Scale - 1: 25000	Map Scale-1: 50000
HANDAPRANGE			
1	Gundurijharan	73C/12/SE	73C/12
2	Kuturakani	73D/9 NE	73D/9
3	Batipurunapani	73D/9 NW	73D/9
4	Susab	73C/12 SW	73C/12
5	Bhangamunda	73C/8 SE	73C/8
6	Mangalapur	73D/5 NW	73D/5
7	Muchhapur 'A'	73D/5 SE	73D/5
8	Muchhapur 'B'	73D/5 SE	73D/5
9	Purunapani	73D/5 SE	73D/5
10	Bjapur	73D/5 NW	73D/5
11	Kuber hill	73D/5 SE	73D/5
12	Pitabalibahal	73D/10 NE, 73D/9 SE	73D/10,73D/9
13	Berham	73D/9 SE	73D/9
14	Rampur	73D/10 NE, 73D/9 SE	73D/10,73D/9
15	Thakurgarh	73D/9 SW, 73D/9 SE	73D/9
16	Solanda	73D/9 NE	73D/9
17	Tulasipur	73D/5 NE	73D/5
18	Digi	73D/5 NE	73D/5
19	Tileswar	73D/9 NW	73D/9

ANNEXURE-XIX

Programme of 5 years Cycle of Maintenance of Boundary Pillars from 2021-2022 to 2025-2026/ 2026-2027 to 2030-2031

Sl.No.	Name of the R.F.	Year of Maintenace											
		2021-2022/2026-2027		2022-2023/2027-2028		2023-2024/2028-2029		2024-2025/2029-2030		2025-2026/2030-2031		Total	
		KMs.	No. of Pilaras	KMs.	No. of Pilaras	KMs.	No. of Pilaras	KMs.	No. of Pilaras	KMs.	No. of Pilaras	KMs.	No. of Pilaras
1	Kusumkohari	7	50	6.2	44	0	0	0	0	0	0	13.2	94
2	Mahendrapur	6.8	31	6	25	0	0	0	0	0	0	12.8	56
3	Kutulsingha	6.32	39	7	40	7	41	7	42	7	47	34.32	209
4	Talejpathr	8.4	32	8	33	8	34	8	36	8	36	40.4	171
5	East Baruni	0	0	0	0	10	80	10	78	8	59	28	217
6	West Baruni	0	0	5.37	41	5	39	0	0	0	0	10.37	80
7	Nuagaon	6.29	26	7	32	7	30	0	0	0	0	20.29	88
8	Narthern	16	51	17	53	16	52	16	53	22	76	87	285
9	Handapa	7.37	31	6	28	6	29	8	37	0	0	27.37	125
10	Dandarugudi	0	0	0	0	0	0	0	0	8.08	67	8.08	67
11	Khopladangiani	0	0	0	0	0	0	0	0	7.55	62	7.55	62
12	Kadalimunda	10.5	104	0	0	0	0	0	0	0	0	10.5	104
13	Dantarikhol	8	58	7.25	58	8	55	0	0	0	0	23.25	171
14	Bankimundi	0	0	0	0	0	0	0	0	9.04	96	9.04	96
15	Bindhyabasini	0	0	0	0	0	0	9.28	92	0	0	9.28	92
16	Kishorban	0	0	0	0	12.03	113	0	0	0	0	12.03	113
17	Ghosar	0	0	10	43	0	0	9.6	42	0	0	19.6	85
18	Guja	0	0	0	0	0	0	11.5	37	0	0	11.48	37
19	Bijamalia	0	0	0	0	0	0	0	0	6.32	32	6.32	32
	Total	**76.68**	**422**	**79.82**	**397**	**79.03**	**473**	**79.4**	**417**	**75.99**	**475**	**390.88**	**2184**