Government of Odisha

THE REVISED WORKING PLAN
OF
ANGUL FOREST DIVISION

FOR THE PERIOD
2021-22 TO 2030-31

Prepared by

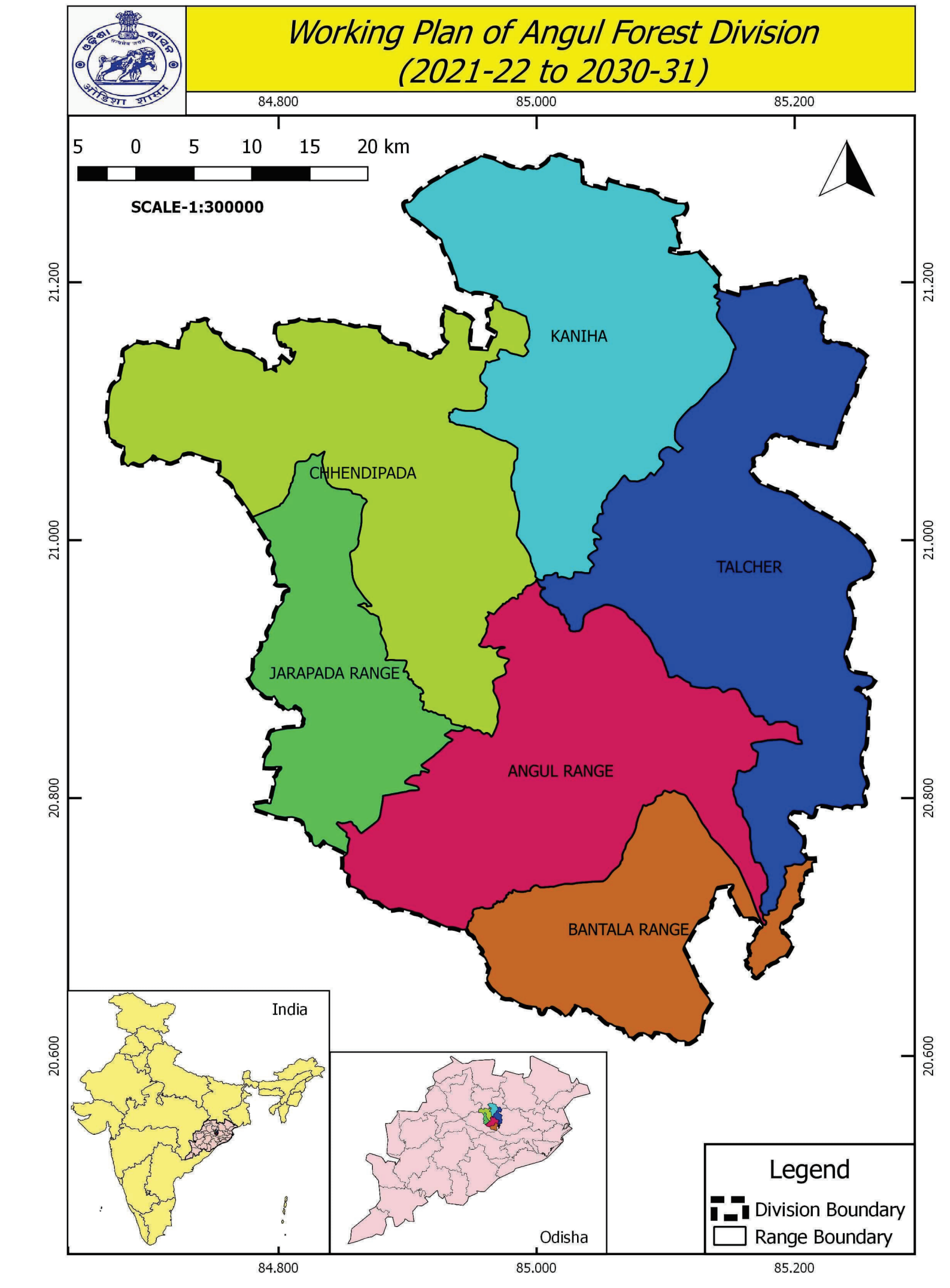
Divisional Forest Officer,
Angul Division

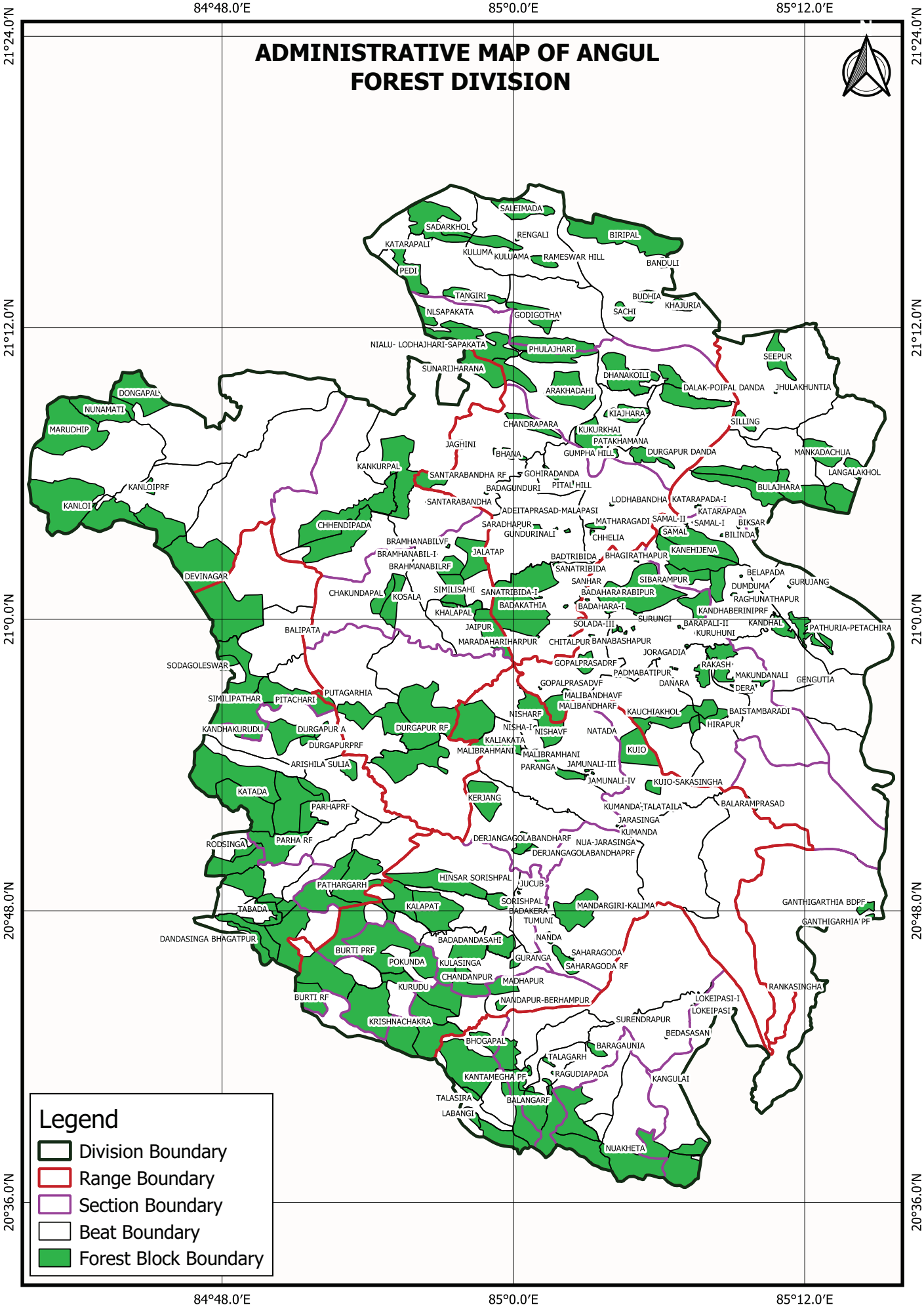
Under the guidance of

Dr. Pradeep Raj Karat, IFS
Field Director, STR-Cum-Regional Chief Conservator of Forests, Angul

Sri Sisir Kumar Ratho, IFS
Principal Chief Conservator of Forests, & HoFF
Odisha, Bhubaneswar

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




ADMINISTRATIVE MAP OF ANGUL
FOREST DIVISION
84°48.0'E
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SALEIMADA
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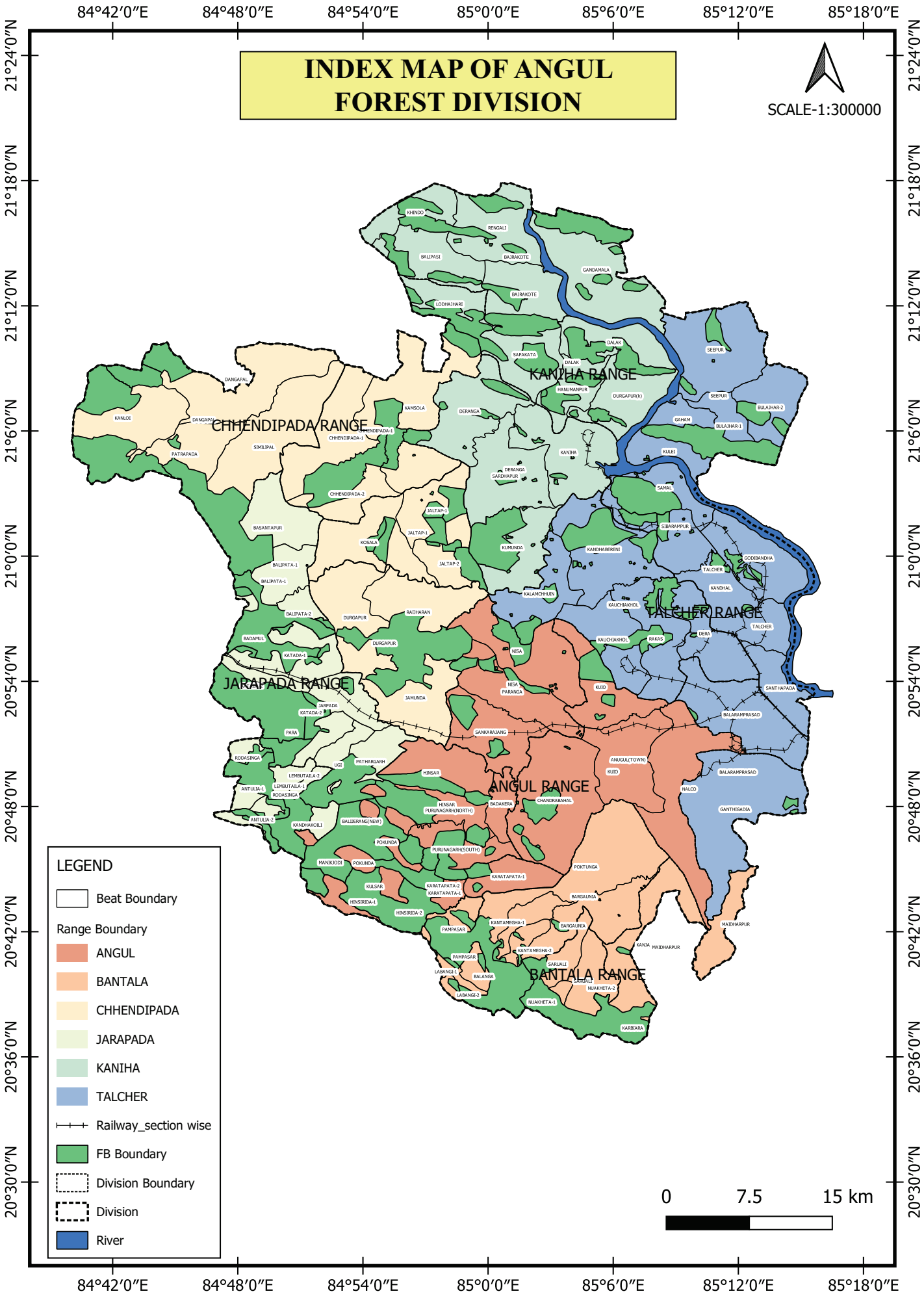
KULUAMA
RAMESWAR HILL
BANDULI
PEDI
TANGIRI
BUDHIA
KHAJURIA
NLSAPAKATA
GODIGOTHA
SACHI
NIALU- LODHAJHARI-SAPAKATA
PHULAJHARI
SEEPUR
SUNARIJHARANA
DHANAKOILI
DONGAPAL
ARAKHADAHI
DALAK-POIPAL DANDA
JHULAKHUNTIA
NUNAMATI
KIAJHARA
SILLING
MARUDHIP
CHANDRAPARA
KUKURKHAI
PATAKHAMANA
JAGHINI
BHANA
GUMPHA HILL
DURGAPUR DANDA
MANKADACHUA
KANKURPAL
SANTARABANDHA RF
GOHIRADANDA
LANGALAKHOL
KANLOIPRF
BADAGUNDURI
PITAL HILL
BULAJHARA
KANLOI
SANTARABANDHA
LODHABANDHA
KATARAPADA-I
ADEITAPRASAD-MALAPASI
KATARAPADA
CHHENDIPADA
SARADHAPUR
MATHARAGADI
SAMAL-II
SAMAL-I
BIKSAR
GUNDURINALI
CHHELIA
SAMAL
BILINDA
BRAMHANABILVF
BRAMHANABIL-I
JALATAP
BADTRIBIDA
BHAGIRATHAPUR
KANEHIJENA
BRAHMANABILRF
SANATRIBIDA
DEVINAGAR
SANHAR
SIBARAMPUR
BELAPADA
DUMDUMA
GURUJANG
CHAKUNDAPAL
KOSALA
SIMILISAHI
SANATRIBIDA-I
BADAHARA RABIPUR
RAGHUNATHAPUR
BADAKATHIA
BADAHARA-I
KHALAPAL
KANDHABERINIPRF
SURUNGI
BARAPALI-II
KANDHAL
BALIPATA
JAIPUR
SOLADA-III
KURUHUNI
PATHURIA-PETACHIRA
MARADAHARIHARPUR
CHITALPUR
BANABASHAPUR
JORAGADIA
SODAGOLESWAR
GOPALPRASADRF
RAKASH
PADMABATIPUR
MAKUNDANALI
GENGUTIA
GOPALPRASADVF
DANARA
DERA
SIMILIPATHAR
PITACHARI
PUTAGARHIA
MALIBANDHAVF
MALIBANDHARF
NISHARF
KAUCHIAKHOL
BAISTAMBARADI
KANDHAKURUDU
DURGAPUR A
DURGAPUR RF
NISHA-I
NISHAVF
NATADA
HIRAPUR
DURGAPURPRF
KALIAKATA
MALIBRAHMANI
KUIO
MALIBRAMHANI
ARISHILA SULIA
PARANGA
JAMUNALI-III
JAMUNALI-IV
KUIO-SAKASINGHA
KATADA
KERJANG
KUMANDA TALATAILA
BALARAMPRASAD
PARHAPRF
JARASINGA
KUMANDA
RODSINGA
PARHA RF
DERJANGAGOLABANDHARF
NUA-JARASINGA
DERJANGAGOLABANDHAPRF
HINSAR SORISHPAL
JUCUB
PATHARGARH
SORISHPAL
MANDARGIRI-KALIMA
GANTHIGARTHIA BDPF
TABADA
KALAPAT
BADAKERA
GANTHIGARHIA PF
TUMUNI
DANDASINGA BHAGATPUR
NANDA
BADADANDASAHI
BURTI PRF
SAHARAGODA
POKUNDA
KULASINGA
GURANGA
SAHARAGODA RF
CHANDANPUR
MADHAPUR
KURUDU
RANKASINGHA
BURTI RF
NANDAPUR-BERHAMPUR
LOKEIPASI-I
LOKEIPASI
KRISHNACHAKRA
SURENDRAPUR
BEDASASAN
BHOGAPAL
BARAGAUNIA
TALAGARH
KANTAMEGHA PF
RAGUDIAPADA
KANGULAI
TALASIRA
BALANGARF
LABANGI
NUAKHETA
Legend
Division Boundary
Range Boundary
Section Boundary
Beat Boundary
Forest Block Boundary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CHHENDIPADA RANGE
KANIHA RANGE
TALCHER RANGE
JARAPADA RANGE
ANGUL RANGE
BANTALA RANGE
LEGEND
Beat Boundary
Range Boundary
ANGUL
BANTALA
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KANIHA
TALCHER
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FB Boundary
Division Boundary
Division
River
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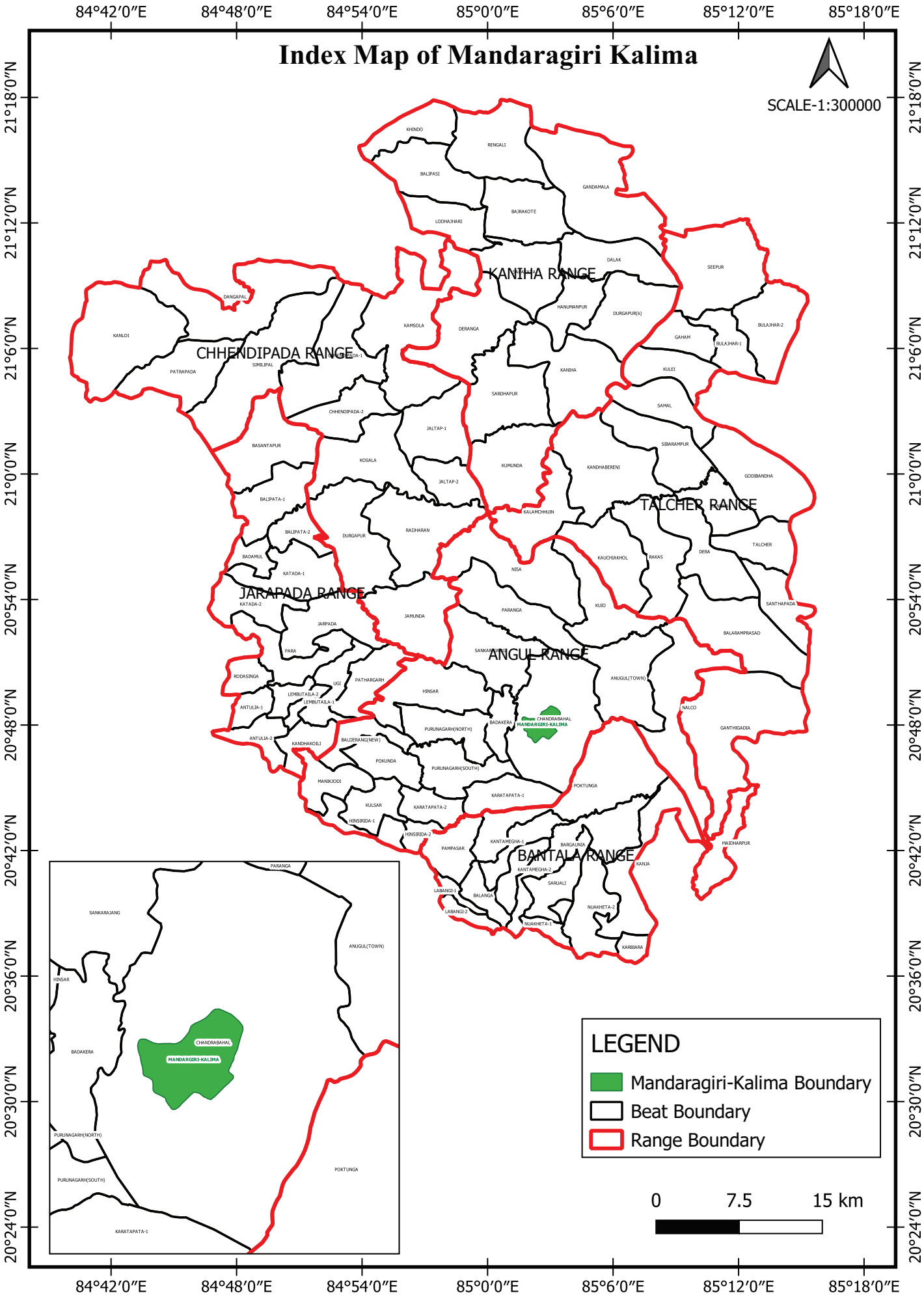
Index Map of Mandaragiri Kalima
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20°54′0″N
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20°42′0″N
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KANIHA RANGE
CHHENDIPADA RANGE
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KANTAMEGHA-2
BARGAUNIA
MAIDHARPUR
KANJA
SARJALI
LABANGI-1
LABANGI-2
BALANGA
NUAKHETA-1
NUAKHETA-2
KARBIARA
LEGEND
Mandaragiri-Kalima Boundary
Beat Boundary
Range Boundary
0
7.5
15 km

भारत सरकार / Government of India
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय / Ministry of Environment, Forest and Climate Change
एकीकृत क्षेत्रीय कार्यालय / Integrated Regional Office
ए/3, चंद्रशेखरपुर / A/3, Chandrasekharpur
भुवनेश्वर - 751 023, ओडिशा / Bhubaneswar - 751 023, Odisha
Telephone: 0674 - 2301213, 2302432, 2301248, 2302452, 2302453. E-mail: roez.bsr-mef@nic.in

No. 8(31)24/2016-FCE

Date: 27th May, 2022

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To

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

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

Ref: The PCCF & HoFF, Odisha letter No.12239/ 11F (SFM) 02/2019 dated 27.07.2021 and No10233/11F (SFM)-02/2019 dated 19.05.2022.

Madam,

The revised draft Working Plan of Angul 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 Angul Forest Division for the year 2021-22 vide this office letter No.8(31)41/2017-FCE dated 14.12.2021 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. 10233/11F (SFM) 02/2019 dated 19.05.2022 and examined by this office. Accordingly, the approval of the Central Govt. is hereby accorded to the Revised Draft Working Plan of Angul 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

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 Integrated 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. 329

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 the 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 (Central)

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 (Central)

PREFACE

The Angul Forest Division was notified in 1891 by Government of Odisha. The first Working Plan was written by Mr. T.I.Pockock in 1908 and was subsequently revised by Mr.R.L. Derry in 1923, Dr. H.F.Mooney in 1932, Mr. S.Jee in 1944 and Dr. C.R. Mohapatra in 1970. The first Working scheme of Talcher forest was written by an employee of Talcher Ex-State and was subsequently revised by Mr.P.Champati, Mr. N.R. Bohidar and Mr.B.C.Mohapatra. During 1989 as per decision taken by the then Principal Chief Conservator of Forests, Odisha, a single revised Working plan for Angul Forest Division (including Talcher forests) was prepared by Sri B.P.Singh, I.F.S. prescribing management guidelines for the period from 1989-90 to 1999-2000.

During the year 1999, Satkosia(W.L.) Division was constituted and 42,539.989 ha. forest area of Angul Forest Division was transferred to that Division.

In the year 1992, the State Government imposed ban on green tree felling and as a result working of forest coupes for timber harvesting was completely stopped and the prescription of working plan could not be carried out in the field.

The outgoing working plan for the period 2007-08 to 2016-17 expire on 2016-17 and the revised plan for 2018-19 to 2027-28 has been prepared. For this present plan the Preliminary Working Plan Report submitted by Dr. Anup Kumar Nayak, IFS, the then RCCF-cum-Field Director Satkosia Tiger Reserve, Angul on consultation with Sri Godabarish Panda, DFO, Angul which was approved by the working plan committee vide memo no. 13331/IF(SFM)-29/2014 dated. Bhubaneswar, the 8th July, 2016. For the year 2017-18 to 2020-21 the management Forest carried out on the scheme approved by Govt. of India. As directed by PCCF (O), HoFF in his memo no. 19436 dt. 07.11.2020 the revised working plan is prepared from the year 2021-22 to 2030-31.

The draft plan part-I has been prepared in compliance to the Principal 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 people 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 Angul Forest Division, Management maps of the Division have been supplied to ORSAC by the Divisional Forest Officer, Angul. The sample point marked by NRSA, Hyderabad were supplied to Division though ORSAC, Bhubaneswar for study of growing stock, regeneration survey, Biodiversity index, soil analysis and carbon sequestration etc. as per the guideline of National Working Plan Code – 2014. The main features of this plan are :

i. This plan cover 215 nos of Forest Blocks extending over and area of 104121.736 ha. Which includes 87 Reserved Forest Block (51357.137 ha.), 29 Proposed Reserved Forest (21845.631 ha.), 5 Demarcated Protected Forests (488.068 ha.), 94 nos. Village Forest (694 ha.), un-classed Forest (54.2 ha.), Other Forest (Revenue Forest – 29682.7 ha.). The total area has been covered

and enumeration has been carried out over 343 nos. of Sample points as prescribed by ORSAC, Bhubaneswar.

ii. Point sampling enumeration covering all the Forest Blocks has been conducted manually for calculation of volume of growing stock, capital value of forest, regeneration status, Floristic diversity index etc.

iii. Analysis of soil profile in all the sample points has been done.

iv. Study of extent of degradation of forests due to illicit felling, soil erosion and fire in all the blocks has been carried out.

v. Financial implications for implementation of the working plan prescriptions and cost benefit analysis has been provided in the plan.

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

vii. Submission of detail information of survey of point sampling enumeration survey of trees, bamboos, regeneration etc. submitted and complied by the ORSAC. So from enumeration data, volume of growing stock, biodiversity index and regeneration status have been calculated by rigorous statistical techniques.

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

ix. The chapters have been formulated based on the observations/ prescriptions of Working Plan Committeee and within the provision of National Working Plan Code 2014 for the first time.

In this context I would like to thank my predecessor Sri Sameer Kumar Satpathy OFS(I) (SB) now working as Divisional Forest Officer, Working Plan Officer, Angul who has completed all the field work of sample posint enumeration manually within stipulated time taking much of pain for early completion of the Revised Working Plan.

Also I am very much grateful to Dr. Anup Kumar Nayak , IFS, the then Regional Chief Conservator of Forests, Angul for his constant guidance and continuous support for completion of Part – I of the Revised Working Plan of the Angul Division.

Also I am very much grateful to Dr. Sudarsan Panda , IFS, the then Regional Chief Conservator of Forests, Angul for his constant guidance and continuous support for completion of Part – I of the Revised Working Plan of the Angul Division.

Also I am very much grateful to Sri Pradeep Raj Karat, IFS, the then Regional Chief Conservator of Forests, Angul for his constant guidance and continuous support for completion of the Revised Working Plan of the Angul Division.

I would thanks Sri Godabarish Panda, the then DFO Angul, Sri Karthick V. IFS, the then DFO, Angul, for extending all logistic support in providing required information in time for computing the first part of the plan.

Last but not the least I would thank Sri Ranjan Kumar Behera, ACF, Sri Biswa Ranjan Sahoo, DEO Accounts & all field and office staff of Angul Forest Division, Angul for their sincere effort in timely completion of work the compilation of data to give final shape of the Revised Working Plan.

Prassana Kumar Behera

Angul.

Prassana Kumar Behera, I.F.S.
Divisional Forest Officer,
Angul Division

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GLOSSARY OF TERMS:
Vernacular and Botanical names of Trees, Shrubs, Climbers etc. found in Angul Forest Division.

Vernacular Name	**Botanical Name**	**Vernacular Name**	**Botanical Name**
Achhu	*Morinda tinctoria*	Amba	*Mangifera Indica*
Ambada	*Spondias mangifera*	Ankula	*Alangium lamarckii*
Anla	*Emblica officinalis*	Arjuna	*Terminalia arjuna*
Asan	*Terminalia tomentosa*	Ashoka	*Saraca asoca*
Aswatha	*Ficus religiosa*	Acacia	*Acacia auriculoformis*
Agasti	*Sesbania grandiflora*	Agnisikha	*Gloriosa superba*
Ambta	*Bauhinia racemosa*	Babul	*Acacia nilotica*
Bahada	*Terminalia belerica*	Bandhana	*Desmodium oojeinensis*
Bara	*Ficus bengalensis*	Barkoli	*Zizyphus jujuba*
Barada	*Bauhinia retusa*	Barbakulia / Dhobi	*Delbergia paniculata*
Baruna	*Crataeva religiosa*	Bastura	*Litsaea polyantha*
Batra	*Melia composita*	Behenta	*Limonia acidissima*
Bela	*Aegle marmelos*	Bhalia	*Semicarpus anacardium*
Bhendiamardan / Genduli / Girdhini	*Sterculia urens*	Bheru	*Chloroxylon swietenia*
Bija/Piasal	*Pterocarpus marsupium*	Bura / Simuli	*Bombax ceiba*
Bhaincha	*Flacourtia indica*	Chadaigodi	*Vitex peduncularis*
Champa	*Michelia champaca*	Chandan	*Santalum album*
Chakundi	*Cassia siamea*	Chara	*Buchanania lanzan*
Chhatian	*Alstonia scholaris*	Chauli	*Elaedendron glaucum*
Chhuinpatuli	*Sterospermum aungustifolium*	Cashew	*Anacardium occidentale*
Dalasingha/ Kumbharchikini	*Canthium didymum*	Dhala Sirisa	*Albizzia procera*
Damkurudu / Katarang	*Gardenia latifolia*	Debadaru	*Polyalthia longifolia*
Dhaman	*Grewia tilaefolia*	Dhaura	*Anogeissus latifolia*
Dhaurang	*Holoptelia integrifolia*	Dimiri	*Ficus glomerata*

Gambhari	*Gmelina arborea*	Gandhapalas	*Milliusa velutina*
Gangasiuli	*Nyctanthes arbortristis*	Genduli	*Sterculia urens*
Ganiari	*Cocholospermum gossypium*	Ghantal	*Trema orientalis*
Ghodalanjia	*Albizzia stipulata*	Giringa	*Pterospermum heyneanum*
Gohira	*Acacia leucophloea*	Gotha	*Croton oblongifolius*
Gundi	*Mallotus philippinensis*	Haldu/Kurum/Mundi	*Adina cordifolia*
Halanda	*Diospyros montana*	Harida	*Terminalia chebula*
Hinjala	*Baringtonia acutangula*	Hentala	*Licuala peltata*
Jaisanda	*Litsea sebifera*	Jamu	*Syzigium cuminii*
Jari	*Ficus infectoria*	Jeotha	*Artocarpus lakoocha*
Kadamba	*Anthocephalus cadamba*	Karamanga	*Averrhoea carambola*
Katha Champa	*Plumeria rubra*	Kaitha	*Feronia limonia*
Kalucha	*Diospyros sylvatica*	Kala Sirisa	*Albizzia lebbeck*
Kanchan	*Bauhinia purpurea*	Kansa	*Hymendictyon excellsum*
Kangada	*Xylia xylocarpa*	Kapasia	*Kydia calycina*
Karada	*Cleistanthus collinus*	Karanja	*Pongamia glabra*
Kasi	*Bridelia retusa*	Kendu	*Diospyros melanoxylon*
Katakala	*Strychnos potatorum*	Keruan	*Sonneratia apetala*
Kurein	*Holarrhena antidysenterica*	Khair	*Acacia catechu*
Khakada	*Casearia elliptica*	Kharsan	*Ficus glaberrina*
Kochila	*Strychnos nuxvomica*	Kodala	*Sterculia villosa*
Kaiyan / Tentuli	*Tamarindus indica*	Kangada / Tangana	*Xylia xylocarpa*
Kumbhi	*Careya arborea*	Kusuma	*Schleichera oleosa*
Kuruma	*Adina cordifolia*	Lembura Moi	*Bursera serrata*
Mahalimba	*Gmelina azadirachata*	Mahula	*Madhuca indica*
Mankadakendu	*Diospyros embryopteris*	Manjari / Paldhua	*Brythrina indica*
Mitikinia	*Mitragyna parvifolia*	Moi	*Lanea grandis*
Mundi	*Mitragyna parvifolia*	Mukha	*Schrebera swietenioides*
Nima	*Azadirachta indica*	Nageswar	*Mesua ferrea*

Oau	*Dillenia indica*	Ostha	*Ficus religiosa*
Paladhua	*Brythrina indica*	Palasa	*Butea monosperma*
Panasa	*Artocarpus heterophyllus*	Panigambhari	*Trewia nudiflora*
Patuli	*Stereospermum suaveolens*	Phasi	*Anogeissus acuminata*
Pitamoi	*Garuga pinnata*	Piasala	*Ptrocarpus marsupium*
Rai	*Dillenia pentagyna*	Rohini	*Soymida febrifuga*
Rakta Chandan	*Pterocarpus santalinus*	Rithaphala	*Sapindus laurifolia*
Saguan	*Tectona grandis*	Sahada	*Streblus aasper*
Sal	*Shorea robusta*	Salai	*Boswellia serrata*
Salapa	*Caryota urens*	Sidha	*Lagerstoemia parviflora*
Simili	*Bombax ceiba*	Sweta Simili	*Ceiba pentandra*
Sirisa (Dhala)	*Albizzia procera*	Sirisa (Kala)	*Albizzia lebeck*
Sisoo	*Dalbergia latifolia*	Suam	*Soymida fabrifuga*
Sunari	*Cassia fistula*	Sugandhi	*Hedychium coronarium*
Tala	*Borassus flabellifer*	Tinia	*Albizzia odoratissima*
Tela kuruan	*Ixora parviflora*	Tentuli / Tamarind	*Tamarindus indica*

B.BAMBOO			
Daba baunsa	*Bambusa arundinacea*	Balangi baunsa	*Oxytenenthera nigrociliata*
Salia baunsa	*Dendrocalamus strictus*	Pani baunsa	*Bambusa pallida*

C. SHRUBS			
Agnijal	*Vernonia roxburghii*	Guakoli	*Maba boxifolia*
Anka-Koli	*Carissa spinarum*	Jhumpuri	*Phyllochlamys spinosa*
Arakha	*Calotropis gigentia*	Kantaikoli	*Zyzyphus oenoplia*
Arguna	*Cycas Circinalis*	Khirkoli	*Mymuspos hexendra*
Baincha koli	*Flacourtia jangomos*	Lajakoli	*Mimosa pudica*
Baula	*Mimusops elengi*	Lantana (Naga airi)	*Lantana camara*

Basanga	*Adhatoda vasica*	Lodha	*Symplocus racemosa*
Begunia	*Vitex negundo*	Mamari	*Antidesma diandrum*
Beta (Gouri)	*Calamus latifolius*	Mura	*Helectris isora*
Beta (Kanta)	*Calamus guruba*	Mersunga	*Murrya koenigii*
Beta (Pani)	*Calamus viminalis*	Nagairy	*Lantana camara*
Bhuin nima	*Andrographis paniculata*	Nalbeli	*Sipadesa fruiticosa*
Bhalia	*Semecarpus anacardium*	Narguni	*Atlantia monophylla*
Bhersunga	*Murraya koenigii*	Panijamu	*Wedlandia excreta*
Bhuin Anala	*Phyllanthus niruri*	Phanaphana	*Oroxylum indicum*
Bichhuati	*Tragia involacrata*	Patalagaruda	*Rauwolfia serpentina*
Chakundi	*Casia tora*	Pokasungha	*Eupatorium odoratum*
Dhatki	*Woodfordia fruticosa*	Ranidanturi	*Desmodium cephalotes*
Dudura	*Datura stramonium*	Ranidantakathi	*Flemingi-a-chappar*
Durikoli	*Opilia amantacea*	Siju	*Euphorbia royalenna*
Giliri	*Indigofera pulchella*	Soyam nai	*Ichnocarpus frutiscens*
Ghurudu	*Gardenia gummifera*	Tilei	*Wedlandia tinctoria*
Gangasiuli	*Nyctanthes arbortristis*		
D.CLIMBERS			
Anantamula	*Hemidesmus indicus*	Guluchi	*Tinospora cordifolia*
Asadua	*Capparis horrida*	Gila	*Entada acandens*
Atundi	*Combretum decandrum*	Kaincha	*Abrus precatorius*
Baidanka	*Mucuna pruriens*	Malati	*Aganosma dichotoma*
Banamali	*Jasminum arborescens*	Marda	*Milletia racemosa*
Buduli	*Butea Superba*	Muturi	*Smilax macrophylla*
Dantari	*Acacia Pinata*	Raktapituli	*Gouaria leptostachya*
Durkoli	*Erycibe peniculata*	Siali	*Bauhinia vahillii*
Gaja	*Milletia auriculata*	Satabari	*Asparagus racemosus*

Gudamari	*Gymneva sylvestris*	Uturudi	*Pergularia daemia*
E.GRASS			
Baguli	*Eulaliopsis binata*	Duba grass	*Cynodon dactylon*
Bena	*Vetiveria zizaniodes*	Phulchanchhuni	*Thysanolaena maxima*
Chhana	*Imperata arundinacea*	Sinkula	*Heteropogon contrortus*
Dhanwantary	*Symbopogon martini*		

GLOSSARY OF LOCAL NAMES OF ANIMALS AND BIRDS FOUND IN ANGUL DIVISION

A. ANIMALS		
Local Name	**English Name**	**Scientific Name**
Bajra kapta	*Pangolin*	*Menis crassicaudata*
Bagha	*Tiger*	*Panthera tigris*
Badodi	*Shortnosed fruitbat*	*Cynopterus spinax*
Banabiradi	*Jungle cat*	*Felis chaus affinis*
Barha	*Wild boar*	*Sus scrofa cristatus*
Balia kukur	*Wild dog*	*Cuon alpinus dukhunensis*
Bhalu	*Black bear*	*Melursus ursinus*
Bilua	*Jackal*	*Canis sureus indicus Hodgson*
Chittal	*Spotted deer*	*Axis axis*
Gayal	*Bison*	*Bol gaurus*
Gundichimusa	*Squirrel*	*Funumbulus pennanti*
Gurandi	*Mouse deer*	*Tragulus minna*
Hati	*Indian elephant*	*Elephas maximus*
Heta	*Hyena*	*Hyaena hyaena*
Jhinka	*Porcupine*	*Hystrix indica*
Kalarapatria bagh	*Leopard*	*Panthera pardus fusca*
Kokisiali	*Fox*	*Vulpes bengalensis*
Kutura	*Barking deer*	*Muntiacus mintijack*
Mankad (Hanu)	*Monkey*	*Presbytis entellus*
Mankada (Pati)	*Rhesus macacue*	*Macaca mulatta*
Musa	*Rat*	*Rattus rattus*
Musa (nepali)	*Flying squirrels*	*Petaurista philippinensis*
Neula	*Common mangoose*	*Herpestes eduardsii*
Odha	*Common otter*	*Lutra lutra*
Sambar	*Sambar*	*Cervus unicolour*
Saliapatani	*Small Indian civet*	*Viverricula indica*
B. BIRDS		
Bani	*Indian myna*	*Acridotheres tristis*
Banakukuda	*Jungle fowl (Red)*	*Gallus gallus*

Bhadabhadalia	*Roller / Blue jay*	*Coracas bengalensis*
Bhaliakhai	*Common grey born bill*	*Tikos birostris*
Chatak	*Pied crested cuckoo*	*Clammator jacobinus*
Dahuka		*Amanronis phoenicury*
Deulia para	*Pigeon*	*Anastomus oseitans*
Gendalia	*Open billed stork*	*Anastomus oseitans*
Ghar chatia	*House scarriw*	*Passer domesticus*
Gobara chadhei		*Molpates cafer*
Haladi Basanta	*Black headed oriole*	*Oriolus xanthornus*
Harada Chadhei		*Crecapus phoenicopterus*
Kajalapati	*Black drongo*	*Dicrurus maerocerus*
Kau (ati)	*King crow*	*Corvus splendens*
Kau (Damara)	*Jungle crow*	*Corvus macrohyreos*
Kochilakhai	*Malabr pied Horn Bill*	*Anthrococeros coronatus*
Koili	*Indian cuckoo*	*Eudynamis scolopaclus*
Kumbhatua	*Crow pheasant*	*Cantropus sinensis*
Kapta	*Dove*	*Streptopellchin oensis*
Mayura	*Peacock*	*Pavo cristatus*
Machharanka	*Pied King fisher*	*Ceryle rudis*
Panikua	*Little cormorant*	*Phalacrocorax niger*
Pecha	*Owl*	*Athena brama*
Sari	*Hyna*	*Gracula religiosa*
Sua	*Parrot*	*Psittacula eupilia*
Sarguna	*King vulture*	*Sacrongyas calvus*
Sankhachila	*Kite brahminy*	*Heliastur Indus*
C. REPTILES AND AMPHIBIANS		
Ahiraj	*King Cobra*	*Ophiaphagus hannah*
Ajagarh	*Indian python*	*Python molurus*
Chanda Boda	*Russels viper*	*Daboia russelli*
Chiti	*Common Indian Krait*	*Bungarus caeruleus*
Dhamana	*Rat snake*	*Ptyas mucosa*
Gokhar	*Indian cobra*	*Naja naja*
Laudonkia	*Common green whip snake*	*Dryophis nasutrus*
Pani dhanda	*Checkeered keel back*	*Natrix piscator*
Rana	*Banded krait*	*Bungarus fasciatus*
Tampa	*Monocellata cobra*	*Naja Naja kaouthia*
II. LIZARDS		
Bahurupi	*Indian chameleon*	*Chammaeleon zeylanicus*
Champainali	*Mabuya*	*Mabuya bibro*
Endua	*Common garden lizard*	*Calotes versicolor*
Godhi	*Large land monitor*	*Varanus bengalensis*
Jhitipiti	*House lizard*	*Homidactylus flaviriridis*
III. TORTIES AND TORTOISES		
Kainchha	*Land tortoise*	*Testudo elonguta*
Pani Kainchha	*Water tortle*	*Lissemys punctan granose*
D. FISHES		
Balia		*Wallagonia attu*
Baligarada		*Glossogobius giuris*
Bhakura		*Catle catla*

Chenga		*Ophiocaphalus gachua*
Chitala		*Notopterus chitala*
Dand-khiri		*Esomus dandrica*
Illishi		*Hilsa ilisa*
Jalanga		*Pangasisus*
Jallah		*Chela argentea*
Kantia		*Myotus cavasius*
Kerandi		*Barbus ambassis*
Magura		*Clarias batrachus*
Mirkali		*Cirrhina mrigala*
Mahurali		*Amblypharyngodon mola*
Phali		*Notopterus notopterus*
Rohi		*Labeo rohita*
Serana		*Barbus serana*
Seula		*Ophiocephalus striatus*
Singi		*Heterophneustes fossil*
Todi		*Mastacembelus armatus*

Executive Summary

Angul Forest Division is located within the civil sub-division of Angul and Talcher of Angul district and lies between 20^0 31'37'' to $21^0$17'48'' N latitude and 84^0 40' 08'' to 85^0 15' 44'' E longitude. The forest area dealt with in this working plan comprises all reserved forests, all proposed reserved forests (demarcated blocks notified under section 4 of Orissa Forest Act) and all demarcated protected forests (demarcated blocks not notified under section 4 of Orissa Forest Act) of this Forest Division. The Division is bounded in the north by Deogarh Forest Division (Pallahara civil sub-division of Angul district and Deogarh civil sub-division of Deogarh district in the north-west corner), in the south and south-east by Satkosia Wildlife Division (Angul civil sub-division of Angul district), Nayagarh civil sub-division of Nayagarh district, Athagarh civil sub-division of Cuttack district), in the east by Dhenkanal Forest Division (Hindol civil sub-division and Kamakhyanagar civil sub-division of Dhenkanal district) and in the west by Rairakhol Forest Division (Rairakhol civil sub-division of Sambalpur district).

The Angul Forest Division was notified in 1891 by Government of Odisha. The first Working Plan was written by Mr. T.I.Pockock in 1908 and was subsequently revised by Mr.R.L. Derry in 1923, Dr. H.F.Mooney in 1932, Mr. S.Jee in 1944 and Dr. C.R. Mohapatra in 1970. The first Working scheme of Talcher forest was written by an employee of Talcher Ex-State and was subsequently revised by Mr.P.Champati, Mr. N.R. Bohidar and Mr.B.C.Mohapatra. During 1989 as per decision taken by the then Principal Chief Conservator of Forests, Odisha, a single revised Working plan for Angul Forest Division (including Talcher forests) was prepared by Sri B.P.Singh, I.F.S. prescribing management guidelines for the period from 1989-90 to 1999-2000.

During the year 1999, Satkosia(W.L.) Division was constituted and 42,539.989 ha. forest area of Angul Forest Division was transferred to that Division.

In the year 1992, the State Government imposed ban on green tree felling and as a result working of forest coupes for timber harvesting was completely stopped and the prescription of working plan could not be carried out in the field.

The outgoing working plan for the period 2007-08 to 2016-17 expire on 2016-17 and the revised plan for 2018-19 to 2027-28 has been prepared. For this present plan the Preliminary Working Plan Report submitted by Dr. Anup Kumar Nayak, IFS, the then RCCF-cum-Field Director Satkosia Tiger Reserve, Angul on consultation with Sri Godabarish Panda, DFO, Angul which was approved by the working plan committee vide memo no. 13331/IF(SFM)-29/2014 dated. Bhubaneswar, the 8th July, 2016. For the year 2017-18 to 2020-21 the management Forest carried out on the scheme approved by Govt. of India. As directed by PCCF (O), HoFF in his memo no. 19436 dt. 07.11.2020 the revised working plan is prepared from the year 2021-22 to 2030-31.

The draft plan part-I has been prepared in compliance to the Principal 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 people 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 Angul Forest Division, Management maps of the Division have been supplied to ORSAC by the Divisional Forest Officer, Angul. The sample point marked by NRSA, Hyderabad were supplied to Division though ORSAC, Bhubaneswar for study of growing stock, regeneration survey, Biodiversity index, soil analysis and carbon sequestration etc. as per the guideline of National Working Plan Code – 2014. The main features of this plan are :

i. This plan cover 215 nos of Forest Blocks extending over and area of 104121.736 ha. Which includes 87 Reserved Forest Block (51357.137 ha.), 29 Proposed Reserved Forest (21845.631 ha.), 5 Demarcated Protected Forests (488.068 ha.), 94 nos. Village Forest (694 ha.), un-classed Forest (54.2 ha.), Other Forest (Revenue Forest – 29682.7 ha.). The total area has been covered and enumeration has been carried out over 343 nos. of Sample points as prescribed by ORSAC, Bhubaneswar.

ii. Point sampling enumeration covering all the Forest Blocks has been conducted manually for calculation of volume of growing stock, capital value of forest, regeneration status, Floristic diversity index etc.

iii. Analysis of soil profile in all the sample points has been done.

iv. Study of extent of degradation of forests due to illicit felling, soil erosion and fire in all the blocks has been carried out.

v. Financial implications for implementation of the working plan prescriptions and cost benefit analysis has been provided in the plan.

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

vii. Submission of detail information of survey of point sampling enumeration survey of trees, bamboos, regeneration etc. submitted and complied by the ORSAC. So from enumeration data, volume of growing stock, biodiversity index and regeneration status have been calculated by rigorous statistical techniques.

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

ix. The chapters have been formulated based on the observations/ prescriptions of Working Plan Committeee and within the provision of National Working Plan Code 2014 for the first time.

In this context I would like to thank my predecessor Sri Sameer Kumar Satpathy OFS(I) (SB) now working as Divisional Forest Officer, Working Plan Officer, Angul who has completed all the field work of sample point enumeration manually within stipulated time taking much of pain for early completion of the Revised Working Plan

Vision Statement

The Vision, goals and objectives of management, SWOT analysis for prescriptions of strategies for achieving the goals and objectives, expected outcome and abstract of plan prescriptions are as detailed below.

a. The vision: The vision statement of this working plan is "Conserving the total Biodiversity of forests of Angul Forest Division land scape through protection and sustainable management of resources with a special focus on the ecological and socio-economic security for the present and future generations".

Goals and objectives of management

Goals and objectives formulated for this working plan is as shown in the table given below:-

Goals and objectives formulated for this working plan

Goals	Objectives
To ensure Dynamics of forests and stands :	To give emphasis on conservation and protection of flora and fauna in its natural condition, genetic resource and diversity with least interference in the wildlife habitat, catchments of rivers, steep hill slopes with an aim to prevent further degradation of environment.
Forests and Soil	To improve density and quality of forests, to arrest soil erosion, soi moisture and soil fertility.
Forests and Water	To rehabilitate and enrich degraded forests, restock blank & barren lands by adopting appropriate silvicultural techniques, to increase ground water level and perianal flow of natural nalahs.
Forest Biodiversity	To take steps for biodiversity conservation and protection of traditional knowledge of the rural and tribal people.
Climate and Forests	To manage forests in such a manner to meet the challenges of climate change such as reducing, green house gas (GHG) e-mission, enhancing carbon sequestration capacity of the forest.
Socioeconomic considerations and generation of forest based employment opportunities and livelihood options	To cater the needs of forest dwellers, rural population, urban population and industries in descending order. As there is no alternate resource of forest produce much emphasis to be given on NTFP for sustainable harvest
Tool for integrated development	To involve VSS and management of forest in JFM mode To provide income generation activities (IGA), to the villagers of the fringe villages to increase their income. To provide them alternate and economic fuel resource to reduce pressure of firewood on forest.
Improving the organizational setup and staff amenities	To introduce modern tools for scientific management of the forests. To take up the infrastructure development for integrated development of the Division. To develop human resources in protection & management of forests and wildlife.
Mitigating Climate change	To reduce emissions from deforestation and forest degradation To enhance Carbon Sequestration in forest by following most desirable level of biomass production and find ways for adoption with Change in climate.

SWOTANALYSIS

Strengths, Weakness, Opportunities and Threats identified for prescription of strategies for achieving goals and objectives are as listed below.

(i) Strengths: Various strengths of the division have listed as follows.

i. Availability of varied biodiversity.

ii. "The main tributaries of river Brahmani, are Lingra, Singida , Tikara and Samakoi to support the existence of flora and fauna in the region.

iii. Potentiality of the areas under the division in production forestry in terms of timber and NTFPs.

iv. Availability of local level institutions for planning and executing joint forest management activities.

v. Ameliorative potential of areas to provider recreation facilities to people.

vi. Huge potential of area to work as an excellent field for research studies in Forestry and Wildlife.

vii. Prospect of the area to function as a centre for Public awareness on protection of natural resources

viii. Properly planned administrative set up to protect and manage forests and wildlife in the area.

ix. Scientifically prepared and regularly updated working plan for management of forest areas.

(ii) Weaknesses: Weaknesses identified are listed below.

i. Fragmented forests lands posing threat to wildlife connectivity.

ii. Heavy Mining area lead to loss of Biodiversity and Forest land.

iii. Lack of trained departmental staffs as per requirement to execute this working plan.

iv. Huge dependency on forest resources to ensure livelihood of local forest dependent community.

v. Degrading wood stock and other NTFPs because of biotic pressure out of human population explosion.

vi. High elephant Depredation and Human Animal Conflict.

vii. Lack of sufficient staff strength within the administrative setup.

viii. Lack of know-how (new technologies and tools for sustainable forest management.)

ix. Lack of tools for assessment of various interventions and integration to the plan.

x. Difficulties to enforce various acts and rules.

xi. Forest land tenure problems.

xii. Resistance to change.

(iii) Opportunities: Various opportunities identified are as follows.

i. Updated forest management plan standards

ii. Biodiversity conservation/protection.

iii. Production of forest produces(Timber and non-timber forest produce)

iv. Increase forest growth through different Schemes along with area of forest land.

v. Forest recreation/ecotourism development.

vi. Improvement in income from forests through planned income generation activities.

vii. Improvement in alternate employment opportunities to forest dependent communities.

viii. Natural disaster prevention

ix. Capacity Building

x. Environment awareness.

xi. Research

xii. Sustainable utilization of natural resources

xiii. Infrastructure Development for protection and management of forests.

xiv. Joint Forest Management activities.

xv. Convergence activities with line departments to promote livelihood of forest dependent community.

xvi. Availability of human resources is high due to enough tribal population for which Forest management will be more smooth by using the above resource.

(iv) Threats: Identified threats are as follows**.**

i. Vulnerability to Forest Fire

ii. Mining

iii. Areas vulnerable to Illegal extraction of forest materials.

iv. Areas vulnerable to Poaching of wildlife

v. Areas vulnerable to Encroachment of forest land and resultant forest loss

vi. Chances of Diseases

vii. Chance pests'/Insects' attack and resultant biodiversity loss

viii. Land use pattern is highly effective

ix. Drought

x. Climate Change

Expected outcome

Scientifically managed forests & sustainably grown and harvested wood, improved protection network with upgraded facilities, restored degraded areas, trained manpower to improve the quality of protection and management of forests, increased tree cover outside the recorded forest areas, enhanced avenue for environmental awareness and responsible society to conserve forests and wildlife, strengthened JFM system ,increased participation of people in protection and management of forests and wildlife, sustainably managed Non Timber Forest Produces, improved forest quality, improved soil water regime, increased tree cover and hence carbon stock, decrease demission and advanced technological measures to conserve natural resources are expected outcomes of the plan.

Abstract of the plan prescription

Abstract of plan prescriptions has given in table below:-

Part – II Chapter No.	Para No./ SubPara No.	Prescribed activity	Remarks
A	B	C	D
2	2.6.2	Silvicultural System	Improvement system will be adopted with maximum emphasis to improve the crop condition. The aim is to encourage natural regeneration to the maximum extent and where ever necessary, it will be supplemented artificially to preserve and nurse the crop for regulation of maximum growth. Only dead and uprooted trees will be harvested for utilization after considering prescriptions of wild life management on removal of dead/uprooted trees.
	2.6.10.1	Demarcation of Annual Coupes/Treatment Area	The annual coupes shall be demarcated in the winter season (October to December) in the year preceding to year of working. In majority of the cases the coupes are divided on the basis of compartments. Hence it is essential to maintain the compartment lines by putting double white paint rings. The other portion of coupe line shall be laid down by clearance of 1.5 m. width along with stone cairns (white painted) at visible distance. Clearance shall be restricted for the purpose of identification and visibility. No felling of any kind shall be done on the strip. Double coal tar rings shall be given on trees standing on coupe line..
	2.6.10.2	Marking Rules	After demarcation of improvement coupe area, marking shall be done in accordance with the following rules. All trees to be marked for felling will be given two blazes opposite to each other of size 15 cm x 15 cm, one at breast height and the other as close to the ground as possible and marked with departmental hammer and numbered serially.
	2.6.10.3	Execution of Improvement Felling	i) Method of disposal of marked trees shall be in accordance with Chapter XIV of Forest Department Code 1979 as modified by Govt. from time to time. ii) Felling and extraction in any annual coupe shall be allowed from 1st October to 31st May.iii) Trees shall be lopped before felling to avoid damage to the regeneration and the standing crop. The trees should be felled towards upper hill slope in hilly coupes
	2.6.11	Subsidiary silvicultural operation cleaning and thinning.	Subsidiary silvicultural operation shall be done in the year following the main felling. This operation shall be done over the entire coupe area except in very degraded areas and steep slopes

	2.6.12	Regeneration.	The identified blank patches shall be taken under sowing and planting. 18 month seedlings of indigenous species like Jamun, Harida, Bahada, Gambhari, Asan, Sissoo, Piasal, Mitkunia, etc. shall be preferred. Teak plantations shall be managed as prescribed under plantation overlapping working circle. But small patches of teak plantations (less than 4 ha. in extent) shall be managed according to prescriptions of this working circle. The D.F.O. shall inspect those teak plantations for finding out any important treatment such as thinning, pruning, climber cutting etc. to be carried out and accordingly works shall be executed.
	2.6.13	Associated Regulations and measures.	Grazing: The coupes shall be closed for grazing for five years including the year of working. Grazing shall be regulated in other area on the basis of rotation. Lopping is strictly prohibited. Fire Protection: The coupes shall be protected against fire for five years 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. Rights and concessions: Rights and concessions shall be regulated as per the provisions of the Orissa Forest Act and Rules made there under and relevant Government policies in force.
3	3.5	Special Objectives of Management of RWC	To improve quality and stocking of the existing crop through silvicultural operation.. To rehabilitate the area and improve soil condition by taking suitable soil and moisture conservation measure. To restock the barren and under stocked area by raising plan To provide protection against illicit removal, grazing and fire so as to check further destruction of left over forest growth. station with suitable species. To encourage natural regeneration. To provide adequate rehabilitation measure to protect hill slopes, nallah bank and ecofragile area.
	3.5.2	Silvicultural System	The prime objective is to restock these forest blocks and to reduce the biotic pressure due to which these blocks have become degraded. There will be no exploitation of mature trees except for removal of dead and uprooted trees. No formal silvicultural system is prescribed. However to achieve the major objectives, operations like regeneration cleaning, soil and moisture conservation, gap planting, block planting along with tending will be carried out. In addition steps will have to be taken to protect the area from grazing, theft and fire with the active support of the people wherever possible.

	3.5.2.1	Method of Execution of Operations	The site specific treatment plan will be prepared by the Range Officer in the year preceding the year in which the work is to be executed. This eco-restoration work will be done with a watershed approach preferably with the active participation of the local people. The following steps shall be taken for treatment under this working circle.
	3.5.3.1.2	Demarcation of Annual Rehabilitation Coupe Areas	The annual treatment areas will be demarcated on the ground in the preceding season of treatment with small stone cairns of the half-meter height erected at visible distance on its periphery in case of blank patches or by the painting Coal tar rings on trees at breast height standing on the coupe line. Hence the clearance of the compartment line needs to be taken up before working of the coupes.
	3.5.3.1.3	Rehabilitation Operations	Once the treatment plan has been prepared and approved, the works shall be carried out as per the requirement without any major deviation. As far as possible operations will be carried out in the JFM mode. Silvicultural operations shall be carried out in the year of creation and preferably before the onset of monsoon. These operations will include singling out of the coppice shoots, retaining the most promising ones, rectification of the high stumps to encourage coppice shoots and climber cutting. Clearing out of invasive weeds and cleaning out of congestion and some light thinning may be carried subject to restrictions prescribed in Para 3.9.4. In addition dead and fallen trees shall be removed from the annual coupe, if such trees are not required for wildlife purposes.
	3.5.10	Method of execution the felling	Not applicable, only uprooted (wind fallen trees) can be removed departmentally basing on the as per the instruction time to time heads of the department.
	3.5.11	Subsidiary silvicultural operation cleaning and thinning along with SMC measures.	High stumps will be cut flush to the ground to encourage coppice shoots. Singling out of multiple coppice shoots to retain the most promising ones. Removal of congestion by cleaning operations aimed at encouraging the growth of locally desirable species. Adoption of few seedlings per ha of locally important and desirable species from the available natural regeneration by giving these species preferential treatment. Removal of invasive weeds.

	3.5.12	Regeneration.	Each Rehabilitation treatment series has been divided in to 10 annual treatment areas or coupes and have been shown in the management maps. The sequence of treatment of the different blocks and compartments has been shown.Care has been taken to treat the rehabilitation area on a micro watershed basis and the blocks and compartment have been selected for treatment based on the micro watershed they occur in. The objective in doing so is to ensure that after treatment of the forest area of one micro-watershed then only the next is taken up. This GIS based selection of annual area has been based on the slope, contour, drainage, forest block and the administrative layers. The annual coupes shall be attended as per the sequence prescribed in the plan. The Tables gives the annual coupe for each rehabilitation series with its number and the year of treatment along with the name of the forest block, its compartment number and area included in the coupe.
	3.5.13	Associated Regulations and measures.	The Annual Rehabilitation journal in accordance with the provisions of the 'Orissa Forest Plantation Manual, 1977'. Annual Rehabilitation journal may be maintained at the Divisional level and Range level along with maintenance of compartment history of the corresponding forest block. Soil and Moisture Conservation Measures:: Gully Plugging:, 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.
4	4.1	General Constitution Plantation Working Circle	Angul Forest Division, the Plantation Working circle was overlapped with rehabilitation working circle and Improvement working circle in current Working Plan. As per discussion by the committee held on 26.11.2015 the plantation working circle to be kept in independent working circle. Presently most of the blank patches have been covered up with vegetation due to intense plantation activities during the last working plan period. So it is very difficult to find out a completely blank patch inside the forest blocks for Block plantation. It is observed that due to proper protection and post planting care during the last working plan period a good no. of plantations are coming up successfully in different forests block of this division and those are included in this Working Circle for better improvement. The total area allotted to this Working Circle is 8142.106 Ha. Considering the fact and vegetation condition of the plantations indipendent plantation working circle proposed as (a) Tending to the old teak plantation raised during and/ or prior to the out going plan period (b)

			Tending to the old existing MISC plantation, compensatory plantation, Fuel fodder plantation, NTFP plantation, Bamboo plantation, JVP plantation etc. raised during and/or prior to the out going plan. (c) Restocking of Village forest
	4.5.2	Silvicultural System	All marked trees left standing by the coupe purchaser (the O.F.D.C.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) All climbers shall be cut.v) All fallen pieces of branches, small wood left during main felling which could cause fire hazard shall be removed.vi) The area shall be replanted with proper soil and moisture conservation measures like gully plugging, contour bunding, dry stone packing, construction of check dams etc. as per prescriptions given in the Orissa Plantation Mannual-1977.
	4.5.2.1	Tending to Teak plantation	Tending to teak plantationhas been constituted the area of 1504.829ha raised upto last plan period & 1174 ha. raised during the current plan period. As such total area of 2678.829ha is proposed for tending in the revised working plan.
	4.5.2.2	Operations in Teak Tending Series	Since the teak plantations are varying in age, these are in need of appropriate silvicultural operations to further boost the growth. They require operations like pruning, thinning and climber cutting. However, the following shall be carried out in the annual coupes.• All dead trees shall be removed departmentally. • All climbers shall be cut. • 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. • Gap plantation shall be done where ever required.
	4.5.2.3	Miscellaneous Tending Series & Compensatory tending series.	Under this MISC tending series all misc plantations, compensatory plantations, NTFP, Fuel and Fodder plantations over an area of 3839.143 ha has been included in future plan. Growth in the miscellaneous plantations tends to become bushy and branchy for want of pruning and thinning. This is more prevalent in case of miscellaneous plantations with species like Eucalyptus, Acacia, Chakunda, Siris, Gambhar, Amla, Bamboo etc which are in regular need of weeding; pruning and climber cutting. These operations are beneficial in the early years of the formation of the plantations.

	4.5.2.5	Operations in Miscellaneous Tending Series& Compensatory tending series.	The tending operations which shall be carried out in the miscellaneous plantation tending series & compensatory 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. • 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.
	4.5.2.5.4	Silvicultural operation in Bamboo	488.00 ha. of area have been taken in Bamboo plantation in different forest blocks, which needs to be tend for improvement of Bamboo clumps. • Tending and cultural operation is recommended. • The area shall be closed to grazing. • Elaborate fire protection measure shall be taken.
	4.5.2.5.5	Restocking of JVP plantation	114ha of JVP plantation has been created during 2002-03 to 2004-05. All the plantation having percentage of survival 60 to 70 percent at present, which needs to be restocked. The following tending operation shall be carried out in the plantation, preparing site specific plan for restocking the same.
	4.5.2.5.6	Restocking of Village Forest	694ha of New creation of plantation has been created during the Plan period.. The following new creation plantation shall be carried out in the plantation, preparing site specific plan for New creation the same.
	4.5.2.5.7	Harvest of old teak plantation.	As per prescription in current working plan harvesting of old teak plantation of 70 years & more age should be done on the basis of exploitable girth by preparing site specific scheme over an area of 97.813ha.
	4.5.2.5.7.1	Operation in old teak plantation.	No harvesting of old teak plantation as per prescription laid down in current working plan has been achieved due to severe cyclonic storm occurred during the year 2013-14,2014-15 & 2019-20 like Phyilin, HudHud & Fani etc., by which maximum harvestable trees had been uprooted, broken, damaged and subsequently salvaged. Along with this these compartments having slope of 30 degree and above are left out as per the prescription. So many natural nalas also present in these plantation area. These compartments also coming within buffer area of Satkosia Tiger Reserve of Satkosia Tiger Landscape. Observing these facts and figure the harvesting of old teak plantation is not taken into consideration. In the last working plan 2007-08 to 2016-17 there is no provision of selection working circle.

5	5.1	General Constitution in Protection Working Circle	1The forest protection is the prerequisite of any effective management of forest. This working circle taken as independent when there is need special protection measures. The forest blocks of Angul Forest Division are in various stages of degradation due to heavy illicit felling, quarry activities, industrial operation, widening of road, urbanization, causing of forest fire. The biotic pressure from human along with bovine population plays a pivotal role in the process of degradation. This working circle taken into consideration looking over a. Elephant Habitat Area b. Mining Area c. Theft Prone Area d. Satkosia Tiger Landscape e. Biodiversuty Conservation f. Protection to Catchment of Derjang MIP g. Eco Frigile and Theft prone area.
	5.5.2	Silvicultural System	No Silvicultural system has been prescribed, but following operations are prescribed for the better forest management. The area should be protected from grazing & fire. Boundary of forest is to be maintained properly. Forest road map will be developed with communication network system like
	5.5.13.1	Execution of operations.	The protection series will be divided in to protection units for emphasing execution of the protection measures and boundary maintenance in that unit. There are several protection related problems in the Division which needs to understood clearly and executed properly.
	5.5.13.2	Protection against Illicit Felling	1. Illicit felling of timber is mainly concentrated in all Ranges of Angul Forest Division mainly for fire wood, poles and agriculture purpose. All the forest blocks shall be strictly protected against illicit felling by strengthening the enforcement mechanism, frequent patrolling, engaging anti-smuggling squad at vulnerable points, by deploying man power from less important areas to vulnerable points and providing ample arms and ammunition to the field staffs.
	5.5.13.3	Encroachments	In Angul Division encroachment of forest blocks are maximum in kaniha and Jarapada Range mostly for quarrying and homestead purposes. Specially, in Arakhadahi RF area and Similipathar RF the forest land and also the non-forest lands are encroached by public for homestead purpose. As theses encroachments are very old cases proper planning is required for eviction by joint action of Police, Forest and Revenue authorities. Therefore, strong action should be taken by the field functionaries to prevent new encroachments. 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.

	5.5.13.4	Forest Fire	The fire incidents in this division have been effectively controlled during the plan period. However, to protect the forest more number of fire protection squads should be provided in these areas. The villagers of forest fringe villages and the VSS members should be motivated and provide incentives to support the field staffs and participate to control the forest fire.
	5.5.13.5	Communication System and Mobility	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. The fast moving vehicles is to be provided to each protection unit.
	5.5.13.6	Miscellaneous Regulation	Special protection squad is to be deployed in Talcher Range, Chhendipada Range, angul Range, Jarapada Range and Bantala Range to check illicit transportation of Kendu leaves and illegal removal of pole from the forest area.
	5.5.13.7	Right and Concessions	Rights and concessions under this working circle shall be regulated in accordance with the provisions of the Orissa Forest Act, 1972: Rules made there under besides the Government policies in force.
	5.5.13.8	Grazing control	The grazing can be controlled in the forest area in regular consultation with local people and arrange to develop fodder resource and to encourage stall feeding. To educate the forest fringe villages to dispose the un-productive cattle and procure better quality of cattle and stall feeding. Forest area should be strictly closed at least for a period of two years basing on forest protection unit wise. Grazing may be allowed basing on the carrying capacity. Villagers should be encouraged for large scale plantations of fast growing fodder species. In forest areas, development of silvi-pasture plots and plantations of fast growing fodder species may be taken up.
		Special protection measures for area under Satkosia Tiger Landscape-Nuakheta RF and part of Balanga RF	Check gate, Half yearly monitoring, protection squad, Joint patrolling Coordination meeting Special management practices for timber and bamboo coupes
	5.5.13.9	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 in forest fringe villages.

6	6.5.2	Silvicultural System in Bamboo Overlapping Working Circle	The Silvicultural System prescribed is "Culm Selection-cum-Clump improvement" combined with simultaneous cleaning and cultural operations for Salia bamboos where as "clump improvement" combined with simultaneous cleaning and cultural operations are prescribed for Daba Bamboos.
	6.5.3	Rotation period	A felling cycle of 4 years has been adopted for both Salia as well as Daba bamboo. Each felling series has been divided into four annual coupes (A, B, C & D)
	6.5.4	Harvestable diameters	Only 4 years bamboos can be removed.
	6.5.10.1	Demarcation of annual coupes:	Bamboo coupes shall be demarcated by giving double coal-tar rings at the breast height of all the trees standing on the coupe lines, which are distinctly visible from each other. Similarly single coal tar ring will show the section line. Sign boards shall be displayed on compartment lines, road crossings, nallah crossings and other strategic points mentioning the details such as sequence of the coupe, its area, year of working and compartment number. Bamboo coupes have already been shown on management maps. The coupe boundaries are kept co-terminus with compartment lines so that the demarcation of coupes is not difficult.
	6.5.10.2	Execution of Operations:	The State Government decides the agency for working of bamboo, as it is a nationalized forest produce. However, at present, the Orissa Forest Development Corporation Ltd. is the agent nominated by the Government to work out bamboo coupes through the Raw Material Procurer (RMP).
	6.5.10.4	Working of Bamboo	Bamboo shall be worked by a definite set of rules that has been prescribed by the CCF (Central), Eastern Regional office, Ministry of Environment and Forests, Government of India, Bhubaneswar as referred to above. It envisages preparation of treatment maps and different felling rules for different treatment types.
			Treatment Type-A: Areas with healthy and well-stocked Bamboo Clumps consisting of 1. Clump Quality-I:-Culm height of Bamboos from 9 meters and up 2. Clump Quality-II:-Culm height of Bamboos between 6 meters to 9 meters 3. Clump Quality-III:-Culm height of Bamboos below 6 meters Treatment Type-B: Areas with well-stocked but degraded, damaged, congested and/or fire burnt Bamboo Clumps Treatment Type-C: Areas where bamboo clumps are sparse and scattered If necessary, the treatment types A & B may further be classified into the above mentioned three clumps quality classes

	6.5.11	Subsidiary silvicultural operation cleaning and thinning.	Since productivity of the bamboo forest depends on proper and timely silvicultural operations, it should be ensured to carry out such operations during / or immediately after the year of actual harvest. Even, the early stage 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. These operations shall preferably be done along with the main cutting and comprise of the following components.
	6.5.12	Regeneration.	i. Plantations of bamboo: It should be taken up in deficient areas especially where the density of bamboos is less than 20 clumps per hectare. The technique for raising bamboo plantation prescribed in Forest Plantation Manual 1977, shall be adopted; however, no felling of trees shall be resorted to for this purpose. Bamboo seedlings at a spacement of about 4m X 4m are to be adopted & retained and the rest are to be thinned out. Cleaning, soil working and seeding is to be done around the adopted bamboo seedlings up to a radius of 50 cm.
7	7.5	Special Objectives of Management	The special objectives of Management set for this Working Circle are within the general objectives of management. These includei. To conserve, protect and improve wild life habitat with special emphasis on the proposed corridors.ii. To protect wild life in general and endangered species in particular.iii. To create mass awareness among the locals regarding the necessity to conserve and protect the wild life and their habitat.iv. To conserve and develop important wild life habitat for the purpose of eco-tourism.v. To increase in biodiversity and wildlife population.vi. To prevent wildlife related crimes.
	7.5.13.4.1	Maintaining Special Habitats	Special habitats are biological in origin and provide habitat functions for small wild animals. They include snags, snag recruits, den trees, down wood, isolated large old trees, trees with fluting boles, buttresses, lianas, some significant species of fruit bearing trees and shrubs. These special habitats have been neglected in the past. Care should be taken while implementing the plan to maintain these special habitats especially in the areas coming under the Improvement Working Circle.
	7.5.13.4.2	Snags:	As a rule of the thumb, maintain at least the 5 tallest and largest diameter snags per hectare, in a well distributed design in all silvicultural treatments. Retained snags need to appear in the compartment history. These are vital for a variety of primary hole-nesting birds like Woodpeckers and Barbets, which are colonized by secondary hole-nesters like Hill Mynas, Rollers, Owlets etc during subsequent years.

	7.5.13.4.3	Snag recruits:	Likewise maintain 5 snag recruits per hectare. These are dying trees, mostly affected by heart rot fungus but not quite dead. They can be recognized by their external symptoms. All such trees, which are being retained, need to be reflected in the compartment histories. These, along with snags provide a very good substrate for epiphytic orchids, especially of genus *Dendrobium.*
	7.6.13.4.4	Down wood:	In felling operations, among the rejects, apart from lops and tops, large size irregular shaped hollow logs often feature. Being uneconomical they usually remain on site, or are converted into fuelwood.
	7.6.13.4.5	Large old trees:	These would naturally occur in low densities. The *Ficus s*p. should not be counted among these since Ficus is not felled even otherwise. Large old trees of different species as and when encountered need to be reserved in any felling/tending operation.
	7.5.13.4.6	Trees with fluting boles and buttresses and holes at the base:	These are expected to occur in very low densities represented by a small number of species. They provide significant micro-habitat functions for small mammals like the Mouse Deer and reptiles.
	7.5.13.4.7	Lianas and tangled climbers	Climber cutting operation is a standard practice in the forest management. There are prescriptions for climber cutting in all working circles. However lianas provide significant habitat functions in support of mobility of arboreal animals, and depending on animal species, serve as resting and escape cover for primates.
	7.5.13.4.8	Fruit bearing trees and shrubs:	All fruit bearing tree species have been kept reserved in felling/ tending operations, that are known to provide fruits to local human inhabitants and wildlife. The information on human use is probably complete but the same cannot be said of wildlife.
	7.5.13.4.9	Roosting/ Nesting trees	All trees which are known to support nesting colonies of water birds or roosting congregations of raptors/other birds need to be retained. This is crucial especially with reference to vultures, which are critically endangered along with Pallas's Fishing Eagle which have become very rare in the Division.
	7.5.13.5	Development of Habitat	Habitat shall 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 reduce the man-animal conflict.

	7.5.13.5.4 :	Construction of check dams & waterholes	a) There are several streams & streamlets drain run off water to Bauli Nadi which is flowing along/ across Nuakheta R.F., Bolong R.F., Labangi D.P.F., Krushnachakra P.R.F., Kurudu R.F. Check dams & waterholes can be constructed on the streams
	7.5.13.5.5	Creation of grass land:	i) Valley areas of Chhendipada & Kankurpal RF ii) Foot hills & valley of Bolong RF compartment No.1 to 4 iii) Valley area of Krushnachakra PRFcompartment No.2,5 & 4 iv) Valley area of Pathargarh PRF compartment No.1 & 2 v) Foot hills of Bulajhar RF compartment No.4 & 6 vi) Foot hills of Phuljhari RF compartment No.1 & 5
	7.5.13.5.6	Distribution of natural salt licks:	Salt is a very important requirement of most wildlife, which they often meet from natural saltlicks scattered in different forest blocks being mostly on sides of nallahs and in foothills.
	7.5.13.5.7	Corridor development:	Due to qualitative and quantitative decline of wildlife habitat including loss of prey base in the Division and loss of connectivity and fragmentation of the habitat, there is increase in man-animal conflicts. Studies shows that the changing land use in the peripheries of the PAs due to demographic changes is affecting wildlife habitats
	7.5.13.6	Maintaining Unique Habitats	Unique habitats provide special functions not provided by succession stages and special habitats. They are geomorphic in origin. These include the following habitats
	7.5.13.7	Maintaining Critical Macro Habitats	Two kinds of critical macro habitats are the riparian zones and gorges
	7.5.13.8	Maintenance of water sources and wetlands:	Existing water sources, perennial and seasonal, artificial or natural need to be protected and maintained. A water source is subjected to silting, poisoning, being drained off, subject to other pollutants; some are shared between cattle, people and wildlife, some monopolized by cattle or people
	7.5.13.9	Maintaining The Cultural Landscape	Sites of pilgrimage: Deities of tribal's/ villagers are often located in ancient/ old growth stands or groves or hillocks and there are specific periods of pilgrimage/ worshipping. People approach the holy site by following several forest routes. Other Prescriptions 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 even help in further improving the management prescriptions

	7.5.13.10	Wildlife Protection Measures	The immediate need is to collect and tabulate all available spatio-temporal information about incidence of wildlife crime including identity and modus operandi of the criminals. The second step is to analyze the information and prepare a strategy and action plan while third step is to carry out enforcement.
	7.5.13.11	Miscellaneous Regulations	Infrastructure and Training, Information network and records keeping,
8	8.5.2	Silvicultural System in NTFP Overlapping Circle	The primary collectors should be properly guided and trained 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 by the primary collectors will increase their earning. Small enterprises to utilize the collected and value added products to produce products required by the markets should also be set up around the forests.
9	9.5.2	Silvicultural System in JFM Overlapping Circle	This Working Circle is an overlapping circle. Hence the silvicultural system to be followed depends on the prescriptions outlined for the main Working Circle to which the block is primarily allotted. Moreover, the system of working in these particular areas would be guided by the micro-plans prepared jointly by the DFO/VSS for the particular patch of forest allotted to the VSS which will be in conformity with the prescriptions of the main Working Circle. The silvicultural operations required for improvement of the crop should be clearly mentioned in the micro-plans. The intermediate benefits derived from the forests (JFM area) shall be shared as per prescriptions of JFM resolutions.

Works prescribed to be executed during the Plan Period(year wise Physical Target)

Year wise physical target of works prescribed to be executed during the plan period has tabulated in the table below :-

Year wise details of works prescribed during the plan period.

Chapter No.	Para No. / Sub-Para No.	Name of Working Circle	Prescribed Activities	Year wise Physical target										
				2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	Total
				Phy	**Phy**	**Phy**	**Phy**	**Phy**	**Phy**	**Phy**	**Phy**	**Phy**	**Phy**	**Phy**
Chapter 14	14.6.2	Improvement Working Circle	Only dead, malformed, wind fallen trees shall be removed from these forest blocks. No exploitable tree shall be removed. from this forest blocks. The prescribed silvicultural system shall be carried out in addition to climber cutting, singling out of prominent shoots, soil and moisture conservation measures and enrichment plantation. The debris should be removed outside the forest block to prevent fire	3011	2793	2835	2743	2961	2534	2642	2774	2814	2480	**27587**
Chapter 15	15.6.2	Rehabilitation Working Circle	The prime objective is to restock these forest blocks and to reduce the biotic pressure due to which these blocks have become degraded. There will be no exploitation of mature trees except for removal of dead and uprooted trees. To achieve the major objectives, operations i.e. regeneration cleaning, soil and moisture conservation, gap planting, block planting along with tending will be carried out. In addition, steps will have to be taken to protect the area from grazing, theft and fire with the active cooperation of the people wherever possible.	1972	2167	2086	2165	2404	2465	2229	2379	2411	2309	**22586**

Chapter 16	16.6.2	Plantation Working Circle	In Angul Forest Division, the Plantation Working circle was overlapped with rehabilitation working circle and Improvement working circle in outgoing Working Plan. As per discussion by the committee held on 26.11.2015 the plantation working circle to be kept in independent working circle. Presently most of the blank patches have been covered up with vegetation due to intense plantation activities during the last working plan period. So it is very difficult to find out a completely blank patch inside the forest blocks for Block plantation. It is observed that due to proper protection and post planting care during the last working plan period a good no. of plantations are coming up successfully in different forests block of this division and those are included in this Working Circle for better improvement. The total area allotted to this Working Circle is 8142.106 Ha. Considering the fact and vegetation condition of the plantations independent plantation working circle proposed as (a) Restocking of Village Forest (b) Tending to the old teak plantation raised during and/ or prior to the out going plan period (c) Tending to the old existing MISC plantation, compensatory plantation, Fuel fodder plantation, NTFP plantation, Bamboo plantation, JVP plantation etc. raised during and/or prior to the out going plan. No harvest is recomended in old teak plantation. The plantation area is shown in the all topo sheet covering Angul Forest Division.											
			Plantation											

			Harbestable Teak plantation	74									74
			Tending to Teak plantation	243.8	312.4	275.6	267	283	276.7	271.5	269.2	270.6	229	2699
			Tending operation to Misc, FF,NTFP plantation	433.6	427.4	392	433.9	380.5	400.8	441.2	383.6	337	463	4093
			Silvicultural operation to Bamboo Plantation	52	53	51	41	47	43	51	47	50	53	488
			Restocking of JVP plantation	0	0	20	17	20	20	16	21	0	0	114
			Restocking of VF	67.19	51.4	73.6	75	64	64.55	73.91	73	78	73.35	694
			Total Plantation Working Circle											**8162**
Chapter 17	17.6.2	Protection Working Circle	As the forests included in this circle are to be mainly protected without any other consideration, no silvicultural system has been prescribed. However, for achieving the special objectives of this circle, the following operations are prescribed: i. The area shall be rigidly protected from illegal biomass removal so as to keep it under nature's own care and nursing. Areas of forest blocks on steep precipitous slopes and eco-fragile areas would be specially protected to ensure there of no loss of vegetation or soil cover. Steps will be taken to prevent fires and grazing in the forests. Boundary of compartments and blocks will be maintained.	**The prescribed area to be treated through out working plan period**										**6295**
Chapter 18	18.6.2	Bamboo (Overlapping Working Plan)	The silvicultural system prescribed is 'Culm Selection-cum-clump Improvement' coupled with cultural operation.	2348	1734	1039	1392	2348	1734	1039	1392	2348	1734	

CHAPTER-I

Summary of Facts on which Proposal are Based

1. The Tract Dealt with

1.1 Name and Situation:

1.1.1 Name of the division and its geographical location.

Angul Forest Division is located within the civil sub-division of Angul and Talcher of Angul district and lies between 20^0 31'37'' to $21^0$17'48'' N latitude and 84^0 40' 08'' to 85^0 15' 44'' E longitude. The forest area dealt with in this working plan comprises all reserved forests, all proposed reserved forests (demarcated blocks notified under section 4 of Orissa Forest Act) and all demarcated protected forests (demarcated blocks not notified under section 4 of Orissa Forest Act) of this Forest Division.The Division is bounded in the north by Deogarh Forest Division (Pallahara civil sub-division of Angul district and Deogarh civil sub-division of Deogarh district in the north-west corner), in the south and south-east by Satkosia Wildlife Division (Angul civil sub-division of Angul district), Nayagarh civil sub-division of Nayagarh district, Athagarh civil sub-division of Cuttack district), in the east by Dhenkanal Forest Division (Hindol civil sub-division and Kamakhyanagar civil sub-division of Dhenkanal district) and in the west by Rairakhol Forest Division (Rairakhol civil sub-division of Sambalpur district).

1.1.2 Demographic and administrative details.

The total population of Angul subdivision and Talcher subdivision as per 2011 census comes to 586772 and 326572 respectively. The population of Angul Forest Division may be taken as the population of these two subdivisions. Detail break up of population is presented at Table No 3.1. Population of this tract during 1971 census was 347023 , during 1981 census was 552411, during 1991 census was 685332, during 2001 census was 792320 &In last 40 years, population has increased by 2.37 times of the figure at 1971. The average annual growth rate comes to 5.6 %. The present population density of this tract as per 2011 census is 265 per sq. km, where as the population density for the entire district is 179 per sq. km. and population density for the state is 236 per sq. km. The population density of this tract during 1941, 1971, 1981 and 1991 were 72 per sq. km, 104 per sq. km , 166 per sq km and 205 per sq. km. respectively. From the figures, it is observed that the population growth of Angul and Talcher sub-Division is very high in comparison to other parts of the district.

Sub-divison wise details in population shown in Table no. 1.1

Table No 1.1	POPULATION OF ANGUL DIVISION		
Population	Angul Sub-division	Talcher Sub-division	Total
1	2	3	4
Total	586772	326572	913344
Male	302247	171587	473834
Female	284525	154985	439510
S.C	99528	62732	162260
S.T	37061	29334	66395
Rural	542977	285731	828708
Urban	43975	40841	84816
House Holds	105520	66797	172317
Rural HH	90345	46657	137002
Urban HH	15175	20140	35315
Source: District Statistical Officer, Angul.			

1.1.2.1 In this division, nearly 90.37% people live in rural areas. There are 808 inhabited and 156 uninhabited villages in the division. The important castes present are Chasa, Kandayat, Karana, Brahmin, Gouda, Paika and Kumbhara etc. The Chasas constitute the major community. They are, par excellence, cultivators. Almost all of them hold lands and they constitute the well to do peasantry of the villages. Cultivation is in fact their hereditary occupation. O'Malley mentioned in Angul District Gazetteer, 1908 that there were 40377 Chasas living in Angul sub-division. Cobden Ramsay has made references of Chasa caste of Talcher sub-division in the beginning of the 20th century in "Feudatory States of Orissa" that Chasa population in Talcher was 17000. The Paiks are mostly Khandayats; the word Khanda means a sword. They claim to Rajput rank and their principal occupation is cultivation. There are 52 categories of Scheduled Castes of which the most numerous are Pana, Tanla, Dhoba, Hadi, Ghasi, Bariki, Chamar, Godra, Bhoi, Pantanti, Dewar etc. There are 26 ethnic groups of Scheduled Tribes, of which the principal tribes are Kond, Gond, Munda, Santal, Juang , Khaira, Kisan, Bhuiyan etc. The details of the SC population is 162260 and ST population is 66395 these two sub-divisions as per 2011 census. There are of 92344 rural families are BPL categories living in these two sub-divisions, out of which 53.59 % of total house holds are living with below the poverty line. The incidence of poverty in Angul district is lowest in Talcher block (24.2 %) followed by Kaniha Block (53.3 %). The block-wise details of families living below poverty line including SC & ST families.

1.1.2.2 Out of the total population (913344), 690488 (75.6%) are literate. The male literate population is 384895 (81.23%) and female literate population is 294472 (67.00%). The average literacy rate of Orissa State is 63.6%; the male literacy rate is 75.95% and the female literacy rate is 50.97%. The literacy rate of this division is fairly good in comparison to the State average litaracy.

1.1.3 Occupational structure:

The total working population is 304111 (36.93%) out of the total population of 823466. In the working population, 219036 (72.03%) are male, and 85075 (27.97%) are female. The female contributes substantially to the economic activity and household income. Out of the total 304111 workers, the main workers are 217860 (71.64%) and marginal workers are 86251 (28.36%). Men are in major proportion of main workers (84.05%) and women are mostly engaged in marginal works (64.2%). Maximum workers are engaged in agriculture either as cultivators (28.03%) or as agricultural labourers (22.00 %).A small fraction of the population in Talcher, Kaniha and Chhendipada block are engaged in the mining activity. The details of categories of workers and classification of workers are provided in Table No: 1.2 and Table No: 1.3 respectively. 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 needs either through the collection of MFP items like Kendu leaves, Mahua flowers, Sal seeds, etc or through selling of firewood, small timbers, raw coal etc.

Table: 1.2 CLASSIFICATION OF POPULATION

Category	Male		Female		Total	
	Population	%	Population	%	Population	%
Main Workers	183103	84.05	34757	15.95	217860	71.64
Marginal Workers	35933	35.8	50318	64.2	86251	28.36
Total (Workers)	219036	72.03	85075	27.97	304111	36.93
Non-Workers	208419	40.13	310936	59.87	519355	63.07
Total(Population)	427455	51.91	396011	48.09	823466	100
Source: District Statistical Officer, Angul						

Table No : 1.3 CLASSIFICATION OF WORKERS

Sl.No	Category	Main Workers	Marginal Workers	Total	%
1	Cultivators	64141	21089	85230	28.03
2	Agricultural labour	26360	40544	66904	22.00
3	Household Sector	12005	5884	17889	5.88
4	Other Workers	115354	18734	134088	44.09
Total		217860	86251	304111	100
Source : District Statistical Officer, Angul					

1.1.4 Cadre Strength and Staff position of Angul Forest Division as on Sept, 2020.

The cadre strength of the division is changed after re-organization of the Forest Department in October 2003. The latest cadre strength and the vacancies are given in **Table No: 1.8** from the table it is observed that there are many vacancies in the division, the worst affected cadre is of Forest Guard, in which almost 53% posts are lying vacant.

Table No: 1.4

Table No. 1.4					
SL No.	Name of Post	Sanctioned strength	Staff in position	Vacancy position	Remarks
1	Dy. C.F.	01	01	00	
2	Asst. C.F.	03	02	01	
3	Forest Ranger	06	03	03	
4	Dy. Ranger	06	04	02	
5	Head Clerk	01	01	00	
6	Jr. Accountant	07	07	00	
7	Jr. Stenographer	01	00	01	
8	Jr. Clerk	09	06	03	
9	Forester	45	48	00	Excess – 3 nos.
10	Forest Guard	126	59	67	
11	FES	03	00	00	Abolished
12	Driver (L.V)	02	01	01	
13	Dak Runner	01	01	00	
14	Mali	02	02	00	
15	Bangalow Choukidar	02	02	00	
16	Office Choukidar	01	01	00	
17	Watcher	04	03	01	
	Total	**220**	**141**	**79**	

1.1.5 Angul is the divisional headquarters of the Angul Forest Division, which is also the district headquarters. It is situated on N.H. 42 at a distance of 105 km in the west from the point, where N.H. 42 meets N.H.-5 (i.e. Manguli Chhak near Cuttack). It is 161 km. from the state capital Bhubaneswar. Being located almost centrally in the state, Angul is well connected by rail and roads to all parts of the state.

In October 2003, the Beats and Sections were also re-organized along with the Ranges. In the Division, two new ranges i.e. Kaniha and Chhendipada were created. With creation of these two Ranges, total number of Ranges became six. The old three ranges namely Angul, Banatala and Jarapada are renamed as Angul, Bantala and Jarapada with their headquarters at the same place vide Notifications no. FE-FE1-0049-2017 12941F&E dt 17.06.2018 respectively Details of the distribution of Sections and Beats along with area of jurisdiction are given in **Appendix – I**

1.1.6 Fire Line: -

Forest fire is the major threat to forest regeneration and establishment of forest crops, so all the boundary line of the forest blocks including inter-district / inter-division, footpath, road inside the forest blocks, compartment lines are to be maintained annually as fire lines by cleaning one to two chain width. Details of fire line are listed in Table No. 1.5 and 1.6.

Table No. 1.5Inter District/Division Boundary line				
Name of the Range	**Section**	**Beat**	**Forest Block**	**Length of Boundary line**
Jarapada	Balipata	Basantapur	Devinagar PRF	5
Chhendipada	Chhendipada-2	Kanloi	Devinagar PRF	7
Chhendipada	Chhendipada-2	Kanloi	Kanloi RF	5.4
Chhendipada	Chhendipada-2	Kanloi	Kanloi RF	8
Chhendipada	Chhendipada-2	Kanloi	Nuamati PRF	8.5
Chhendipada	Chhendipada-2	Kanloi	Dangapal PRF	8
Talcher	Seepur	Bulajhara -2	Bulajhar RF	4.5
Talcher	Seepur	Bulajhara -1	Bulajhar RF	4
Talcher	Seepur	Kulei	Bulajhar RF	1
Kaniha	Rengali	Gandamala	Biripal RF	12
Kaniha	Rengali	Khindo	Sadarkhola	1.5
			Total	**64.9**

Table No. 1.6

Maintenance of Foot Path & Road inside Forest Block as fire line

Sl No	***Name of Range***	***Name of Forest Block***	***Length of Foot path (in KM)***	***Length of Road on KM***
1	Bantala	Balanga RF	3.267	
2			2.14	
3			0.55	
4		Bhogapal	1.431	
5			0.543	
6		Labangi RF	1.531	
7		Nuakheta RF		2.877
8			1.523	
	Total		**10.985**	**2.877**
1	Jarapada	Debinagar PF	2.772	
2			1.093	
3		Parha RF	4.619	
4		Katada RF	3.137	
5		Antulia RF		1.214
6		Tabada RF	2.177	0.917
7			1.790	
8		Pathagarh RF	5.728	
9			1.985	
10		Similipathar RF	2.219	

11			1.70	
12			1.684	
13			1.082	
	Total		**29.986**	**2.131**
1	Chhendipada	Debinagar PRF	5.239	
2		Kanloi RF	3.574	
3		Marudhipa RF	1.947	
4			1.307	
5		Nunimati PF	4.653	
6			2.075	
7		Dangapal PF	12.075	
8			1.574	
9		Raipal RF	1.36	
10		Chhendipada RF		5.967
11				6.859
12			2.789	
13		Kankurpal RF		4.569
14		Kosala RF		1.216
15			2.300	
16		Dahianali RF	1.616	
17		Brahmanibil RF	2.335	
18		Kosala RF	1.101	
	Total		**43.945**	**18.611**
1	Angul	Nisha		1.876
2			1.646	
3			2.26	
4			0.36	
5				2.288
6		Kaliakata RF	2.71	
7			1.877	
8				1.236
9		Kuio RF	0.784	
10			3.679	
11			1.859	
12			2.407	
13			2.133	
14		Kerajang RF	1.105	
15			2.705	
16		Badadandasahi RF	2.137	
17		Kalapata RF		0.531
18				1.669
19		Pokunda RF		1.104

20			1.455	
21		Bruti RF	1.754	
22			1.929	
23			3.55	
24			1.639	
25		Kurudu RF		3.794
26			0.874	
27		Madhapur RF	2.311	
28		Krushnachakragarh PRF		
	Total		**39.174**	**12.498**
1	Talcher	Kauchiakhola RF	0.791	
2				0.606
3			0.478	
4				2.105
5				4.506
6				0.314
7				1.077
8		Dera	0.772	
9		Rakas	0.77	
10				1.494
11			2.533	
12			0.67	
13				0.494
14				0.946
15		Makundanali RF		0.405
16				0.481
17				0.512
18		Kandhaberini RF	0.533	
19		Petachira RF	0.372	
20			1.185	
21			1.289	
22			1.383	
23			0.879	
24			0.267	
25			0.581	
26			0.47	
27			0.91	
28			0.463	
29			0.199	
30		Kandhal	1.86	
31			0.476	
32		Gopalprasad RF	1.406	
33			1.314	

34		Malibandha RF	1.581	
35			1.911	
36			1.096	
37			0.961	
38		Ganthigadia RF		1.453
39			0.997	
40			1.358	
41		Bulajhar RF	1.299	
42				3.217
43				0.547
	Total		**28.804**	**18.157**
1	Kaniha	Dalak RF		0.979
2				1.93
3				2.486
4				0.38
5		Saradhapur RF		1.23
6			0.845	
7			1.002	
8		Pital RF		0.362
9			0.663	
10		Patakhaman RF	2.104	
11			2.249	
12				0.610
13		Dhankoili RF		0.438
14		Phulajhari RF	3.848	
15		Tangiri RF	0.763	
16			0.638	
17				0.536
18		Nialu Lodhajhari RF	1.205	
19				1.226
20		Peri RF	1.191	
21			0.729	
22			0.869	
23				0.89
24		Rengali RF	0.76	
25		Sadarkhola RF	1.585	
26			0.56	
27			0.814	
28			0.815	
29		Sachi RF	1.108	
30		Jarapadadanda RF	0.307	
31		Badakathia RF	0.943	

32			2.128	
33			5.931	
34			1.629	
35			3.214	
36				3.133
	Total		**35.900**	**14.200**

Besides the above another 400 Kms fire line is to be maintained along the boundary lines of forest blocks.

1.2 CONFIGURATION OF THE GROUND

1.2.1 The tract dealt with under this plan has wide physiographic variations. To describe the physiography, the tract covered may be divided into three parts – (i) northern part, (ii) central part and (iii) southern part. The northern part is the portion of the tract bounded by river Tikira on south, river Brahmani on the east and division boundary on the north & west. The southern part is the portion of tract located on the south of N.H. - 55, while the central part lies between N.H. - 55 and river Tikira and Brahmani. Though different physiographic features are present in all the parts of the tract dealt with, these parts cannot be termed as physiographic zones; however, this division has been made to describe the physiography conveniently.

The Forest Blocks of Angul Division are situated in Northern Part, Southern Part and Central Part as under in **Table 1.2.1.**

Table 1.2.1

Parts of the Division	**Name of the Range**	**Forest Blocks**
Northern Part	Kaniha, Talcher	Arakhadihi RF (B), Bandhuli RF (B), Biripal RF, Budhia RF, Godigotha RF (B), Gumpha RF, Kiajhara RF, Khajuria RF (B), Kukurkhai RF, NialuLodhajhariSapakata RF, Patakhaman RF, Pedi RF (B), Pitala RF, PoipalDanda RF, Rameswar RF, Sadarkhole RF, Saleimara RF, Sachi RF, Silakhani RF and Tangiri RF are under Kaniha Range and Forest Block of Talcher Range Like Bulajhar RF, Seeling RF, Mankadachua RF, Seepur RF (B), Langalkhole RF (B)
Southern Part	Angul, Jarapada&Bantala	Balanga RF, Baragounia RF, Nuakheta RF, Balanga PRF, Kanguloi PRF, Labangi DPF, Talasira DPF of Bantala Range. Badadandasahi RF, Bhogapal RF, Guranga RF, Madhapur RF, MandargiriKalima RF, Nanda RF, Nandapur Berhampur RF, Saharagoda RF, Sorisapal RF, Burti PRF, Chandanpur RF, HinsarSorispal PRF, Kalapata PRF, Krushna Chakra PRF, Kulasinga PRF, Kurudu PRF, Pokunda PRF of Angul Range. Antulia Tabada RF, Katada RF, Pathargarh PRF, Dandasingha Bhagatpur PRF, Para PRF, Roadsingha PRF, Tabada PRF of Jarapada Range.

Central Part	Talcher, Kaniha, Jarapada, Chhendipada&Angul	Baistmbaragudi RF, Nuabhuin RF, Kanehijena RF, Kandhal RF, Gengutia RF, Makundanli RF, Kanteikulia RF (B), Kauchiakhole RF (B), Gopalprasad RF, BalaramprasadRF, Hirapur RF (B), PetachiraPathuria RF, Dera PRF, Kandhabereni PRF, Shibarampur PRF of Talcher Range. Badakathia RF (B) Bhana RF, Chandrapada RF, Gohiradanda RF, Jagini RF, Matharagadi RF, Pitalhill RF, Santarabandha RF(B), Saradhapur RF of Kaniha Range.Bahianali RF, Brahmanabil RF, Chhendipada RF, Jarapada RF, Jaltap RF, Jeypour RF, Kankurpal RF, Kanaloi RF, Khalapal RF, Kosala RF, Putagadia RF, Similisahi RF, Dangapal PRF, Debinagar PRF, Kanaloi PRF, Marudhipa PRF, Nunmati PRF, Sunarijharan PRF, Chakundapal DPF of Chhendipada Range. DerjangGolabandha RF, Kaliakata RF, Kuio RF, KuioSakasinga RF, KumandaTalataila RF, Malibrahmani RF, Nisha RF, Paranga RF, DerjangGolabandha PRF, Kerjang PRF of Purunagrh Range. Arisuliasulia RF, Jarapada A RF, Kandhakurudu RF, Similipathar RF, Jarapada PRF, Sudagolaswar PRF of Jarapada Range.

Physiographic of Forest Blocks like Bahaianali, Brahmanbil, Chhendipada, Jarapada, Jalatap, Jeypure, Kankurpal, Khalpal, Kosala, Putagadia, Similisahi, Marudhip, Nunmati, Pitachari, Sudagoleswar, Arakhadahi, Badakathia, Kiajhara, Kukurkhai, Patakhaman, Saradhapur, Kaliakata, Kuio, Malibrhamani, Nisha, ParangaKandhal, Gengutia, Baistambaragudi, Makundanali, Nuabhuin are occupying plain area. Rests of Forest Blocks consist of small hillocks with moderate to steep slope.

1.2.2 The northern part is the northern portion of Kaniha and Talcher Range. It consists mainly of isolated hill blocks, but arranged in such a manner that the hill ranges form three broken chain of hills running in east-west direction across the river Brahmani. The forest blocks namely Sadarkhol, Saliameda, Biripal and Bandhuli form the extreme chain of hills on the north and north-west corner of Kaniha Range bordering Deograh Forest Division. The Nialu-Lodhajhari-Sapakata, Phuljhari, Dhankoili blocks of Kaniha Range along with Siling, Mankadchua, Langalkhol blocks of Talcher Range form the middle or second chain of hill ranges which start from Talcher - Pallahara border in the north-eastern side of Talcher & Kaniha Range and extend up to the border of Deogarh Forest Division. The third chain of hill ranges can be taken as Patkhaman, Gumpha hill, Jarapada and Bulajhar blocks, which borders with the Anantpur R.F. of Dehnkanal Forest Division in the eastern side. Out of these, Nialu-Lodhahari-Sapakata and Bulajhar are long hill blocks having mainly the northern and southern aspects. In other hill blocks, all aspects can be noticed. Except these hills, the physiography of northern part of the tract is plain.

1.2.3 The central part consists of southern portion of Talcher, Kaniha and northern portion of Jarapada, Chhendipada and Angul Range. The physiography of this part is almost plain excepting Kanheijena block of Talcher Range, squatting as an isolated hill on the southern bank of river Brahmani, Kanloi block of Chhendipada Range bordering Athamallick and Rairakhol Forest Division, Debinagar block on north-west bordering Athamallick Forest Division and Sunarijharan block on north-east corner of Chhendipada Range bordering Deogarh Forest Division. These blocks have rugged and irregular contours (more remarkable in Debinagar) and consist of steep, almost barren rock hill sides and deep ravines. Except these four steep and precipitous hilly blocks, rest of the land in the central part are mostly plain or undulating small hillocks occupying comparatively level areas.

1.2.4 The southern part consists of southern part of Angul&Jarapada Range and entire Banatala Range. Extensive forest of Banatala, Angul and Jarapada Range comprises of a vast tract of high hills, moderately steep to very steep and valleys extending all along the border of Satkosia Wild life Division. Nuakheta block is remarkable for its rugged and irregular contours and steep slopes with rocky hillsides and having deep ravines too. Krushnachakra & Burti blocks of Angul Range and Antulia-Tabada & Katada blocks of Jarapada Range consist of high hills and have moderate to steep slopes and provide more open valleys. Rest of the forest blocks of Angul&Jarapada Range are lying in the north of Nuakheta-Bolong occuping comparatively plain area and consist of small hillocks, i.e. a physiography similar to that of the central part.

1.3 GEOLOGY, ROCK AND SOIL

1.3.1 The geological formation of Angul Forest Division is of great academic interest. Two distinct and different formations of different ages occur in this division. They are the eastern ghat group of rocks belonging to Archean age and Godwana group of rocks of younger age than eastern ghat group of rocks. These two groups of rocks are separated from each other tectonically. The southern portion of the division upto Cuttack-Sambalpur road and slightly north of it belongs to Eastern ghat group of Archean age where it is separated from Gondwana group of rocks by a fault running east to west slightly in north of Cuttack-Sambalpur road. The Gondwana group of rocks extends in the north from this fault upto river Tikira and Brahmani where it is separated again from Archean group of rocks by another fault.

1.3.2 Gondwana formation, which covers part of Kamakhyanagar sub-division of Dhenkanal district in the east, passes through Talcher and part of Angul and Athamallik sub-division extending further in the west in Rairakhol Forest Division of Sambalpur district. The occurrence of Gondwana group of rocks in this fashion has given the basis of the geological theory that there existed a basin between faulted boundaries at some pre-historic geological age in shape of a trough. The process of sedimentation and physical changes gave rise to Gondwana formation. The older formation was called lower Gondwana while the younger were called upper Gondwana. The lower Gondwana formation is being represented by Talchir series and Damuda series while the upper Gondwana formation is being represented by Mahadev series.

1.3.3 The general strike of Archaean formation is WNW-ESE direction showing a regional conformity with river Mahanadi strike. However later deformations have formed the out-crops into strips. The Gondwana formation also shows a regional conformity with the general trend of Archeans.

1.3.4 The out-crops of upper Gondwana rocks are seen on the hills of Kanloi, Debinagar, Similipathar &Jarapada blocks on western side and Kanheijena block on eastern side where it occurs in continuation of Talchir Gondwana field. The main rock types found are conglomerates, coloured laminated shales and gritty sand stone of highly ferruginous nature. Kanheijena block in north meets with Archaean formation. Out of the above-mentioned rocks, laminated shales are the best unit for the growth of vegetation. Talchir series, which is about 150 meters thick, consist of Talchir boulders bed of glacial origin, sand stone and khaki green slippery shales. Talchir boulder bed consisting of boulders of all specifications which have striation due to movement of glaciers indicated by altered feldspar are said to be of glacial origin of carboniferous age approximately 90 million years ago. The boulders of glacial origin can be noticed in the valley of river Aunli. Carbonaceous shales can be noticed near village Patropara in the bed of a tributary of river Aunli. The part of forest blocks of Similipathar, Jarapada, Kanloi, Debinagar, Baishnavrugudi, Gohiradanda, Bhan, Joghani, Patkhaman of Jarapada, Chhendipada, Talcher and Kaniha Range have signs of Talchir series of formation. Between the two narrow strips of Talchir series of formation, Damuda series comprised of alternate bed of sand stone shale and coal exposed around Talcher, Kosala & Chhendipada occur in a large oval shaped patch extending from river Brahmani near Dera in the east to Chhendipada in the west. This series covers all worked out coalfields and all coal bearing areas. Almost all plain forest blocks are represented by this series.

1.3.5 Gondwana group of rocks are composed of sand stone and shales. Shale yields fertility in the soil while sand stone yields sandy loam, which serves as aquifer. Naturally sand stone with inter-collation of shale yields good soil while pure sand stone does not. Generally soil derived from ferruginous sand stone of Mahadev series, which is of reddish colour sandy loam supports good vegetation of Sal, Asan, Mahul, etc. Soil derived from Talchir & Damuda series vary in its fertility from place to place, some time very fertile in the valleys but generally of low fertility on the slopes and support poor vegetation. Patchy distribution of laterite rocks noticed in plain forest blocks of Talcher, Kaniha, Jarapada& Chhendipada Range generally occur in thinmantle. Lateritic soils derived from these rocks have ferruginous with concretions of sand stone (usually limonite). Absence of bamboo is an interesting feature in the soil derived from Gondwana group of rocks.

1.3.6 The bulk of forest existing in the south of Cuttack - Sambalpur road (southern tract) and north of Tikra-Brahmani River (northern tract) occur on the hills of geological formation of Archean age. Between these two tracts occurs central tract of Gondwana age. The important forest blocks of northern tract are Bulajhar, Nialu-Lodhajhar-Sapkata, Phuljhari, Dhankoili, Dalak and Mankadachua. The main rocks of this tract are quartzite which is occasionally micacious, micaschist, hornblende-biotite or gneisses. The main rocks of Bulahjar are quartzite and micaschist. The main rocks of Nialu-Lodhajhar-Sapkata, Godigotha are granite and gneiss. Granite is composed of quartz, feldspar and mica while the kaoline or chinaclay are the altered product of feldspars. In Pedi, Phuljhar and Makadachua, main rocks are quartzite and micaschist.

1.3.7 Soil in the northern tract is mainly of coarse and sandy soil mixed with quartzite boulders, except in the valleys, where profuse sal regeneration and promising growth of sal and other species are seen. On the hill slopes, soil is very thin. Hill slopes support miscellaneous crop with degraded clumps of salia bamboos. Alluvial soil is of most recent deposits and found only on either bank of river Brahmani, Tikra and Singada where cultivation is the principal activity.

1.3.8 The rocks of southern tract are of eastern ghat group of Archean age. The main rocks are Gneiss, Quartzschist (usually ferruginous). Khondalite, Charnokites and Granite. Gneiss is generally granitic towards Katada (in Katada, part of Similipathar and Jarapada- Para) where Granite is also found. Hornblendic gneiss predominates in Nuakheta. In Bolong, Khondalite is commonly met with, yielding very good quality of sandy loam soil and usually associated with pure Sal crop.

1.3.9 Soil in southern tract is poor dry and very shallow sandy loam mixed with Quartzite boulders as seen on the steeper hillsides of Nuakheta and Katada. Soil varies enormously in this region from poor and shallow sandy-loam to deep fertile ferruginous loam towards Banatala block of Satkosia Wild Life Division. The soils of all grades are met with between these two extremities.

1.3.10 Kanker formation of nodular limestone, which produces heavy impermeable clay, is also met within Katada, Jarapada, Para and Similipathar. This formation bears poor crops. On the bank of nallas and rivers, alluvial soils of lesser extent are met with.

1.3.11 The stratiographic sequence of Angul district is given in Table No. – 1.3.1

Table: 1.3.1 Stratiographic Sequence of Angul District

Period	Group	Sub-group	Formation	Range of thickness in (m)	Lithology
Recent			Alluvium laterite	2-37	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 sandstone 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, quartz-mica 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.

Source: Deputy Director, Mines, Talcher

1.3.12 Description of Common Rocks of Eastern Ghat Group.

1.3.12.1 Khondalitic Rocks**:**Khondalite are the major rock types of eastern ghat group of rocks and are made up of metamorphosed sediments. These rocks are named after Khonds in whose region these are commonly found. These are rich in garnet, silimanite with varying proportion of quartz, feldspar and graphite and are found exposed in southern tract of the Division constituting lofty hill ranges covered by dense vegetation of Banatala, part of Angul and Jarapada Range. The general trend of schistosity is WNW-ESE direction. These rocks show banded nature with garnet, quartz and feldspathic mineral. Abundance of feldspars is the apparent cause of disintegration and its ultimate product of weathering is laterite.

1.3.12.2 Basic Charnockites**:**This is the name given to a series of granitoid rocks occurring among the older Archean Gneisses and Schists.They contain high percentage of rhombic pyroxene, hypersthene or eristatite and dark ferro-magnesium compounds which impart dark colour to the rocks. These rocks are common associates of Khondalite with band and schistosity like Khondalite.These rocks continue over a large area in the Division. It yields good soil on weathering.

1.3.12.3 Basic Igneous rocks**:** These rocks occur as intrusive within Khondalite and Charnockite suite of rocks, coarse-grained rocks exposed in Similipathar and Katada. These rocks yield good soil on weathering.

1.3.12.4 Granites**:**An intrusive into the Khondalite and Charnockite suite of rocks, coarse grained and composed of quartz feldspar and biotite. These granites do not yield good soil.

1.3.12.5 Gneisses:These rocks form the basal rocks underlying the flood plain of Mohanadi. They contain garnet, hematite, quartz, feldspar and mica and are commonly associated with Khondalite. These rocks do not yield good soil on weathering.

1.3.13 Mineral Resources

Important ores and minerals (which have mined economically) found in the area of Division are furnished below:

1.3.13.1 Chinaclay**:**It is available near Machhakata (Lat 21° 04'N: Long 84° 50'E), Angul (21°02': 84°50'), Raijharan (20°57': 84°59') Banarpal (20°50': 85°13') Shivpur (20°48': 85°16'), in the east of Nialu (20° 50': 85°16'). The clay is used for construction of earthen pot, potteries and idols, etc.

1.3.13.2 Fire clay**:**Fire clay of Gondwana period is available in tract at places (Bda Gunduri, Kansamunda & Telisinga village) near Kaniha (21° 05': 50° 02'). Average thickness of clay bed is 3 m and reserve estimated is 26.05 MT. It is also available at Chhendipada (21° 03': 84° 52'), Raghunathpur (21° 01': 85° 16'), Brahmanbil, (21° 03': 84° 56') and Gopalprasad (20° 59': 85° 03'). It is generally used for construction of firebricks.

1.3.13.3 Coal**:**Coal is the prime mineral of the district. The coal belt is associated with Damuda series of Gondswana formation. Iit is seen exposed on the surface at some of the places. Coal was discovered in Talcher sub-division during 1837 near Gopalprasad. Geological Survey of India map of 1856 showed this coal bearing area. However exploitation of coal was started during 1924 in Handidhua, during 1930 in Dera mines and during 1932 in Deulbeda mines. These are different coal strata in these mines. This coal is non-coking in nature and mostly suitable for thermal power and railway engines. Superior coal is also available in the area, but relatively in small quantity. As many as 12 workable coal seams of various thickness have been reported in Talcher. The basinal area of Talcher coal field is 1813 sq.km.The total geological reserve has been worked out to be about 36,868.12 million MT up to a depth of 1200 m, which constitute about 18.7 % of countyy's total non-coking coal reserve. Out of this, mineable reserve would be in the region of 9500 million MT.

1.3.13.4 Garnet**:**It is available in west and south-west of Chintamanipur (21° 07': 85° 05') and Poipal (21°09': 85° 08').

1.3.13.5 Mica**:**Mica mixed pegmatites are available at places near Dangapal, Phuljhari, Sapkata, Bulajhar, Jarapada, Longuliabeda and Basala.Bery 1 is also expected near Longuliabada.

1.3.13.6 Quartzite**:**Refractory use quartzites are available in Tangiri hill, Boudhbeda and Mankadchua hill area. These are also available at Phulpada, Jarapada, Parang and Krushnachandrapur.

1.3.13.7 Other Minerals**:**Urtz in Brahmani river belt and iron in Kanheijena forest block are found in lesser percentage. Gold in sand of river Aunli and Tikira are found in very rare quantity. Feldspar occurs in association with quartze at Parang about 10 km from Angul on Angul – Chhendipada road. Columbites Tantalite occurs in Pegmatites at Kangula (20° 47'42'': 85° 07' 35'').

Pink sapphire, Amazonite and moonstone are found at Longalkhol, Bajrakot, Kendumunda and Chintamanipur.

1.3.14 Soil

Different types of soils present in the division can be broadly categorized into following types: i) Sandy soils. ii) Sandy Loam soils. iii) Clayey loam soils. iv) Clayey soils.

1.3.14.1 Sandy soils**:**These soils are derived from quartzite. The Gondwana rocks, predominant in the northern tract of the division, yield sandy soils. They have very less water holding capacity and are also poor in nutrients. The soil is acidic in nature and they are coarse with stone pebbles and boulders in some areas like Kanheijena and Sibrampur forest blocks. The sandy soils are also present in Antulia- Tabada and Kaliakata forest blocks.

1.3.14.2 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 types of soil are found in the forest blocks of Krushnachakra, Bolong PF, Khalpal, Chakundapal, Nisha, Para, Gengutia, Mukundanali, Similipather (Comp.No.7), Antulia-Tabada (Comp.No 1&2), Nialu-Lodhajhari-Sapakata (Comp No 3). The soil contains boulders with gravels and with morrum at places.

1.3.14.3 Clayey loam soils**:**The soil is fine textured and contains sand (20 – 50-%), silt (20 – 50 %) and clay (20- 30 %) and 5 % organic matter. This type of soils is noticed in the forest blocks of Bulajhar, Nialu-Lodhajhari-Sapakata, Kandhal, Saradhapur, Jaghani, Rakas, Balaramprasad, Sadarkol, Pedi, Similipather, Kanloi, Nuakheta, Bolong, Jarapada and Debinagar.

1.3.14.4 Clayey soils**:** The soil is fine textured and heavy. Percentage of sand and silt remain below 50%. Percentage of clay is 30% and above. It is homogeneous to feel with fingers, very sticky and plastic when wet. It is very compact and hard when dry. This type of soil is noticed in the forest blocks of Langalkhol, Burti, Phuljhari, Bulajhar, Dalak, Biripal, Patkhaman, Gumpha hill, Jarapadadanda, Khejuria, Mankadchua, Kankurpal, Ganthigadia, Bhogapal, Gopalprasad, Sorispal, Brahmanibil, Bahianali, Kosala RF and Chhendipada RF

A forest blockwise detailed statement of soil survey results obtained from ORSAC, Bhubaneswar are given in **Appendix – II.**

1.3.15 Relation between Geology, Soil & Minerals

1.3.15.1 Khondalite, Charnockite, basic igneous rocks support thick luxuriant vegetation while vegetation on gneisses and granite are comparatively poor. When the percentage of gneisses and granite increases the quality of vegetation become comparatively poor and bushier. In Gondwana group of rocks when the percentage of laminated shales are more vegetation is thick but when it is less, the vegetation is poor. Sal occurs in the division on all above rocks where soil is good and area is moist. It vanishes on drier aspects. Bamboo does not occur on Gondwana group of rocks in the division.

1.4 Climate Parameters

1.4.1 General Climate**:** The climatic condition of Angul Division is much varied. It has mainly four seasons. Summer starts from the month of March and continues up to mid June, followed by rainy season, which continues up to the month of September. Winter begins from December and remains effective up to February. The period from October to November may be treated as post monsoon season, when sporadic rains occur.

1.4.2 Rainfall**:**Bulk of precipitation occurs in the rainy season by the influence of south-western monsoon. In general, rains break in the third week of June and continue up to middle or end of September. Occasionally, pre monsoon showers are also experienced in the 1st or 2nd week of June. Post monsoon showers are also experienced in the month of October and November. During April and May, thunderstorms occur in the division. On an average, there are 70 rainy days in a year. Average annual rainfall in the division over last 15 years (1990 – 2004) is 1309 mm. The average during the years from 1979 to 1988 was 1136 mm. and 1294.16 mm. in the 1st half of the 20th century as recorded in the Dhenkanal Gazettier 1981. Close examination of rainfall data of last fifteen years reveals that rainfall in 9 years remained below the annual average (i.e. 1309 mm). Rainfall was above annual average in six years, of which below 1400 mm in one year, within 1500 – 1600 mm in four years and more than 2200 mm in one year. Although average rainfall is 1309 mm, but deviation from the annual average in different years is high. Distribution of rainfall is also quite erratic, causing wide spread drought year after year. The average rainfall data of Angul Forest Division (taking average of five representative stations i.e Angul, Banarapal, Chhendipada, Jarapada, Kaniha& Talcher) for the period from 1990 to 2004 is given in the Table No. – 1.4.6.Bulk of precipitation occurs in the rainy season by the influence of south-western monsoon. In general, rain breaks in the third week of June and continues up to middle or end of September. Occasionally, pre monsoon showers are also experienced in the 1st or 2nd week of June. Post monsoon showers are also experienced in the month of October and November. During April and May, thunderstorms occur in the division. On an average, there are 72 rainy days in a year. Average annual rainfall have been recorded in four station at Block head quarter of Angul, Banarpal, Chhendipada, Kaniha, Talcher from 2005 to 2017.

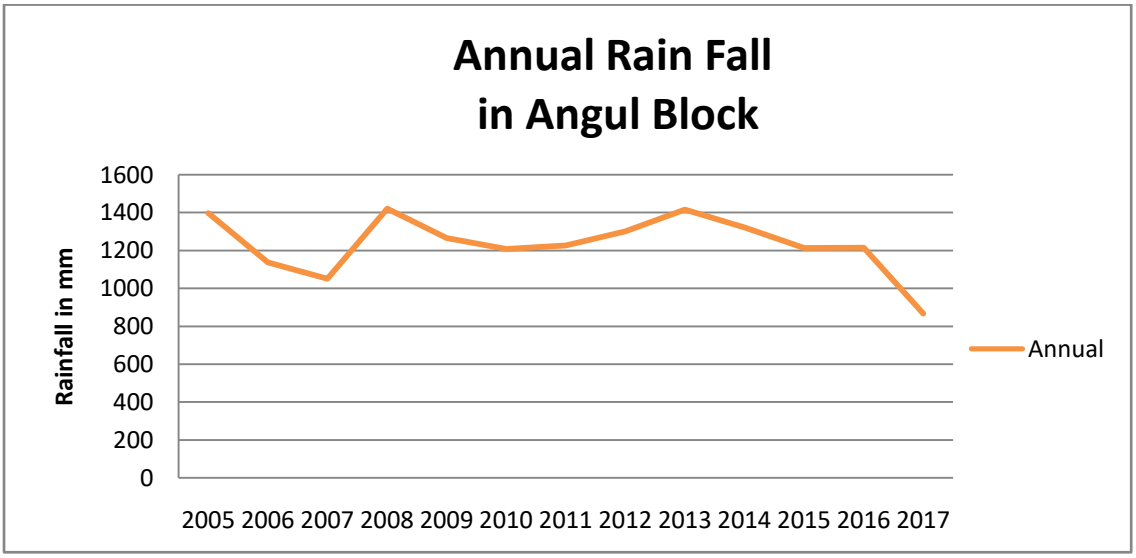
Rain Fall Data Block-Wise Month Wise Report (in mm)

Angul Block.

The Annual Rain fall of Angul Block Area from the year 2005 to 2017 has been recorded as under the table. The average rain fall comes to 1275.834 mm as presented below in **table no. 1.4.1**

Year	Jan	Feb	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
2005	36.8	0.8	54.6	36.6	77.2	157.4	524.8	50.4	229	224	6	1	1398.6
2006	0	0	14.8	49.8	62	170.2	250	450.6	113.2	28	0	0	1138.6
2007	1.6	25.2	15.2	46.4	64.7	170.8	220.4	117.5	378.6	11.8	0	0	1052.2
2008	69.4	2.8	9	7	30.9	311.5	242.8	342.2	406.4	0.4	0	0	1422.4
2009	0	0	2.3	0	61.2	52	659	198	99	159.2	36.4	0	1267.1
2010	2	0	56.6	0	119.1	142.2	280.2	282.4	138	119	24	46	1209.5
2011	0	44.8	13.8	45.3	61.6	145.4	96.2	374.2	413	33.2	0	0	1227.5
2012	119	0	0	0	35.7	105.2	285	305	296.7	54.2	102	0	1302.8
2013	0	10.6	7.8	29.8	67.4	231.4	279.8	198.8	248.9	342	0	0	1416.5

2014	0	25.2	44.84	23.2	143.4	76.4	450.2	258.6	301.3	0	0	0	1323.14
2015	29.8	4	0	30.5	31	187	374.6	336.3	164	29.8	0	27.4	1214.4
2016	0	17	65.2	12.2	96	137.8	224.2	438.4	155.4	61.8	7.6	0	1215.6
2017	2.4	0	20.6	3.8	23.6	184.4	184.2	205.6	154.8	57.4	30.6	0	867.4
AVG	20.08	10.03	23.44	21.89	67.22	159.4	313.2	273.7	238.3	86.22	15.89	5.723	1235.06

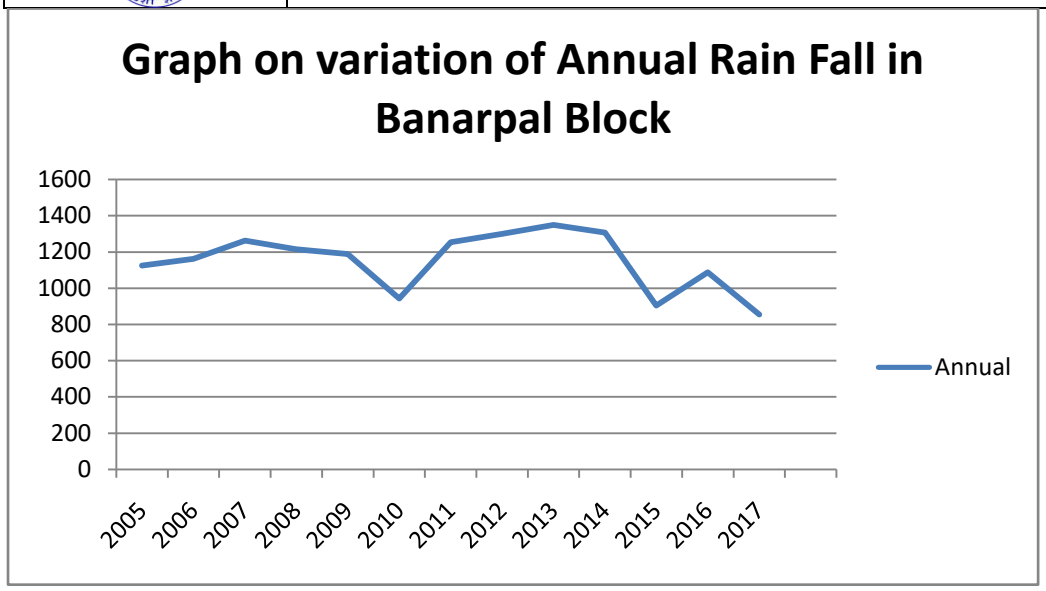


Banarapal Block.

The Annual Rain fall of Banarpal Block Area from the year 2005 to 2014 has been recorded as under the table. The average rain fall comes to 1210.09 mm as presented below in **table no. 1.4.2**

Table no-1.4.2

Year	Jan	Feb	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
2005	12	0	10	18	15	62	463.5	97	201.3	227.5	18	0	1124.3
2006	0	0	16	21	66	297.2	192	405	157	8	0	0	1162.2
2007	0	0	32	44	125	176	191	338	344.2	12	0	0	1262.2
2008	70.2	4.3	0	19	39.2	252.6	217.2	315	253.7	43	0	0	1214.2
2009	0	0	0	0	21.2	61	682.6	127.1	102	173.3	21.5	0	1188.7
2010	0	0	9	0	93.1	80.6	266.7	307	81.2	61.4	2	41.9	942.9
2011	0	9	11	45.2	73	201.8	70	413.9	411.9	17	0	0	1252.8
2012	72	0	0	0	22.2	140	227.3	476.2	229.2	51.4	80.8	0	1299.1
2013	13	7	2	17	51.8	212.8	402.3	95.1	237.8	310	0	0	1348.8
2014	0	2	12	0	127.2	78.5	519	219	348	0	0	0	1305.7
2015	2	0	0	7	15	212	301	148	185	22	0	11.6	903.6
2016	0	21	22.4	0	83	75.8	363	359.4	64	74.8	23.6	0	1087
2017	2	0	48	0	33.8	199	134	235	98.6	83	20.2	0	853.6
AVG	13.17	3.331	12.49	13.17	58.88	157.6	310	272	208.8	83.34	12.78	4.115	1149.6

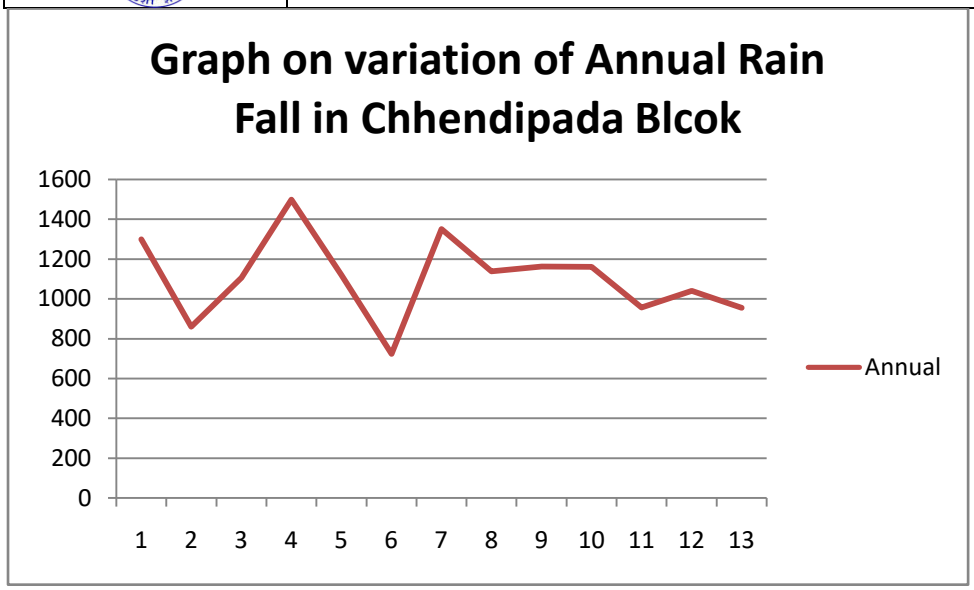


Chhendipada block.

The Annual Rain fall of Chhendipada Block Area from the year 2005 to 2014 has been recorded as under the table. The average rain fall comes to 1142.64 mm as presented below in **table no. 1.4.3**

Table no-1.4.3

Year	Jan	Feb	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
2005	3	0	10	0	40	160	589	99	179	219	0	0	1299
2006	0	0	33.3	2	123	124.7	142.6	330	92.5	11.4	2	0	861.5
2007	0	0.8	9.1	18.6	55.2	183	218.4	210.9	378.2	14	18.4	0	1107
2008	32.4	5.1	5.3	29.9	20.7	299.8	351.2	298.8	444.5	11.4	0	0	1499
2009	0	0	19.6	0	12.5	50.6	452.7	283.9	128	141.2	33.3	0	1122
2010	0	0	1.4	6.4	79	45.6	152.5	138.4	141.4	111	20	28.4	724.1
2011	0	22.6	4.2	86.4	68.4	188.8	69.2	398	495.6	17.8	0	0	1351
2012	120	38.4	0	0	15.2	86.1	307	267	203.2	42	60.2	0	1139
2013	3.2	4	0	42.6	36.4	222.6	265.8	222.7	102.8	263	0	0	1163
2014	0	33.4	14.2	2	59.2	122.8	446.9	210.8	272.2	0	0	0	1162
2015	11	13.4	11	52.8	33.4	179.3	279.8	201.2	131.4	0	0	44	957.3
2016	0	30.6	19.5	0	76.8	243.8	156.5	346	112.4	55.9	0	0	1042
2017	0	0	12.9	0	39.1	177	184.1	215.2	191	122.2	13.4	0	954.9
AVG	13.05	11.41	10.81	18.52	50.68	160.3	278.1	247.8	220.9	77.61	11.33	5.569	1106

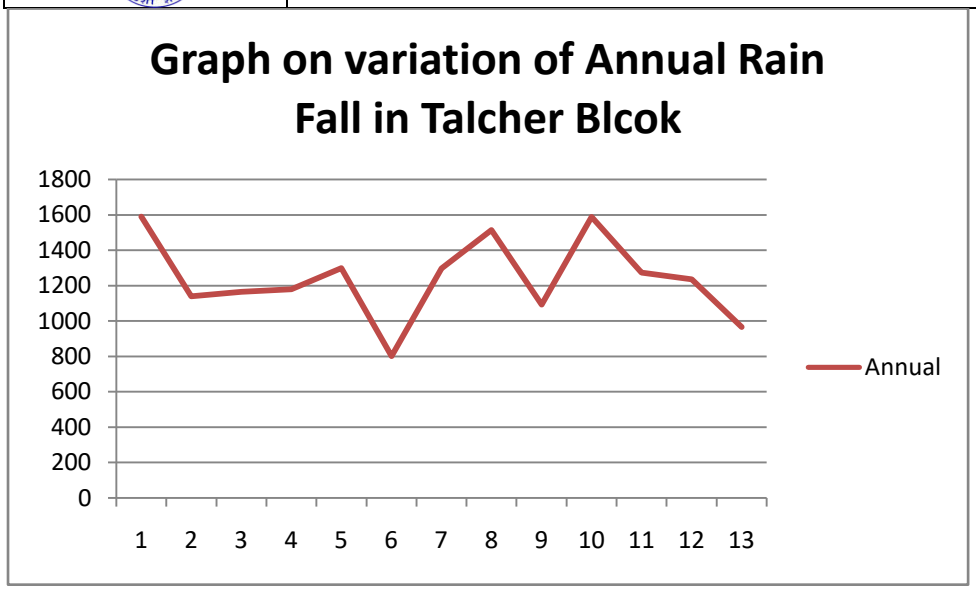


Talcher Block.

The Annual Rain fall of Talcher Block Area from the year 2005 to 2014 has been recorded as under the table. The average rain fall comes to 1266.29 mm as presented below in **table no. 1.4.4**

Table no-1.4.4

Year	Jan	Feb	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
2005	28	0	19	26	53	217	607	173	182	276	8	0	1589
2006	0	0	13	42	93	184	220	406	159	22	0	0	1139
2007	0	0	0	34	85	99.6	288	174	427	39	18	0	1165
2008	52	0	1	25	70	219	232	266	288	27	0	0	1180
2009	0	0	0	0	76	83	682	166	142	126	23	0	1298
2010	3	0	6	0	121	75	188	233	112	23	1	40	802
2011	0	20	20	52	83	209	160	278	444	30	0	0	1296
2012	111	40	0	0	35	127	324	442	333	31	71	0	1514
2013	0	15	31	8	60.1	153	269	103	159	294	0	0	1092
2014	0	26	40	6	164	51	687	338	276	0	0	0	1588
2015	18	5	0	25	24	252	398	267	187	35	0	63	1274
2016	0	17	86	0	67.2	80	335	423	132	94	2	0	1236
2017	0	0	47	0	97	152	170	156	157	166	22	0	967
AVG	16.3	9.46	20.2	16.8	79.1	146	351	263	231	89.5	11.2	7.92	1242

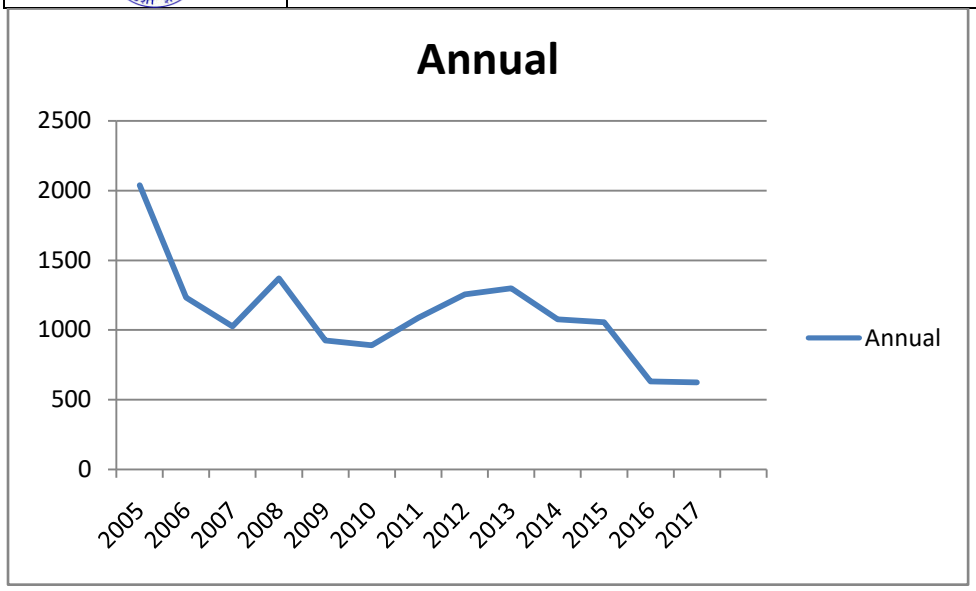


Kaniha Block.

The Annual Rain fall of Kaniha Block Area from the year 2005 to 2014 has been recorded as under the table. The average rain fall comes to 1219.11 mm as presented below in **table no. 1.4.5**

Table no-1.4.5

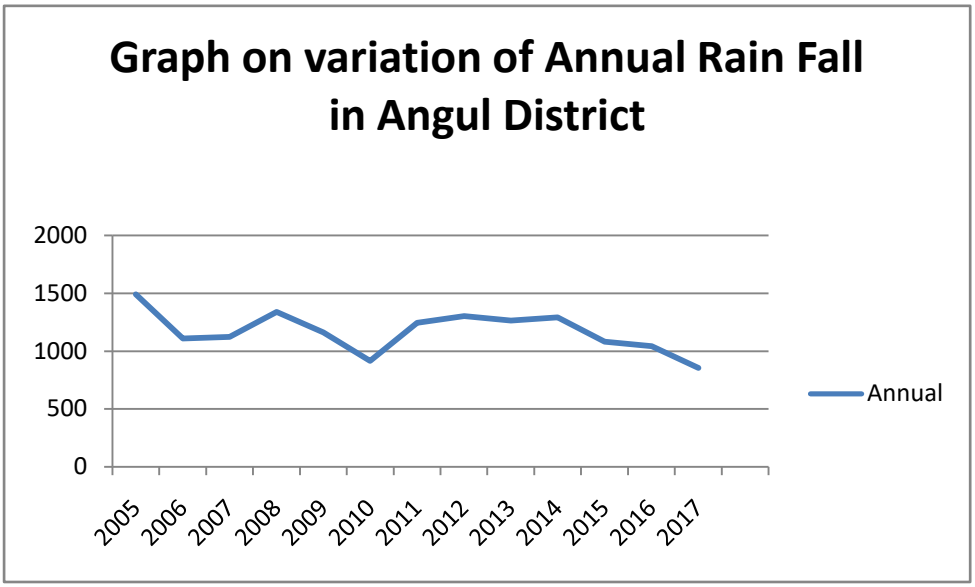
Year	Jan	Feb	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
2005	20	5	7	14	10	466	844	147	154	370	0	0	2037
2006	0	0	48	6	83	108	283	490	185	25	3	0	1231
2007	0	20	16	45	24	199	221	202	259	40	0	0	1026
2008	20	5	0	18	88	351	258	246	343	40	0	0	1369
2009	0	0	0	0	66	75	479	97	54	131	22	0	924
2010	2.5	0	19	0	89	36	218	309	126	50	2	38	890
2011	0	9	35	37	60	138	155	179	456	18	0	0	1087
2012	76	6	0	0	2	59.7	338	377	251	81	64	0	1255
2013	1	1	12	26	35.8	279	322	190	83	348	0	0	1298
2014	0	33	28	7	72	86	447	247	155	0	0	0	1075
2015	15	0	7	18	84	166	403	183	138	16	0	24	1054
2016	0	3	8	2	17	104	176	220	37	64	0	0	631
2017	1	0	1	0	5	52	157	206	93	94	14	0	623
AVG	10.4	6.31	13.9	13.3	48.9	163	331	238	180	98.2	8.08	4.77	1115



Taking Average rain fall of above five nos of representative stations (at block headquarter from the year 2005 to 2014 the average rain fall of Angul Forest Division is 1222.793mm. It is observe very low rain fall during the year 2006 & 2010. The data of average rain fall as under as presented below in **table no. 1.4.6**.

Year	Jan	Feb	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
2005	20	1.16	20.1	18.9	39	212	606	113	189	263	6.4	0.2	1490
2006	0	0	25	24.2	85.4	177	218	416	141	18.9	1	0	1106
2007	0.32	9.2	14.5	37.6	70.8	166	228	208	357	23.4	7.28	0	1122
2008	48.8	3.44	3.06	19.8	49.8	287	260	294	347	24.4	0	0	1337
2009	0	0	4.38	0	47.4	64.3	591	174	105	146	27.2	0	1160
2010	1.5	0	18.4	1.28	100	75.9	221	254	120	72.9	9.8	38.9	914
2011	0	21.1	16.8	53.2	69.2	177	110	329	444	23.2	0	0	1243
2012	99.5	16.9	0	0	22	104	296	373	263	51.9	75.6	0	1302
2013	3.44	7.52	10.6	24.7	50.3	220	308	162	166	311	0	0	1264
2014	0	23.9	27.8	7.64	113	82.9	510	255	271	0	0	0	1291
2015	15.2	4.48	3.6	26.7	37.5	199	351	227	161	20.6	0	34	1081
2016	0	17.7	40.2	2.84	68	128	251	357	100	70.1	6.64	0	1042
2017	1.08	0	25.9	0.76	39.7	153	166	204	139	105	20	0	853
AVG	14.6	8.11	16.2	16.7	61	157	317	259	216	87	11.8	5.62	1170

Table no-1.4.6 Average Rain fall Data of Angul Forest Division



The rain fall is sporadic by the south west monsoon. It accelerates by the low pressure occurring in the Bay of Bengal. On an average there are 72 rainy days in a year and average rain fall in the Division is 1170 mm in last ten years which is comparatively less in comparison to preceding plan for the period from 2007-08 to 2016-17. It is observed that most of rain water from the surface are immediately drained out by rill, gully, nala, stream to river as a result water table is not rising and moisture content become very less in the forest area which adversely affect the existing forest crop and future regeneration.

1.4.3 Temperature

Summer is experienced with rise in temperature in the month from 3rd week of February to 2nd week of June. Summer months are very hot and maximum day temperature varies from 39^0 C to 48^0 C and some times in the month of May it goes beyond 48^0 C. In the October &mid November the day temperature remains up to 33^0 C, while the night temperature falls and night become cooler. December is the coolest month experienced when temperature during night varies between 9^0 C to 13^0 C. Some times during December & January severe cold is felt due to western wind blow from North India & temperature falls up to 7^0 C in Angul District.

Extreme heat during summer is being experienced in the last few years in & around in Talcher & Angul town due to deforestation for mining activities, different developmental activities, establishment of Large plant like NTPC at Kaniha, TTPS at Talcher, JITPL at Kaniha, NALCO at Angul, BHUSAN at Meramandali, GMR at Kamalang, JSPL at Parang, MONNET at Nisha and other small industries. Open Cast Coal mines, burning of coal, exposure rock, and boulder& Fire occurrence in coal stock yard increases temperature in this area.

Increase in temperature during summer is adversely affecting the growth of forest crop & its regeneration as presented below in **table no. 1.4.7.**

Table no-1.4.7

Monthly MET data of Angul

Year	Month	Temperature in degree Celsius		
		Maximum	Minimum	Average
1	2	3	4	5
2005	January	28.7	10.9	34.15
	February	32.8	14.2	39.9
	March	36.6	18.2	45.7
	April	39	22.2	50.1
	May	41.3	26.9	54.75
	June	40	28.5	54.25
	July	33.7	23.3	45.35
	August	32.5	25.3	45.15
	September	32.3	24.6	44.6
	October	32.3	21.8	43.2
	November	28.9	20.7	39.25
	December	26.6	14.1	33.65
2006	January	29.4	13.3	36.05
	February	35.7	15	43.2
	March	35.8	22.1	46.85
	April	39.2	26.4	52.4
	May	38.2	27.5	51.95
	June	36	22.6	47.3
	July	32.7	21	43.2
	August	30.9	19.6	40.7
	September	32.7	21	43.2
	October	33.6	14.4	40.8
	November	28.7	18.3	37.85
	December	29.4	16	37.4
2007	January	29.8	14.6	37.1
	February	32.2	16.3	40.35
	March	35.6	16.9	44.05
	April	29.9	24.2	42
	May	29.2	25.6	42

	June	36.1	25.9	49.05
	July	33.69	25.2	46.29
	August	32.8	24.9	45.25
	September	32	24.5	44.25
	October	32.2	20.5	42.45
	November	30	17	38.5
	December	29.1	13	35.6
2008	January	28.7	13.1	35.25
	February	29.4	15.6	37.2
	March	35.6	20.3	45.75
	April	38.8	23.5	50.55
	May	40.7	25.9	53.65
	June	33.2	24.5	45.45
	July	31.9	24.7	44.25
	August	21.7	24	33.7
	September	31.5	24	43.5
	October	32.6	21.7	43.45
	November	29.8	17.1	38.35
	December	29.2	14.2	36.3
2009	January	21.3	13.9	28.25
	February	34.4	17.9	43.35
	March	37.5	19.3	47.15
	April	42.1	24.6	54.4
	May	40.5	25.2	53.1
	June	40.4	26.3	53.55
	July	21.3	24.4	33.5
	August	33.5	25	46
	September	33.6	24.5	45.85
	October	32.2	19.7	42.05
	November	31.1	17.2	39.7
	December	28.1	12.4	34.3
2010	January	27.6	11.4	33.3
	February	33.1	15.3	40.75

	March	38.4	21.2	49
	April	42.9	25.5	55.65
	May	39.4	24.9	51.85
	June	38	23.5	49.75
	July	33.5	22	44.5
	August	31.6	21.3	42.25
	September	32.5	22.4	43.7
	October	32	21.2	42.6
	November	DNA	DNA	
	December	26.6	13.9	33.55
2011	January	25.3	14.7	32.65
	February	34.2	15.3	41.85
	March	39.4	22.3	50.55
	April	41.8	24.5	54.05
	May	42.2	27.8	56.1
	June	39.3	25.3	51.95
	July	31.2	21.8	42.1
	August	29.6	21.2	40.2
	September	27.2	20.2	37.3
	October	23.4	19.8	33.3
	November	21.2	17.2	29.8
	December	20.7	15.5	28.45
2012	January	22.6	14.9	30.05
	February	33.2	16.8	41.6
	March	36.5	20.4	46.7
	April	41.8	30.3	56.95
	May	43.2	34.2	60.3
	June	40.4	31.8	56.3
	July	27.5	30.6	42.8
	August	25.2	27.2	38.8
	September	22.2	25.5	34.95
	October	21.3	24.3	33.45
	November	20.2	18	29.2

	December	19.1	15.2	26.7
2013	January	21.5	14.6	28.8
	February	25.6	16.3	33.75
	March	33.2	17.9	42.15
	April	35.7	24.8	48.1
	May	40.2	27.2	53.8
	June	39.1	25.8	52
	July	33.69	21.2	44.29
	August	31.8	20.8	42.2
	September	30.6	19.5	40.35
	October	27.5	19.8	37.4
	November	25.5	19.5	35.25
	December	33.1	14.5	40.35
2014	January	25.7	13.1	32.25
	February	29.3	15.8	37.2
	March	33.8	21.1	44.35
	April	37.2	27.5	50.95
	May	41.2	33.9	58.15
	June	35.8	28.2	49.9
	July	33.2	24.7	45.55
	August	27.7	23.2	39.3
	September	26.2	22.8	37.6
	October	25.8	21.7	36.65
	November	21.5	15.8	29.4
	December	20.2	13.2	26.8
2015	January	27.6	11.4	33.3
	February	33.1	15.3	40.75
	March	38.4	21.2	49
	April	42.9	25.5	55.65
	May	39.4	24.9	51.85
	June	38	23.5	49.75
	July	33.5	22	44.5
	August	31.6	21.3	42.25

	September	32.5	22.4	43.7
	October	32	21.2	42.6
	November	27.6	11.4	33.3
	December	33.1	15.3	40.75
2016	January	25.7	13.1	32.25
	February	29.3	15.8	37.2
	March	33.8	21.1	44.35
	April	37.2	27.5	50.95
	May	41.2	33.9	58.15
	June	35.8	28.2	49.9
	July	33.2	24.7	45.55
	August	27.7	23.2	39.3
	September	26.2	22.8	37.6
	October	25.8	21.7	36.65
	November	21.5	15.8	29.4
	December	20.2	13.2	26.8
2017	January	21.5	14.6	28.8
	February	25.6	16.3	33.75
	March	33.2	17.9	42.15
	April	35.7	24.8	48.1
	May	40.2	27.2	53.8
	June	39.1	25.8	52
	July	33.69	21.2	44.29
	August	31.8	20.8	42.2
	September	30.6	19.5	40.35
	October	27.5	19.8	37.4
	November	25.5	19.5	35.25
	December	33.1	14.5	40.35

1.4.4 Relative Humidity

The atmosphere remains humid during the rainy season and in the months of October and November. It is around 80 percent in July, August, and September. In other months, it varies between 60-70 %. The humidity reduces towards March, April, and May and is minimum in March. In summer afternoons, the relative humidity varies between 25 to 40 %. An account of relative humidity for the last ten years from 2005 to 2014 of Angul district is given in **Table No. – 1.4.8.**

Table No. – 1.4.8 Monthly MET data on relative humidity Angul

Year	Month	Relative Humidity in %		
		08.30 hrs	17.30 hrs	Average
1	2	3	4	5
2005	January	57	54	55.5
	February	62	41	51.5
	March	66	48	57
	April	68	51	59.5
	May	65	44	54.5
	June	61	51	56
	July	79	81	80
	August	76	74	75
	September	76	81	78.5
	October	74	77	75.5
	November	61	60	60.5
	December	60	60	60
2006	January	58	52	55
	February	43	40	41.5
	March	51	52	51.5
	April	60	43	51.5
	May	68	54	61
	June	64	58	61
	July	68	62	65
	August	80	65	72.5
	September	79	62	70.5
	October	59	54	56.5
	November	62	47	54.5
	December	51	47	49
2007	January	64	58	61
	February	61	61	61
	March	61	50	55.5
	April	57	45	51
	May	50	48	49
	June	71	70	70.5
	July	88	66	77
	August	81	74	77.5
	September	78	77	77.5
	October	73	75	74
	November	58	62	60
	December	65	62	63.5
2008	January	82	74	78
	February	83	74	78.5
	March	77	73	75

	April	69	58	63.5
	May	62	61	61.5
	June	59	52	55.5
	July	77	71	74
	August	82	79	80.5
	September	80	74	77
	October	75	67	71
	November	77	72	74.5
	December	81	78	79.5
2009	January	80	75	77.5
	February	69	54	61.5
	March	68	59	63.5
	April	68	54	61
	May	68	55	61.5
	June	59	58	58.5
	July	79	75	77
	August	77	70	73.5
	September	75	73	74
	October	77	73	75
	November	76	70	73
	December	79	64	71.5
2010	January	72	62	67
	February	78	56	67
	March	80	56	68
	April	76	47	61.5
	May	75	63	69
	June	78	63	70.5
	July	74	67	70.5
	August	70	67	68.5
	September	74	70	72
	October	72	65	68.5
	November	DNA	DNA	DNA
	December	71	77	74
2011	January	73	65	69
	February	75	59	67
	March	78	59	68.5
	April	77	50	63.5
	May	72	66	69
	June	68	66	67
	July	73	70	71.5
	August	75	70	72.5
	September	69	73	71
	October	72	68	70
	November	72	70	71
	December	71	77	74
2012	January	78	72	75

	February	66	51	58.5
	March	66	58	62
	April	66	51	58.5
	May	66	52	59
	June	57	55	56
	July	77	72	74.5
	August	75	68	71.5
	September	72	70	71
	October	75	70	72.5
	November	72	68	70
	December	75	62	68.5
2013	January	68	60	64
	February	65	63	64
	March	65	52	58.5
	April	61	47	54
	May	54	50	52
	June	75	72	73.5
	July	92	68	80
	August	85	76	80.5
	September	82	79	80.5
	October	76	77	76.5
	November	62	64	63
	December	69	64	66.5
2014	January	88	78	83
	February	89	76	82.5
	March	87	75	81
	April	77	60	68.5
	May	68	63	65.5
	June	67	54	60.5
	July	84	73	78.5
	August	84	81	82.5
	September	86	76	81
	October	81	79	80
	November	83	74	78.5
	December	87	80	83.5
2015	January	88	78	83
	February	89	76	82.5
	March	87	75	81
	April	77	60	68.5
	May	68	63	65.5
	June	67	54	60.5
	July	84	73	78.5
	August	84	81	82.5
	September	86	76	81
	October	81	79	80
	November	83	74	78.5

	December	87	80	83.5
2016	January	68	60	64
	February	65	63	64
	March	65	52	58.5
	April	61	47	54
	May	54	50	52
	June	75	72	73.5
	July	92	68	80
	August	85	76	80.5
	September	82	79	80.5
	October	76	77	76.5
	November	62	64	63
	December	69	64	66.5
2017	January	68	60	64
	February	65	63	64
	March	65	52	58.5
	April	61	47	54
	May	54	50	52
	June	75	72	73.5
	July	92	68	80
	August	85	76	80.5
	September	82	79	80.5
	October	76	77	76.5
	November	62	64	63
	December	69	64	66.5

CHAPTER - 2

2. Maintenance / Increasing the extend of Forest and Tree Cover

2.1 Areas of Forest under different legal classes (RF, PRF, PF,VF and Others)

The area of different legal classes such as RF, PRF, VF, PF etc are as per notification is given under the table. This plan cover forests situated in 87 Reserved Forests Blocks having area 51357.137 ha., 29 Protected Reserved ForestBlocks having area of 21845.631 ha., 5 nos. Demarcated Protected Blocks having area of 488.068 ha., Protected Forest over 3 nos. having area of 206.814 ha. & 91 nos. Village Forest with an area of 694 ha in table no. 2.1 to 2.5.

Table – 2.1 List of forest area details RF of Angul Forest Division

Sl.No	Name of the forest block	Legal status, RF/PRF/DPF	Area as per Notification in Ha	Notification No.
1	2	3	4	8
1	Antulia- Tabda	RF	2324.192	1597 dt.20.03.1894
2	Arakhadahi	RF	738.173	14927 dt.16.09.1963
3	Arisulia - Sulia	RF	145.692	1003/75 dt.25.01.1976
4	Badadandasahi	RF	294.622	967/75 dt.l5.0l.l976
5	Badakathia	RF B	1257.403	14927 dt.16.09.1963
6	Bahianali	RF	68.394	357/80 dt.25.04.1980
7	Baishnabaragudi	RF	58.196	51 dt. 09.04.1919
8	Balaramprasad	RF	43.404	1024/75 dt. 15.01.1976
9	Bandhuli	RF B	291.384	51.dt 09.04.1919
10	Baragounia	R.F.	80.839	302/79 dt.14.02.1979
11	Bhana	RF	54.635	5l dt.09.04.1919
12	Bhogpal	RF	198.910	988/79 dt.l.l0.l979
13	Biripal	RF	1295.040	599 dt.05.05.1905
14	Bolonga (P)	R.F.	3111.998	1597 dt.20.03.1894
15	Bramhanbil	RF	208.421	393/81 dt.01.06.1981
16	Budhia	RF	95.105	599 dt.05.05.1905
17	Bulajhar	RF	1620.419	784 dt. 19.07.1896
18	Chandrapada	RF	339.657	51.dt 09.04.1919
19	Chhendipada	RF	1770.158	400/80 dt 25.05.1980
20	Derjang-Golabandha(P)	RF	166.160	6/99-ll772/R dt.08.03.2000
21	Dhankoili	RF	718.747	599 dt.05.05.1905
22	Durgapur	RF	3660.916	1597 dt.20.03.1894
23	Durgapur (A)	RF	46.702	1597 dt.20.03.1894
24	Durgapur Danda	RF	247.676	599 dt.05.05.1905
25	Gengutia	RF	38.924	51 dt. 09.04.1919
26	Godigotha	RF B	369.086	14927 dt.16.09.1963

27	Gohiradanda	RF	27.398	51.dt 09.04.1919
28	Gopalprasad	RF	174.021	784 dt. 29.07.1896 & 2566 dt. 04.08.1896
29	Gumpha	RF	49.373	9179 dt.09.03.1906
30	Guranga	RF	49.778	241/80 dt.15.04.1980
31	Hirapur R.F.B	RF	284.099	14927 dt. 16.09.1963
32	Jaghani	RF	25.901	51.dt 09.04.1919
33	Jaltap	RF	471.071	361/80 dt.25.04.1980
34	Jaypore	RF	488.675	347/79 dt.01.05.1979
35	Kaliakata	RF	200.731	246/8l dt.15.04.1981
36	Kandhakurudu	RF	63.133	372/81 dt.01.06.1981
37	Kandhal	RF	211.253	305 dt. 17.07.1912
38	Kanheijena	RF	946.998	506 dt. 31.03.1902
39	Kankurpal	RF	1016.121	373/81 dt.01.06.1981
40	Kanloi	RF	2042.521	1597 dt.20.03.1894
41	Kanteikulia R.F.B	RF	350.956	14927 dt. 16.09.1963
42	Katada	RF	3183.289	2351 dt.12.06.1896
43	Kauchiakhol R.F.B	RF	545.131	14927 dt. 16.09.1963
44	Khajuria	RF B	518.016	14927 dt.16.09.1963
45	khalpal	RF	102.794	392/81 dt.01.06.1981
46	Kiajhar	RF	284.909	599 dt.05.05.1905
47	Kosala	RF	244.344	315/79 dt.15.04.1979
48	Kuio	RF	564.152	305/79 dt.15.4.1979
49	Kuio-Sakasinga	RF	137.598	1012/75 dt. 25.01.1976
50	Kukurkhai	RF	19.426	51.dt 09.04.1919
51	Kumanda-Talataila	RF	55.671	1253/76 dt.15.01.1977
52	Langalkhol R.F.B	RF	111.293	14927 dt. 16.09.1963
53	Madhapur	RF	229.870	974/75 dt.15.01.1976
54	Makundanali	RF	160.237	51 dt. 09.04.1919
55	Malibrahmani	RF	154.284	1033/87 dt.20.08.1984
56	Mandargiri-Kalima	RF	586.730	37l/8l dt.1.06.l98l
57	Mankadachua	RF	438.695	9179 dt.09.03.1906
58	Matharagadi	RF	46.945	51 dt.09.04.1919
59	Nanda	RF	92.150	340/80 dt.25.04.1980
60	Nandapur-Berhampur	RF	40.470	874/76 dt.20.09.l976
61	Nialu- Lodhajhari & Sapakata	RF	1495.771	14927 dt.16.09.1963
62	Nisa	RF	610.692	100l/75 dt.25.01.l976
63	Nuabhuin	RF	271.958	51 dt. 09.04.1919

64	Nuakheta RF	R.F.	3011.777	1597 dt.20.03.1894
65	Paranga	RF	258.199	1000/75 dt.25.0l.l976
66	Pattakhaman	RF B	485.640	14927 dt.16.09.1963
67	Pedi	RF B	563.342	51.dt 09.04.1919
68	Petachira-Pathuria	RF	607.050	305 dt. 11.07.1912
69	Pital Hill	R.F	26.306	51 dt.09.04 1919
70	Poipal Danda (Dalak)	R.F	702.559	14927 dt.16.09.1963
71	Putagadia	RF	70.418	1142/76 dt.20.12.1976
72	Rabipur R.F.B	RF	1251.332	14927 dt. 16.09.1963
73	Rakas R.F.B	RF	487.259	14927 dt. 16.09.1963
74	Rameswar hil	R.F	79.192	51 dt.09.04.1919
75	Sachi	R.F	106.841	599 dt.05.05.1905
76	Sadarkhol	R.F	1165.536	9179 dt.09.03.1906
77	Saharagoda	RF	184.422	309/79 dt. 15.04.1979
78	Saleimada	R.F	364.230	5l dt.09.04.1919
79	Santrabandha	R.F B	174.830	14927 dt.16.09.1963
80	Saradhapur	R.F	137.193	599 dt.05.05.1905
81	Seepur R.F.B	RF	310.810	14927 dt. 16.09.1963
82	Silakhani (Phulajhari)	R.F	946.998	599 dt.05.05.1905
83	Silling 'A'	RF	77.702	599 dt. 05.05.1905
84	Similipathar	RF	4014.624	1597 dt.20.03.1894
85	Similisahi	RF	307.977	28747 dt.30.05.1985
86	Sorispal	RF	222.585	1242/76 dt.20.12.l976
87	Tangiri	R.F	259.008	5l dt.09.04.1919
	Total		**51357.137**	

Table – 2.2 List of forest area details PRF of Angul Forest Division

Sl.No	Name of the forest block	Legal status, RF/PRF/DPF	Area as per Notification in Ha	Notification No.
1	Balanga	P.R.F.	55.849	189/65. 77461/R dt. 04.12.65
2	Burti	PRF	2958.357	218/65. 78531/R dt. 08.12.65
3	Chandanpur	PRF	470.262	215/65. 78749/R dt. 09.12.65
4	Dandasingha-Bhagatpur	PRF	178.068	172/65. 77404/R dt. 04.12.65
5	Dangapal	PRF	835.706	204/65. 78470/R dt. 08.12.65
6	Dera	PRF	93.587	379/81. 31232/R dt. 07.05.1984
7	Derjang-Golabandha	PRF	8.670	177/65. 78449/R dt. 04.12.65
8	Devinagar	PRF	3318.135	216/65. 78722/R dt. 09.12.65

9	Durgapur	PRF	97.937	171/65. 77412/R dt. 04.12.65
10	Hinsar-Sorispal	PRF	779.048	175/65. 77469/R.
11	Kalapat	PRF	1202.364	dt. 04.12.65
12	Kandhaberini	PRF	240.999	380/81.31236/R dt. 07.05.1984
13	Kangulei	P.R.F.	52.514	180/65. 77460/R dt. 04.12.65
14	Kanloi	PRF	86.606	178/65. 77452/R dt. 04.12.65
15	Kerjang	PRF	498.590	217/65. 78730/R dt.09.12.65
16	Krushnachakra	PRF	2430.628	199/65. 78726/R. dt.09.12.65
17	Kulasingha	PRF	625.262	219/65. 78738/R dt.09.12.65
18	Kurudu	PRF	842.585	196/65. 78416/R dt. 08.12.65
19	Marudhipa	PRF	1800.915	383/81. 31252/R dt. 08.05.84
20	Nunmati	PRF	516.397	384/81. 91540/R dt. 08.05.84
21	Para	PRF	986.254	382/81. 91245/R dt. 08.05.84
22	Pathargarh	PRF	1688.004	186/65.78436/R dt. 08.12.65
23	Pitachari	PRF	521.254	170/65. 77477/R dt. 04.12.65
24	Pokunda	PRF	375.562	212/65.8531/R dt.08.12.65
25	Rodasingha	PRF	139.622	173/65. 77424/R dt. 04.12.65
26	Sibarampur	PRF	307.928	381/81.31240/R dt. 07.05.1984
27	Sudagolasar	PRF	75.679	172/65. 77404/R dt. 04.12.65
28	Sunarijharan	PRF	457.311	207/65. 78718/R dt. 09.12.65
29	Tabada	PRF	201.541	169/65. 78509/R dt. 08.12.65
	Total		**21845.634**	

Table – 2.3 List of forest area details DPF of Angul Forest Division

Sl.No	Name of the forest block	Legal status, RF/PRF/DPF	Area as per Notification in Ha	Notification No.
1	2	3	4	8
1	Chakundapal	DPF	205.992	Not yet notified U/S-4
2	Ganthigadia 'A'	DPF	130.03	Not yaet notified U/s - 4
3	Ganthigadia 'B'	DPF	31.850	Not yaet notified U/s - 4
4	Labangi	DPF	70.823	Not yet notified U/S-4
5	Talisara	DPF	49.373	Not yet notified U/S- 4
	Total		**488.068**	

Table – 2.4 List of forest area details PF of Angul Forest Division

Sl.No	Name of the forest block	Legal status, RF/PRF/DPF	Area as per Notification in Ha	Notification No.
1	2	3	4	5

1	Baudabeda	PF	33.722	68SRONo. 21/2010 Dt. 08.01.2010
2	Jukub	PF	4.860	825/F & E Dt. 13.01.2015
3	Talagarh, Kantamegha, Ragudiapada	PF	168.232	Letter no. 23547, 23533 & 23509 Dt. 03.11.2010
	Total		**206.814**	

Table – 2.4(a) Un-Classified Forest of Angul Forest Division

Sl. No	Name of the Range	Name of the location	Khata No.	Plot No.	Area in Acre	Remarks
1	2	3	4	5	6	7
1	Raiguda	Forest Rest house at Labangi	1	307	0.96	
2		Range Office -Cum-Quarter at Raigoda Range at Bantala	549	1160	1.47	
3		Out house to range Office at Bantala				
4		Forest Guard Shed at Bantala				
5		Marking Shed at Bantala (DWT) Raigoda range Office-I				
6		Raigoda DWT Range Office -II				
7		Forester Quarter Special Section of Raigoda Range, Bantala		3308	0.82	
8		Forester Quarter at Sankhapur of Raigoda Range.	505	1036	0.84	
9		Forest Guard Shed at Kanja		1343	0.11	
10		Pampasar Forest Guard Shed & R.I. Shed		42	0.15	
11		Forest Guard Beat at Pampasar		41	0.9	
12		Nuakheta F.R.H.	1	2192	0.54	
13		Nuakheta Marking Shed		1848 & 1849	0.2	
14		Raigoda F.R.H.	1	138 & 139	1.01	
15		Old Range Office Raigoda	1	147	1.28	
16		R.I.Shed Forest Guard shed	1	154 & 155	2.66	

		Raigoda				
17		F.R.H. Labangi	1	307	0.96	
18		F.G. Hurt, Kantamegha		561	0.06	
19		Forester Quarter at Labangi		194	0.07	
20		R.I. Hurt & F.G. Hurt Labangi		174, 175 ,176 & 177	1.11	
21		F.G. Hat & Check-naka hurt Nuakheta		73 & 74	0.19	
22		R.I. Hurt (Old range Quarter Nuakheta		217	1.31	
23		F.R.H. & hurt houses Raigoda		103	1.09	
24		R.I. Hurt, Forester Quarter, F.G. Quarter at Raigoda		109	5.65	
		Total			**21.38**	
1	Talcher & Kaniha	Gandamala F.G. Shed	316	2582	0.09	
2		F.G. Shed at Nialu Lodhajhari	90	1644	0.22	
3		F.G. Shed at Balipashi	21	709	0.04	
4		F.G. Shed at Rengali	42	980	0.16	
5		Bajrakote Beat House	521	4656	0.27	
6		Parabil F.G. Shed	362	5504/ 9738	0.3	
7		F.G. Shed at Kulei	9	657	0.08	
8		F.G. Shed at Bulajhar	89	1548	0.03	
9		F.G. Shed at Gaham	462	3270	0.04	
10		Forester Quarter at Seepur & F.G. Quarter at Seepur	576	2036	0.49	
11		Forester Quarter at Seepur & F.G. Quarter at Seepur				
12		Forest Guard Quarter at Sibarampur	7	455	0.06	
13		Forest Guard Shed, Samal	1	109	0.68	
14		Forester Quarter Dera Section		509	1.08	
15		Forest Guard Shed at Dera				
16		Forest Guard Shed Kandhaberani	153	134/1189	0.34	
17		F.G. Shed Kalamchhuin			0.4	
18		F.G. Shed at Saradhapur	34	339	0.1	
19		Dalak Village		519	0.1	
20		F.G. Shed Durgapur	1	1855	0.59	
21		Forester Quarter at Kaniha	113	3016	0.53	
22		F.G. Shed at Kaniha				

23		Sapakata F.G. Shed			0.04	
24		Range Office Cum-Quarter, Talcher	241	675/ 964	1.04	
		Total			**6.68**	
1	Jarapada Range	Kampasala Beat	1	1435	0.14	
2		Jalatap Beat	1	115	0.18	
3		Kosala Beat	1	4350	0.14	
4		Katada Beat	2/ 1	776/1545	0.02	
5		Bakala Beat	1	610	0.02	
6		Durgapur Beat	222	201	0.13	
7		Raijhran Beat	1	1461	0.31	
8		Jarapada Range office	1	1192	2.32	
9		Balipata	1	643	0.22	
10		Chhendipada	1	4420	0.5	
11		Kanaloi	1	849	0.12	
12		Dangapal	1	1993	0.11	
13		Basantpur	1	584&585	0.76	
14		Tentuloi	1	59	0.06	
15		Roadsingha Beat	1	634	0.14	
16		Antulia FRH	1	1236	0.92	
17		Antulia Beat	1	835	0.14	
		Total			**6.23**	
1	Purunakote Range	F.R.H at Baghamunda		187	2.17	
2		Forester & Forest Guard Quarter at Baghamunda		186	0.4	
3		Range Officer Quarter & Chouckidar Quarter		34	1.64	
4		Range Officer Quarter Rest Shed at Majhipada		140,141&190	1.23	
5		Forest Guard shed majhipada Tainsi		87, 52	0.19	
6		Forest Guard Shed Tainsi		473	0.62	
7		Range Officer Rest house & Quarter Tikarapada		342(P), 526	0.65	
8		F.G. Shed Tikarapada		487	0.1	
9		RO and F.G. Shed at kataranga		62,64,65,38,39&40	1.16	
10		FRH Range Office inspection shed & FG hot at Tuluka		164 & 165	2.02	
11		Forester Quarter at Tuluka		155	0.56	
12		F.G. Hot Chhotoki		95 & 71	0.18	

13		FRH Range Office, Forester, FG Quarter, store godown ofg Purunakote.		10 & 318	5.36	
14		Jaganathpur F.G. Qaurter		207 & 269	0.1	
15		Tikarapada Depot		445,618,519,446 ,520,462,522 & 521	10.289	
		Total			**26.669**	
1	Angul Range	Forester Quarter at Purunagarh	1	53	0.96	
2		Forester Quarter at Purunagarh	1	54	0.7	
3		Old Range Quarter at Purunagarh	1	95	0.31	
4		Old Range Plot at Purunagarh	67	103	0.18	
5		Forest Guard Quarter at Hinsar Beat	1	476	0.31	
6		Clerk Quarter	1	253	0.4	
7		Clerk Quarter	1	241(197,199)	1.28	
8		Range Officer Quarter	1	575(82,95)	0.31	
9		Mooney Forest Guard Training School at Angul	1	948(430/A, 431/A)	36.63	
10		Conservator of Forests, Angul (Residence)	1	1600, 1601, 1602	22	
11		Divisional Forest Officer & Bungalow		44,64,47,448	6.33	
12		Forest Barrack (Sub-ordinate rest house)		3,87,589	0.26	
13		F.G. Hurt and Ros rest hurt., Jaganathpur		2,07,269	0.1	
14		Range Officers hurt at Nisha		196	0.04	
15		F.G. Hurt Paranga		501	0.1	
16		F.G. Hurt karatapata-II		1,89,280	0.28	
17		F.G. Hurt Pokunda		59,131	0.36	
18		F.G. Hurt Kulsar		110/222 (152)	0.2	
19		F.G. Quarter & F.G. Hurt Purunagarh Karamangasahi		49,54	0.49	
20		F.G. Shed Chandrabahal		1,37,31,510	0.25	
21		F.G. Hurt Kuio		172/1767, 252, 253,254,255, 297,298,299,300	0.11	
22		F.G. Hurt Ganthigadia		6/283	0.4	

23		Clerk Quarters 5th set		229	0.4	
24		Office Chouckidar hurt Angul		174	0.01	
25		Residence of A.C.F. Angul		452/1	0.5	
		Total			**72.91**	
	GRAND TOTAL				**133.9**	**or 54.20 ha.**

Table – 2.5 List of forest area details VF of Angul Forest Division

Sl.No	Name of the forest block	Legal status, RF/PRF/DPF	Area as per Notification in Ha	Notification No.
1	Atrapada	VF	10	19412 dt.04.11.1991
2	Badagunduri	VF	5	29570 dt.09.12.1992
3	Badahar	VF	10	19412 dt.04.11.1991
4	Badahar	VF	12.52	19412 dt.04.11.1991
5	Badahar	VF	4.83	19412 dt.04.11.1991
6	Badatribida	VF	5	19412 dt.04.11.1991
7	Balipata	VF	0.25	2861 dt.03.01.1993
8	Banabaspur	VF	14	3764 dt.18.02.1992
9	Barapali	VF	4.55	3764 dt.18.02.1992
10	Barapali	VF	3.84	3764 dt.18.02.1992
11	Bedasasan	VF	1.38	2861 dt.03.01.1993
12	Belpada	VF	5	3764 dt.18.02.1992
13	Bhagirathipur	VF	13.5	2861.dt.03.01.1993
14	Bikisar	VF	5	3764 dt.18.02.1992
15	Bilinda	VF	30	3764 dt.18.02.1992
16	Brahmanbil	VF	5	29570 dt.03.01.1993
17	Brahmanbil	VF	5	29570 dt.03.01.1993
18	Budakera	VF	5	10536 dt.15.04.1993
19	Chakundapal	VF	5	29570 dt.03.01.1993
20	Chhelia	VF	10	3764 dt.18.02.1992
21	Chitalpur	VF	10	19412 dt.04.11.1991
22	Danara	VF	6.78	2861.dt.03.01.1993
23	Dumduma	VF	10	3764 dt.18.02.1992
24	Gopalprasad	VF	2.13	3764 dt.18.02.1992
25	Gundurinali	VF	6	19412 dt.04.11.1991
26	Gurjanga	VF	5	3764 dt.18.02.1992
27	Inkarbandha	VF	1.52	2861 dt.03.01.1993
28	Inkarbandha	VF	0.71	2861 dt.03.01.1993
29	Jadunathpur	VF	10	3764 dt.18.02.1992
30	Jadunathpur	VF	10	3764 dt.18.02.1992
31	Jamunali	VF	0.6	2861 dt.03.01.l993
32	Jamunali	VF	17.57	1804 dt.02.04.1993

33	Jamunali	VF	10	1804 dt.02.04.1993
34	Jarada	VF	10	3764 dt.18.02.1992
35	Jarasingha	VF	3	1804 dt.02.04.1993
36	Jarasingha	VF	1.02	2861 dt.03.01.1993
37	Jhulakhuntia	VF	10	3764 dt.18.02.1992
38	Joragadia	VF	1.18	3764 dt.18.02.1992
39	Joragadia(kuria)	VF	6.43	3764 dt.18.02.1992
40	Jukub	VF	4	1804 dt.02.04.1993
41	Kaliakata	VF	10	29570 dt.09.12.1992
42	Kandhabereni	VF	10	3764 dt.18.02.1992
43	Katarapada	VF	10	29570 dt.03.01.1993
44	Katrapalli	VF	10	3764 dt.18.02.1992
45	Kuluma	VF	20	29570 dt.09.12.1992
46	Kuluma	VF	30	10536 dt.15.04.1993
47	Kumanda	VF	5	1804 dt.02.04.1993
48	Kuruhuni	VF	4.27	2861.dt.03.01.1993
49	Lodhabandha	VF	5	10536 dt.15.04.1993
50	Lokeipasi	VF	0.48	2861.dt.03.01.1993
51	Lokeipasi	VF	0.58	2861.dt.03.01.1993
52	Mahuliapasi	VF	8.66	19412 dt.04.11.1991
53	Malibandha	VF	5.48	3764 dt.18.02.1992
54	Malibrahmani	VF	10	29570 dt.09.12.1992
55	Mardharipur(kumunda)	VF	8	3764 dt.18.02.1992
56	Natada	VF	6	1804 dt.02.04.1993
57	Nisa	VF	10	1804 dt.02.04.1993
58	Nisa	VF	5	1804 dt.02.04.1993
59	Nua-Jarasingha	VF	2.73	286l.dt.03.01.1993
60	Olanda	VF	5	3764 dt.18.02.1992
61	Padmabatipur	VF	4.43	3764 dt.18.02.1992
62	Padmbatipur	VF	1.21	2861.dt.03.01.1993
63	Phulapada	VF	5	1804 dt.02.04.1993
64	Phulpada	VF	4	1804 dt.02.04.1993
65	Raghunathpur	VF	20	3764 dt.18.02.1992
66	Ranjagola	VF	12	3764 dt.18.02.1992
67	Ranjagola	VF	15	3764 dt.18.02.1992
68	Rankasingha	VF	4	2861 dt.03.01.1993
69	Rengali	VF	8	10536 dt.15.04.1993
70	Rutubhuin	VF	8	3764 dt.18.02.1992
71	Rutubhuin	VF	8	3764 dt.18.02.1992
72	Sahadagoda	VF	3	2861 dt.03.01.l993
73	Samal	VF	10	3764 dt.18.02.1992
74	Samal	VF	5	3764 dt.18.02.1992
75	Samal	VF	5	3764 dt.18.02.1992

76	Sanhar	VF	10	19412 dt.04.11.1991
77	Santarabandha	VF	5	29570 dt.03.01.1993
78	Santribida	VF	15	19412 dt.04.11.1991
79	Santribida	VF	8	19412 dt.04.11.1991
80	Sarangi	VF	15	3764 dt.18.02.1992
81	Sibarampur	VF	12.08	3764 dt.18.02.1992
82	Sibarampur	VF	3	3764 dt.18.02.1992
83	Sibarampur	VF	10	3764 dt.18.02.1992
84	Solada	VF	5	3764 dt.18.02.1992
85	Solada	VF	5.27	3764 dt.18.02.1992
86	Solada	VF	29	2861.dt.03.01.1993
87	Sunakhani	VF	5	3764 dt.18.02.1992
88	Surendrapur	VF	1	2861 dt.03.01.1993
89	Susab	VF	3	2861 dt.03.01.1993
90	Tubey	VF	5	1804 dt.02.04.1993
91	Tumuni	VF	3	1804 dt.02.04.1993
	Total		**694**	

Table 2.5 (a) Abstact as per Govt. notification

Sl.No	**Status (Notified area)**	**Area in Ha**
1	Reserve Forest	51357.137
2	Proposed Reserve Forest U/S 4(I) of O.F.A	21845.634
3	Demarcated Protected Forest	488.068
4	Protected Forest	206.814
5	Un classified Forest	54.2
6	Village Forest	694.0
	Total	**74645.85ha.**

Table 2.5 (b) Abstact as per approved outgoing working plan

Sl.No	Status (Notified area)	Area in Ha
1	Reserve Forest	48625.798
2	Proposed Reserve Forest U/S 4(I) of O.F.A	20803.096
3	Demarcated Protected Forest	407.580
4	Protected Forest	206.814
5	Village Forest	694.0
	Total	**70737.288ha.**

2.1.2 Forest Consolidation.

2.1.2.1 The consolidation of forests has been grossly neglected in the past. In fact, only one further RF blocks could be notified during the outgoing plan and even in the intervening period though 29 numbers of PRFs and another 5 numbers DPFs blocks have been pending. All the pending blocks need to be notified u/s 21 of OFA during this plan period. Utmost priority is to be given to this work and a phased programme is to be drawn and pursued vigorously with the Collector/Forest Settlement Officer (FSO) for final notification of all such blocks as RF for better and intensive forest management. More over, large patches of good forest are existing in Angul, Jarapada, Chhendipada and Bantala Ranges without any demarcation. Further other forest areas as per DLC report and borne in the Revenue records especially large areas with good tree growth should also be converted to RF/PFs for better management. New reservation proposals for areas having good forest cover and/ or coming within the identified wildlife corridor should also be submitted after proper survey, demarcation on the ground and mapping.

2.1.2.2 As DPFs and PRFs have been notified long back i.e. more than four decade, these blocks may need fresh re-demarcation to ascertain their exact location, size and area. In fact, in many such blocks, the boundary lines are not traceable leading to confusion in the field. These blocks need to be re-demarcated in consultation with the FSO and assistance should be provided to the FSO to complete his enquiry so that the final notification is facilitated. It should be sincerely pursue all the pending proposals and facilitate the notification in a fixed time frame. Since in all 34 number of such blocks are to be attended to, every year at least 10 number of the blocks shall be pursued by the DFO for their declaration as Reserved Forests. Besides, new proposals for notification as RFs during the plan period shall also be dealt with promptly. Special experienced person headed by ACF of the division may be engaged for consolidationworks for facilitated the notification in time. The progress /pending of Forest consolidation works of the division is furnished in table no. 2.6 and 2.7

Table 2.6 Progress of Consolidation Work In Angul Forest Division

Sl No.	Description		Proposal	
			Number	Area (ha)
1	Potential Forest Block not surveyed		-	-
2	Forest Block surveyed but pending at various level			
	A	Range Officer	05	488.0682
	B	Divisional Forest Officer	-	-
	C	PCCF Orissa	-	-
	D	Collector	-	-
	E	Revenue Divisional Commissioner	-	-
	F	Director, land reform and survey	-	-
	G	Board of Revenue	-	-
	H	Forest and Environment department	-	-
	I	Revenue Department	-	-
	Sec-4 notified forest Blocks being processed for sec-21 notification by F.S.O as follows under item No.3			

3	A	Under section -6	01	8.670
	B	Under section -11	10	12567.437
	C	Under section -12	08	3807.673
	D	Under section -15	05	2024.311
	E	Under section -16	02	2258.226
	F	Rejected by FSO	-	0
4	Recommended by FSO for Sec-21 notification		03	879.317
	Total -3 & 4		29	21545.634
	Total Block – 2,3 & 4		34	22033.7022
5	Forest Blocks recommended for Sec-21 by FSO but pending at various level			
	A	Collector		
	B	Revenue Divisional Commissioner		
	C	Director, Land Reforms & survey		
	D	Board of Revenue		
	E	Forest & Environment department		
	F	Revenue Department	03.	879.317
6	Position of Reserve Forest Area			
	A	Beginning of the Month	87	51357.137
	B	Notified under section -21 during the Month	Nil	-
	C	Reserve Forest Area at the end of the Month	87	51357.137

Table 2.7

Sl No.	Stage of Pendency	Name of the Forest block		Area (ha)	Pending with	Since when	Remarks
2A	Sec-4 Notification	1	Labangi	70.8225	PCCF. Orissa		
	-do-	2	Talsira	49.3734	-do-		
	-do-	3	Chakundapal	205.9923	-do-		
			Total area	**326.1882**			
3B	Range Level	1	Roadsingha	139.622	R.Os.		
		2	Kurudu	842.585	R.Os.		
		3	Dangapal	835.706	R.Os.		
		4	Devinagar	3318.135	R.Os.		
		5	Burti	2958.357	R.Os.		
		6	Krushnachakra	2430.628	R.Os.		
		7	Bolang	55.849	R.Os.		
		8	Para	986.254	R.Os.		
		9	Durgapur-B	97.937	R.Os.		
		10	Kalapata	1202.364	R.Os.		
		11	Ganthigadia-A	80.94	R.Os.		
		12	Ganthigadia-B	80.94	R.Os.		
			Total area	**13029.317**			

3C	At joint verification	1	Kanloi	86.606	F.S.O.		
		2	Sibrampur	307.928	F.S.O.		
		3	Dera	93.587	F.S.O.		
		4	Kandhaberini	240.999	F.S.O.		
		5	Pukunda	375.562	F.S.O.		
		6	Pathrgarh	1688.004	F.S.O.		
		7	Nunamati	516.397	F.S.O.		
		8	Kerjenga	498.590	F.S.O.		
			Total area	**3807.673**			
3D	Joint verification completed.	1	Sudaagolaswer	75.679	F.S.O.		
		2	Pitachari	521.254	F.S.O.		
		3	Dandasingha-Bhagatpur	178.068	F.S.O.		
		4	Sorisapal – hinsar	779.048	F.S.O.		
		5	Chandanpur	470.262	F.S.O.		FSO directed to rectify the map
			Total area	**2024.311**			
3E	For rectification of maps.	1	Sunarijharan	457.311	R.Os.		Under process.
		2	Marudhipa	1800.915	R.Os.		-do-
			Total area	**2258.226**			
4	For notification U/S 21.	1	Kulasinga	625.262	Govt. of Orissa, Revenue Deptt.		
		2	Kanguloi	52.514	-do-		
		3	Tabada	201.541	-do-		
			Total area	**879.317**			

2.2. Forest area under different working circle/management plan

2.2.1 Area adopted in Revised Working Plan.

The GIS area of the forest block are taken in consideration of management fold. Out of total GIS area of 87 RF, 29 PRF, 5 DPF, 3 PF and 91 VF. The total GIS area is 70737.288 ha., out of the GIS area 4750.163 ha. transfer to Satkosia Tiger Reserve, 1191.6457 ha. diverted under Forest Conservation Act & 185.429 ha. under Misc. Regulation. Thus 6127.237 ha.are excluded from the total GIS area. So 64610.0503 ha.of area are taken in the revised management plan. The details of notified area, GIS area excluded area is appended in **Appendix – III.**

2.2.2 Range wise forest area under different working circle involving the revised working plan.

The outgoing working plan of Angul Forest Division has been prepared by Mr. Arjun Behera, WPO, Baleswar working plan division for the period from 2007-08 to 2016-17. On sample plot survey it is observed the canopy density/ crop density has been improved in some of forest blocks. So these forest blocks has included in improvement working circle. It is because of timely implementation and monitoring, prevention measure for fire incident and active participation of local people during the intervening period. In the revised working plan legal status wise involved in different working circle as under the **Table .2.8.**details of distribution area in different working circle is appended **in Appendix. IV.**

Table 2.8Forest area under different working circles involved in the revised working plan in ha.

Range	RF/ PRF /DPF	Improvement WC	Rehabilitation WC	Plantation WC	Protection WC	Total	Bamboo (OL) WC	Wild life (OL) WC	NTFP (OL) WC	JFM (OL) WC
Angul	RF	1154.768	1839.679	687.862	744.117	4426.426	0	4426.426	4426.426	4312.76
	PRF	5877.433	2508.399	1032.01	850.983	10268.825	1933.208	10268.825	10268.825	5357.139
	DPF	0	0	0	0	0	0	0	0	0
	PF	0	4.86	0	0	4.86	0	4.86	4.86	4.86
	VF	0	0	100.92	0	100.92	0	100.92	100.92	100.92
	Total	**7032.201**	**4352.938**	**1820.792**	**1595.1**	**14801.031**	**1933.208**	**14801.031**	**14801.031**	**9775.679**
Bantala	RF	0	55.634	15	1264.453	1335.087	1264.453	1335.087	1335.087	1335.447
	PRF	0	46.009	20	33.522	99.531	53.522	99.531	99.531	79.531
	DPF	0	0	46	73.524	119.524	119.524	119.524	119.524	69.96
	PF	0	168.232	0	0	168.232	0	168.232	168.232	168.232
	VF	0	0	17.67	0	17.67	0	17.67	17.67	17.67
	Total	**0**	**269.875**	**98.67**	**1371.499**	**1740.044**	**1437.499**	**1740.044**	**1740.044**	**1670.84**
Chhendipada	RF	5612.464	448.961	973.82	2590.851	9626.096	0	9626.096	9626.096	7071.11
	PRF	0	4484.927	497.572	0	4982.499	0	4982.499	4982.499	4823.4
	DPF	0	178.821	0	0	178.821	0	178.821	178.821	178.821
	PF	0	0	0	0	0	0	0	0	0
	VF	0	0	20	0	20	0	20	20	20
	Total	**5612.464**	**5112.709**	**1491.392**	**2590.851**	**14807.416**	**0**	**14807.416**	**14807.416**	**12093.331**
Jarapada	RF	6325.956	157.53	1288.27	422.665	8194.421	3142.494	8194.421	8194.421	5220.798
	PRF	365.962	4086.415	390	0	4842.377	0	4842.377	4842.377	3822.784
	DPF	0	0	0	0	0	0	0	0	0
	PF	0	0	0	0	0	0	0	0	0
	VF	0	0	0.25	0	0.25	0	0.25	0.25	0.25
	Total	**6691.918**	**4243.945**	**1678.52**	**422.665**	**13037.048**	**3142.494**	**13037.048**	**13037.048**	**9043.832**
Kaniha	RF	4315.825	5769.7806	1575.858	0	11661.464	0	11661.464	11661.464	8281.25
	PRF	0	0	0	0	0	0	0	0	0
	DPF	0	0	0	0	0	0	0	0	0
	PF	0	0	33.722	0	33.722	0	33.722	33.722	33.722
	VF	0	0	214.51	0	214.51	0	214.51	214.51	214.51
	Total	**4315.825**	**5769.7806**	**1824.09**	**0**	**11909.696**	**0**	**11909.696**	**11909.696**	**8529.482**
Talcher	RF	3693.711	2486.1887	763.492	314.912	7258.3037	0	7258.3037	7258.3037	5317.648
	PRF	240.559	295.805	73.5	0	609.864	0	609.864	609.864	559.864
	DPF	0	54.998	51	0	105.998	0	105.998	105.998	84.997
	PF	0	0	0	0	0	0	0	0	0
	VF	0	0	340.65	0	340.65	0	340.65	340.65	340.65
	Total	**3934.27**	**2836.9917**	**1228.642**	**314.912**	**8314.8157**	**0**	**8314.8157**	**8314.8157**	**6303.159**
G. Total		**27586.678**	**22586.239**	**8142.106**	**6295.027**	**64610.05**	**6513.201**	**64610.05**	**64610.05**	**47416.323**

2.3 Percentage of Forest with secured boundaries.

State of Boundary: -

2.3.1Length and nature of boundaries: The length of boundary is 1369.6KMs along with number of pillars and length of forest blocks has been furnished in the table no. 2.3.1.

Table No. – 2.3.1

Legal status	No of Forest Blocks	Total length of artificial exterior boundary in KMs	Total length of natural boundary in KMs	Nos. of pillars	Total length of boundary in KMs
RF	87	933.05	55.07	7783	988.12
PRF	29	340.98	15.70	2798	356.68
DPF	5	24.8	0	166	24.8
Total	**121**	**1298.83**	**70.77**	**10747**	**1369.6**

2.3.2 As per prescription of previous plan of Shri B.P.Singh, IFS and Arjun Behera, OFS-I. The artificial forest boundary coinciding with division boundary shall be cleared to a width of 15 meters (50feet) and rest to a width of 9 meters (30feet). This prescription is retained for future boundary line clearance in this plan too. Artificial exterior boundary of forest blocks including village rings is demarcated with pillars made up of stone cairns with a wooden post having a notch bearing number in centre. There is no mention regarding size of pillars in previous plan. The common boundaries of reserved forest blocks are not maintained at all but the common boundary of reserved blocks and demarcated blocks are maintained. The inter division boundary has not cleared since a long period due to indistinguishable boundary line from neighboring areas in many forest blocks of Angul, Bantala, Chhendipada, Jarapada, Kaniha & Talcher Ranges.

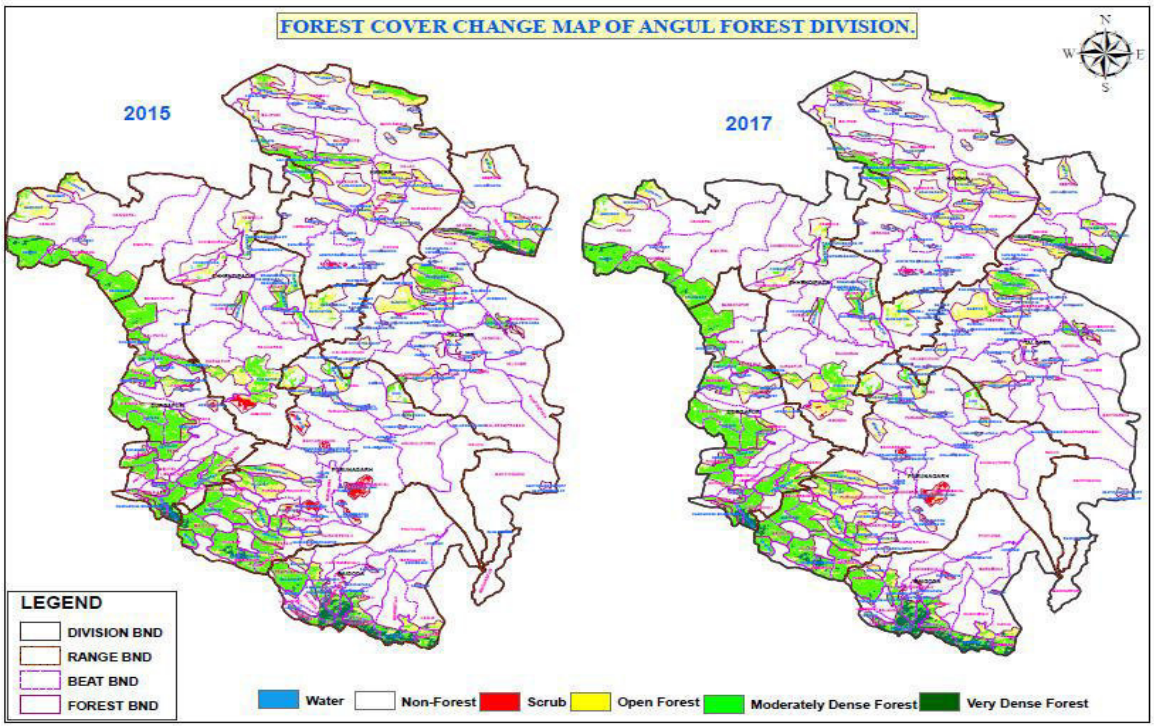
2.3.3 Maintenance of boundaries**:** Inspite of the prescription for regular maintenance of boundary in previous plan of Dr. C.R.Mohapatra, Sri B.C. Mohapatra (Talcher Plan), and revised working plan of Shri B.P. Singh, IFS, the condition of the boundaries has not improved except in a few forest blocks. The inter Divisional boundaries have also not been maintained since long. Recently, the Divisional Forest Officer has taken steps to maintain reserved forest boundaries in a phased manner. Significant work have been done in boundary maintenance and posting of pillars in all Forest Block. A statement showing details of boundary maintenance is presented at **Appendix- V**.

2.3.4. The total boundary length of Reserve Forest in this division is 988.12 Kms. Which included 7783 boundary pillars. Out of which 873 Kms have been maintained in the outgoing plan period. Out of 7783 boundary pillars 4162 pillars existing are existingwith good condition and 1419 pillar has to be repaired and 2192 pillar have to be newly posted.

The total boundary length of Protected Reserved Forest in this division is 356.98 Kms. Which included 2798 boundary pillars. Out of which 312 Kms have been maintained in the outgoing plan period. Out of 2798 boundary pillars 1293 pillars existing and 1027 pillar have to be repaired and 478 pillar have to be newly posted.

The total boundary length of Demarcated Protect Forest in this division is 24.8 Kms. Which included 166 boundary pillars. Out of which 12 Kms have been maintained in the outgoing plan period. Out of 166 boundary pillars 34 pillars existing and 102 pillar haveto be repaired and 30 pillar have to be newly posted.

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



Forest Cover Change in Angul Division:

Name Of Division-Angul			
Type of Forest Cover	FC Data - 2015 Area in ha	FC Data - 2017 Area in ha	Forest Cover Change Between 2015-2017
VDF	5123.61	5127.57	3.96
MDF	37220.16	37138.92	-81.24
OF	42503.67	44410.56	1906.90
Total	84847.44	86677.05	1829.61
% GA	30.05	30.70	0.65
Scrub	4134.73	3199.10	-935.62
NF	187142.45	187720.56	578.10
Water	6239.52	4767.42	-1472.10
Total Geographical Area	282363.84		

Name Of Range-Purunagarh			
Type of Forest Cover	FC Data - 2015 Area in ha	FC Data - 2017 Area in ha	Forest Cover Change Between 2015-2017
VDF	722.84	725.01	2.17
MDF	7898.91	7875.06	-23.85
OF	5660.85	6383.81	722.96
Total	14282.60	14983.89	701.28
% GA	26.69	28.00	1.31
Scrub	1858.78	1269.50	-589.28
NF	36291.96	36504.82	212.86
Water	1084.83	759.96	-324.87
GA	53518.17		

Name Of Range-Kaniha			
Type of Forest Cover	FC Data - 2015 Area in ha	FC Data - 2017 Area in ha	Forest Cover Change Between 2015-2017
VDF			
MDF	3832.36	3821.19	-11.17
OF	12899.15	12930.23	31.07
Total	16731.51	16751.41	19.90
% GA	34.96	35.01	0.04
Scrub	317.72	334.59	16.86
NF	28177.65	28737.45	559.80
Water	2625.76	2029.20	-596.56
GA	47852.64		

Name Of Range-Durgapur			
Type of Forest Cover	FC Data - 2015 Area in ha	FC Data - 2017 Area in ha	Forest Cover Change Between 2015-2017
VDF	402.73	403.36	0.63
MDF	10419.94	10412.71	-7.23
OF	3883.32	4424.43	541.10
Total	14706.00	15240.50	534.50
% GA	51.00	52.85	1.85
Scrub	975.81	715.99	-259.82
NF	13046.58	12833.44	-213.14
Water	106.85	45.31	-61.54
GA	28835.24		

Name Of Range-Talcher			
Type of Forest Cover	FC Data - 2015 Area in ha	FC Data - 2017 Area in ha	Forest Cover Change Between 2015-2017
VDF	912.90	913.79	0.89
MDF	3993.39	3985.83	-7.55
OF	9516.14	9608.54	92.39
Total	**14422.43**	14508.16	85.73
% GA	23.42	23.56	0.14
Scrub	143.99	145.02	1.04
NF	45065.27	45430.97	365.70
Water	1959.39	1506.92	-452.46
GA	61591.07		

Name Of Range-Raigoda			
Type of Forest Cover	FC Data - 2015 Area in ha	FC Data - 2017 Area in ha	Forest Cover Change Between 2015-2017
VDF	2504.82	2508.44	3.63
MDF	4291.13	4287.74	-3.39
OF	2443.47	2521.52	78.05
Total	9239.42	9317.71	78.29
% GA	33.65	33.94	0.29
Scrub	195.39	226.22	30.83
NF	18011.90	17899.42	-112.48
Water	10.01	13.38	3.36
GA	27456.72		

Name Of Range-Chhendipada			
Type of Forest Cover	FC Data - 2015 Area in ha	FC Data - 2017 Area in ha	Forest Cover Change Between 2015-2017
VDF	580.33	576.97	-3.36
MDF	6784.44	6756.39	-28.05
OF	8100.72	8542.04	441.32
Total	15465.49	15875.40	409.91
% GA	24.51	25.16	0.65
Scrub	643.04	507.79	-135.25
NF	46549.09	46314.46	-234.63
Water	452.67	**412.64**	-40.03
GA	63109.99		

2.4 Land use pattern

2.4.1 In the division the forest area is in major proportion. The total forest area as per DLC report is 104121.736 ha. This constitutes 35.78 % of the total geographical area (290954.2 ha.) of the division. Net sown area for agriculture is 85024 ha. Fallow lands are present over an area 61932 ha. The detailed land use pattern in five blocks is given in the Table No: 1.4.

2.4.2 Maximum people are marginal farmers (54.34%), having control over 22.38% of land. Small farmers constitute 30.88% of the farming community and they have control over 34.35% of land. Large farmers having average land holding 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 percentage of people in different categories and the area operated by them are given in Table No: 2.4.1. The details furnished in the table are the average figures of Angul district.

Table No : 2.4.1 LAND UTILISATION PATTERN (in Ha)

Category	Angul	Banarpal	Chhendipada	Kaniha	Talcher	Total
Misc. Tree Crops	858	257	2253	593	813	4774
Pasture & Grazing Lands	2497	1467	3360	1864	253	9441
Culturable Waste	1389	1265	1884	3191	712	8441
Non-Agricultural Use	4868	5169	4157	6671	6129	26994
Barren& Uncultivable Land	1375	731	1135	1332	62	4635
Current Fallow	3087	3167	9878	3594	1941	21667
Other Fallows	5351	3190	5490	3041	1526	18598
Net Sown Area	21203	17961	22434	16047	7379	85024

Source: District Statistical Handbook, 2001

Table: 2.4.2 DETAILS OF SIZE OF OPERATIONAL HOLDINGS

Category	All Social Groups			Scheduled Caste		Scheduled Tribes	
Type	Avg. area	% People	% Area	% People	% Area	% People	% Area
Marginal	0.5 - 1.0	54.34	22.38	9.1	3.27	8	3.06
Small	1.0 - 2.0	30.88	34.35	3.1	3.31	4.53	4.96
Semi-medium	2.0 - 4.0	11.73	26.61	1	2.21	1.5	3.32
Medium	4.0 - 10	2.74	12.62	0.1	0.44	0.28	1.23
Large	10 - 20 & Above	0.31	4.04	0.004	0.04	0.013	0.15
Total		100	100	13.304	9.27	14.323	12.72

Source: District Statistical Handbook, 2001

2.4.3 In the division, there are 133390 ha of cultivable area. This includes 74988 ha of high land, 36268 ha of medium land and 22134 ha of low land. It is seen that the proportion of high and medium lands are more in Chhendipada block and low lands are more in Angul & Banarpal block. The number of farm families are more in Angul block , next followed by Banarpal block. The details are given in the **Table No: 2.4.3**

Table No : 2.4.3 EXTENT OF CULTIVABLE AREA (in Ha)

Block	Geographical Area	Cultivable Area				No of Farm Families
		High	Medium	Low	Total	
Angul	109379	17525	9785	5800	33110	20686
Banarpal	62863	14392	7798	4961	27151	20673
Chhendipada	59746	20247	10033	4371	34651	19438
Talcher	33625	5021	4192	3200	12413	18694
Kaniha	66678	17803	4460	3802	26065	16316
Total	332291	74988	36268	22134	133390	95807

Source : District Gazetteer Angul – 2005

2.4.4 In the division, there is one major irrigation project (Rengali Multipurpose Project) constructed at Rengali. In stage – II construction of the said project, a barrage has been constructed at Samal near Talcher to provide industrial water use and extend irrigation facilities on either bank of river Brahmani in Angul, Dhenkanal, Jajpur , Cuttack and Keonjhar district. There are two medium irrigation projects in the division; one is Derjang Irrigation Project constructed across river Ningara & Matalia near Majhika village in Angul and the second is Aunli Irrigation Project constructed across river Aunli near village Kanloi in Chhendipada block. These two irrigation projects have culturable cultivable area (CCA) of 9138 ha during Kharif. The block wise details of irrigation potential created in the division are given below in **Table No: 2.4.4**

Table: 2.4.4 IRRIGATION POTENTIAL OF ANGUL DIVISION

Block	Major /Medium irrigation (in Ha)		Minor irrigation (in Ha)		Lift irrigation (in ha)	
	Kharif	Rabi	Kharif	Rabi	Kharif	Rabi
Angul	1490	500	2977	30	450	455
Banarpal	5807	1800	142	----	525	546
Chhendipada	1746	450	4210	60	308	364
Kaniha	106	----	674	----	705	624
Talcher	54	----	242	----	285	246
Total	9203	2750	8245	90	2273	2235

Source: Statistical Hand Book,2001

2.4.5 Cropping Pattern

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-Pulses-Groundnut etc are taken.

2.4.6 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, Mustard, Sunflower, Sugar cane, Potato, Onion, Garlic and Coriander etc. In this division, pulses production like Mung, Biri, Arhar is predominant. Onion is cultivated in bulk and sold to outside. The important horticultural crops grown in the division are Mango, Banana, Orange, Lemon, etc.

2.5 Threats to the forest

2.5.1 Illicit felling.

Exploding human population is the main cause of depletion of forest resources through illicit felling and removal; uncontrolled grazing; encroachment; girdling and lopping; setting of forest fires; felling of trees for collection of honey, leaves, fruits and barks. Most of the forest blocks are surrounded by thickly populated villages in which poverty and unemployment has widened its base.

The Divisional 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, which has a great impact in reducing at-least the movement of timber through vehicles.

2.5.2 Forest Fire: Forest fires globally are considered as one of the major factors of climate change, biodiversity loss and increase in global temperature due to production of biological carbon and green house gasses. In the tropical deciduous forests of Orissa, fire is a recurrent phenomenon due to higher levels of water stress during summer.

2.5.3 Encroachments: It is a serious problem in this division especially in Talcher, Kaniha, Chhendipada and Angul Range. These are encroachments either for agricultural, homestead land or for mining.

2.5.4 Grazing by Domestic Animals: Severe damage is caused to the forest crop by grazing of domestic animals. With the increase of human population, population of cattle has also tremendously increased. These large herds of cattle and buffalos are kept by villagers not only for ploughing agricultural field or pulling carts or getting milk but also to get more dung for use in field. These cattle are let loose for grazing and browsing. This uncontrolled grazing and browsing causes severe damage to plantations, natural regeneration and thus leads to the replacement of mesophytic flora by relatively more xerophytes, dry and thorny ones that can withstand grazing and hacking and is giving rise to erosion of soil. Heavily grazed forests have very little palatable fodder and in the process of grazing branches of trees, poles and bamboos are lopped regularly, seedlings trampled and soil compacted with the result that re-establishment of vegetation becomes more and more difficult. All the blocks of the division are prone to heavy grazing and browsing The poor ground regeneration in sapling and pole stage are the out come of the excessive grazing. Excessive and uncontrolled grazing in these forests at present rate will not only curtail and even destroy the fodder resources with all its consequences to rural economy but will also lead to accelerated soil erosion which will first endanger the cultivated field itself. The greater stress to control and regulate grazing has to be laid but remedy lies in making grazing more expensive, giving more stress on growing fodder, replacing large unproductive herds by a few productive cattle and introducing stall feeding and making it popular.

2.5.5 Wild animals: Damage to bamboo clumps and culms, debarking of Sal poles and trees by elephants, browsing of Sal saplings and coppice shoots by Chital, Sambhar, Nilgai, Gaur are the type of damages caused to crop by wild animals mainly in Bantala and Jarapada Range. Damages by bears, pigs, rodents and porcupines are not uncommon in the above ranges but to a very small extent. On the whole damage by wild animals, is not posing any threat to forest management.

2.5.6 Insects: The damages caused to the forests and plantations by defoliators, borers and other insect pests have not been estimated quantitatively. However certain amount of damages are caused to the crop by following insects.

1. Hoploceramby yspinicornis - (Sal Heart wood boror) causes damage to Sal trees.
2. Weevel cytotrachelus longipes -Causes damage to top of new bamboo Culm.
3. Estigueno chinensis -Causes tunneling of inter nodes of new culms.
4. Hapalia machaerlis -Causes damage to teak leaves attack more in Sept-Oct.
5. Hyblaea pleura (Teak defoliator) -Causes damage to teak leaves attack more common

Extent of damage by first three are very less while damage by the fifth is more in Division than that of the fourth.

2.5.7 Climbers:*Millettia extensa* (arkala) is the most common climber of Sal forest. *Bauhinia vahlii* (Siali) is next in abundance and occurs all along sal forest. *Combretum roxburghii* (Atundi) is another climber occurring throughout the division in abundance. *Zizyphus oenoplea* is prevalent throughout the division either in form of undergrowth or climber. Another prevalent climber is *Butea superba* (Laipalas). These climbers cause appreciable damage to pole crop of Sal and other trees. The attack of these climbers is increasing as no

climber cutting operations are being carried out systematically. Generally climbers are cut in approachable portion of coupes near road and allowed to infest heavily in other portions. Other climbers of importance are *Acacia sinuate* (Dantari), *Smilax ovalifolia*,(Muturi), *Entada phoseoloides* (Gila) and also seen throughout the Division. Dantari and Muturi are seen more in damp areas near nallah. There are many climbers of medicinal value found in Division such as *Dioscorea bulbifera* (Pitaalu), *Cryptolepis buchanani* (Gopkanu),*Asparagus racemosus* (Satabari) ,*Hemidesmus indicus* (Anantamula).

2.5.8 Weeds: *Eupatorium* is the main weed suppressing plantations in Bantala Range when Teak is raised after clear felling of natural forest. *Lantana* dominates in few forest blocks of Angul and Jarapada Range. These weeds have posed problem for eradication.

2.5.9 Climate: Adverse climate like drought, flood and storm causes calamities and affects badly both plantations and natural forests. Drought which is very common to division causes mortality of plantations, regenerations and kills even large trees. Floods are not very common and damage to crop is not much in the division. However storm causes sometimes damage by uprooting trees.

2.6 Distribution of different forest types

Classification of forests:

2.6.1 All previous Plans including B.P.Singh's Plan have adopted silvicultural classifications made by Champion and Seth in their Revised Survey of Forest Types in India,1962. The forests of Angul Division were broadly classified as 'Tropical Deciduous Forests' which was more moist than the forests of Sambalpur district but never approaches the dampness of forests of Puri Division. Tropical Deciduous Forests were further divided in to two sub-groups, moist and dry types which some times over lap each other. The types and sub-types of forests of Angul Division according to old classification are

Sub-group: - **3C - Noth Indian Moist Deciduous Forests**.

3C/c2e (ii) Moist Penninsular Low level Sal (average density 50%)

Sub-group: - **5B - Nothern Tropical Dry Deciduous Forests**

i) 5B/c1c Dry Penninsular Sal bearing forests (average density 40%)

ii)5B/C2Northern Dry Mixed Deciduous Forests(average density 30%)

Dedgradation Stages:

iii) 5/DS1 Dry Deciduous & Scrub forest (average density 25%) Edaphic types:

iv) 5/E9 Dry Bamboo brake

Serial types:

v) 5/S1 Dry Tropical reverain forests.

2.6.2 FOREST TYPES:

Using satellite image spectral separability and ground data following forest types were mapped and equated within standard Champion & Seth's classification scheme (**Table No 2.6.1**). Champion & Seth's classification at level II is based on phenological pattern (Evergreen, Semievergreen, Deciduous) and level III Deciduous forest is divided based on presence or absence of Sal (*Shorea robusta*). Further level IV categorization is based on locale specific criteria in terms of locality, species composition and topographic factors (**Figure 2.6**). Range wise distribution of forest types was given **Table No 2.6.2.** Species and their corresponding families are given in **Table No 2.6.1. 2.6&2.6.3.** The forest block/ compartment wise forest type statistics of this division.

Figure No.2.6: Methodology for type classification

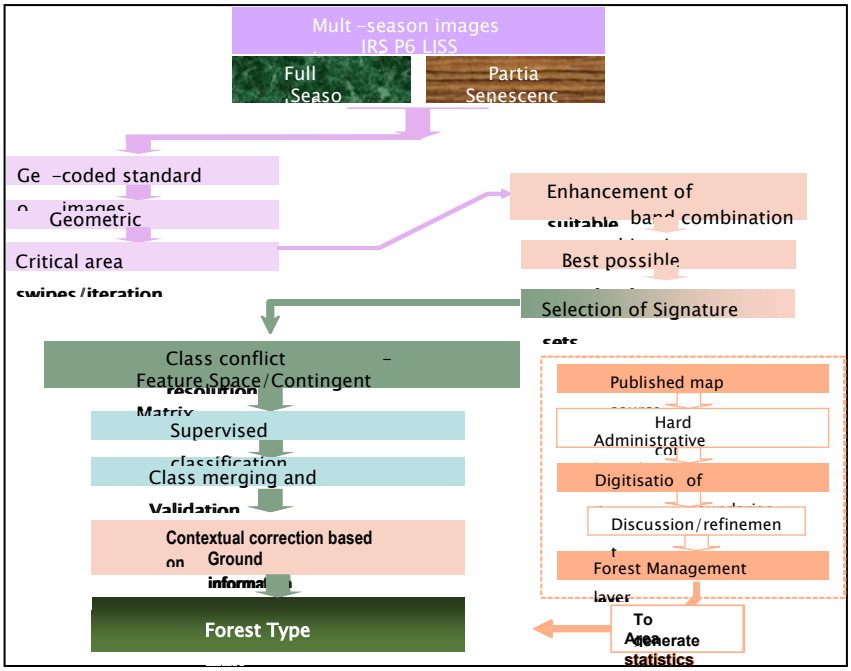


Table No 2.6.1 Forest types of Angul division (Champion & Seth's system)

SL. No.	Corresponding Classes		Code
	Level - III	Level - IV	
1	North Indian moist deciduous forests	Moist Peninsular Sal forest	3C/C2
2	Northern tropical dry deciduous forests	Northern Dry mixed deciduous forest	5B/C2
		Dry Deciduous Scrub	5DS1

Table No 2.6.2 Range wise distribution of Forest Types (Land cover in Ha.)

Name of the Range	Vegetation Types			
	North Indian Moist Deciduous Forest	Northern Dry Mixed Decidious Forest	Dry Deciduous Scrub	Grand Total (in ha.)
Angul	7398.398	5631.312	1771.321	14801.031
Bantala	1098.391	576.395	65.258	1740.044
Chhendipada	9198.039	4242.735	1366.642	14807.416
Jarapada	5679.32	5679.458	1678.27	13037.048
Kaniha	6975.652	3645.6726	1288.371	11909.6956
Talcher	4572.721	2445.4547	1296.64	8314.8157
Grand Total	**34922.521**	**22221.0273**	**7466.502**	**64610.0503**
Source: NRSA,Hyderabad)				

2.6.1.1 North Indian Moist Deciduous Forests:

In Angul division, North Indian moist deciduous forests are represented by Moist Peninsular Sal forest type. In these forests, top storey trees are typically deciduous trees. Lower storey is predominantly occupied by evergreen trees or shrubs. The forests mostly containing *Shorea robusta* (Sal) and which forms more than 10-66% of total crop and it was delineated using remote sensing data. The other co-dominant species are *Terminalia tomentosa, Cleistanthus collinus, Tectona grandis,Buchanania lanzan, Lannea coromandelica, Anogeissus latifolia Madhuca latifolia, Lagerstroemia parviflora, Diospyros melanoxylon*.

It is interesting to note the occurrence of *Tectona grandis* (Teak) in North Indian moist deciduous forests. According to Champion & Seth (1968), as a rule Sal and Teak does not overlap and they separated by miscellaneous *Cleistanthus collinus* dominated forests.

The shrubby layer consists of *Grewia hirsuta, Grewia disperma, Cipadessa baccifera, Clerodendrum viscosum, Woodfordia fruticosa, Helicteres isora,* and *Zyziphus oenoplia*. The common woody climbers in these forests are, *Milletia racemosa, Bauhinia vahlii, Cryptolepis buchanani, Butea superba*. Grasses like *Arundinella setosa, Thysanolaena maxima, Themeda triandra* form the ground cover. The common herbs of these forests are *Elephantopus scaber*, *Curculigo orchioides, Andrographis paniculata, Vernonia cinerea, Geodorum densiflorum, Hemigraphis hirta, H. latebrosa, Canscora heteroclita* and *Lindernia* spp.

Champion & Seth (1968) further categorized Moist Peninsular Sal forest of Orissa, into (i) Moist peninsular high level Sal, (ii) Moist peninsular low level Sal, and (iii) Moist peninsular valley Sal based on indicative species associations and elevation.

2.6.1..2 Northern Tropical Dry Deciduous Forests:

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.

Champion & Seth (1968) mentioned 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 and it rarely goes up to 10% of the total crop.

2.6.1.3 Northern dry mixed deciduous forest:

In these forests, *Cleistanthus collinus* is the predominant species. The other co-dominant species are *Anogeissus latifolia, Lannea coromandelica, Lagerstroemia parviflora, Diospyros melanoxylon, Terminalia tomentosa,Aegle marmelos* and *Pterospermum heyneanum.*

Helicteres isora, Thespesia lampas, Flemingia semialata, Indigofera cassioides etc. form the shrubby layer. *Bauhinia vahlii, Hemidesmus indicus, Calycopteris floribunda, Milletia racemosa, Butea superba* are the climbers of these forests. The common herbs of these forests are *Goniogyna hirta, Hybanthus enneaspermus, Indoneesiella echioides, Lindernia ciliata. Lindernia hyssopioides, Bulbostylis barbata, Tacca leontopetaloides, Canscora decussata, Evolvulus nummularius, Biophytum nervifolium* and *Desmodium triflorum.*

2.6.1.4 Dry Deciduous Scrub:

It is generally confined to the foot hills and along the fringes of forests. It is determined by factors like edaphic conditions, climate and biotic pressure in forests. It occupies mainly the drier parts. The vegetation presents a very open appearance and distinctly covered by widely spaced small trees or bushy shrubs.

In this type, three categories of vegetation was found viz. (a) the permanent low canopy vegetation occurring through out the year, with stunted trees and shrubs and (b) the seasonal vegetation consisting of the annuals growing mainly during rainy season and (c) Regenerating vegetation with scattered trees.

2.6.1.5 RESULTS AND DISCUSSION

The vegetation cover of the division was accounted to be 96% of total geographical area under management. Of the total vegetation cover, scrub occupies 11.55% of area.

Analysis of areal extent of forest cover statistics of Angul division indicates the predominance of Northern Moist Deciduous forest (54.05% of area). Of the 6 Ranges, Chhendipada, Angul and Jarapada bears proportionately high area under Sal Dominant Moist Deciduous Forests. Where as in Kaniha Range, Dry mixed deciduous forests occupy (34.39% of area).

2.7 Tree cover outside forest area

2.7.1 Assessment of the growing stock and the potential area for extension of forestry outside forests: -

To increase tree cover outside of forest area the line department like horticulture, Forest corporation made efforts by free distribution of seedlings to the villagers during outgoing plan which resulted excellent by planting forest species like Teak, Amla, Jamu, Neem, Karanja, Mango etc. details of seedlings districbuted under various scheme is furnished under

Table . 2.7.1

Year wise	Name of the organization	Name of Scheme (furnish scheme wise)	Seedlings distributed in lakh	Species Planted
2007-08	Horticulturist, Angul		0.11	Mango
	OFDC, Angul		0.225	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2008-09	Horticulturist, Angul		0.4854	Mango, Cashew
	OFDC, Angul		0.22475	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2009-10	Horticulturist, Angul		0.3514	Mango, Cashew, Amla
	OFDC, Angul		0.44075	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2010-11	Forest Department	CAMPA APO 2009-10	3.1	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0.47760	Mango, Cashew, Amla
	OFDC, Angul		.28050	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2011-12	Forest Department	State Plan – 13th FC Grant	5.0	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0	
	OFDC, Angul		0.47725	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2012-13	Forest Department	State Plan – 13th FC Grant	5.0	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0	
	OFDC, Angul		0.34250	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc

2013-14	Forest Department	State Plan – 13th FC Grant	7.4	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0	
	OFDC, Angul		.10150	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2014-15	Forest Department	Non Plan – 13th FC Grant	7.4	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		State Plan – Increase Tree Cover outside the Forest	7.0	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0	
	OFDC, Angul		0.05	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2015-16	Forest Department	State Plan – Increase Tree Cover outside the Forest	7.4	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		State – Plan Agro Forestry	7.0	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0.462	Mango, Cashew, Amla
	OFDC, Angul		0.04	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2016-17	Forest Department	State – Plan Agro Forestry	7.0	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		CAMPA Interest Money – Increase tree Cover outside Forest (TOF) Nursery for 2016-17	5.43	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		Shree Jagannath Bana Prakalpa	2.0	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0.4315	Mango, Cashew, Amla
	OFDC, Angul		0.2496	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2017-18	Forest Department	MGNREGS (Convergence)	0.33	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0.415	Mango, Cashew, Amla
	OFDC, Angul		0.5757	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc

2018-19	Forest Department	CAMPA-Wildlife-Site Specific Conservation Plan	0.48000	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		MGNREGS-AGRO-FORESTRY	2.04830	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		MGNREGS-TOF	0.50300	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
2019-20		Green Mohanadi Mission	1.15000	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		MGNREGS-Agro Forestry	2.87625	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		MGNREGS-TOF	1.50475	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		MGNREGS-Permanent Nursery	2.02390	Teak, Sisoo, Ghambar, Amla, Bamboo etc
	Total		**80.38665**	

2.7.2 Sustainable land use management within the geographical area of the forest division.

Assessment of tree covered outside forest area has not been done in the current working plan. There is how ever potential for extension of forestry outside the forest areas. As per District Level Committee report, an area of 1,04,121.736 ha. of forest under different categories is existing in the Division within total geographical area of 2909.542 SqKm. and, the present revision includes only 736.91 sq.km or 73690.836 ha(Notified Area). which works out to be over 70.77% of the total forest area of the Division. Thus, the remaining area of only 30,430.09 ha. is left, which the forest area, under the control of the Revenue department and private personal. These forests needs to be identified and slowly brought into the management fold. Un-surveyed land having forest, if any, should be located, surveyed and notified as PF/RF under OFA. Hence, expeditious steps shall be taken to consolidate all such good forests out of this left over area into RF blocks for intensive management. Besides above people shall be conscious to raise trees on their own land for meeting their demand and demand of their labour in ours of needs. Tree planting in all unutilized land shall be encouraged to made the people self dependant in respect of forest produced for the above propose department shall be supplied seedlings with nominal cost as per the demand and guidance shall be made for planting and its sustainability

2.8 Shifting cultivation (Jhumming)

Podu or shifting cultivation is not prevailing in this Division.

CHAPTER - 3

3. Maintenance, Coservation and Enhancement of Biodiversity

3.1. Forest Composition and distribution.

3.1 Composition and Condition of Crop

3.1.1 The tract of Angul Forest Division is situated within the tropical zone which is characterized as having mean annual temperature over 24 degree C and mean January temperature over 18 degree C and with no frost. Since most of precipitation is concentrated to monsoon months only which is rapidly drained out due to hilly and undulating topography of tract, the moisture content of soil remains low. Excessive transpiration due to prolonged summer further reduces the moisture content of the soil. On account of these factors, the habitat is dry and annual forest fire in summer makes it drier except in certain sheltered pockets. Due to prolonged dry season and insufficient moisture content of soil the vegetation met with is of deciduous type. Both moist and dry deciduous zones of vegetation are seen in the tract dealt with. Though the tract dealt within this plan is situated well inside sal belt but general character of vegetation is tropophilous with distinct tendency to xerophytic structure in many of its species. As per comparative analysis of 2006, 1988 and 1968 enumeration figures it is found that the species like Sal, Piasal, Sissoo, Bandhan, Gambhar, Mitkunia, Kurum, Asan, Siris, Bahada, Harida, Dhaura, Mahul are reducing in the proportion while Sidha, Amla, Char and other miscellaneous species are increasing in the proportion. Varying with the configuration of the ground, constitution of soil influencing its moisture retention capacity, past and present biotic influences, composition and quality of vegetation exhibit marked variation.

3.1.2 Sal is the main species in most of the forest blocks in moist and dry deciduous vegetation and it occurs in pure patches to rarely mixed in miscellaneous vegetation. Between these two extremes different proportion of Sal is found in forests of the Division. The maximum percentage of Sal is noticed in a few patches of Banatala block where it constitutes two third of the crop composition. Though Sal, a gregarious species, is seen even on hill tops of Bolong block, Kanloi block and Krushnachakra block in favourable sites mainly associated with Khondalite cap of hills, it is mostly confined to foot hills, valleys and sheltered pockets where moisture status of soil is moderate. Due to increasing dryness of the tract and decreasing moisture retention capacity of soil, both of which are interlinked, supported by increasing biotic interference. Sal is noticed to be disappearing from the drier tracts of the Division. Vegetation on hill slopes and upper portion is predominantly miscellaneous consisting of high proportion of Anogeissuslatifolia (Dhaura), Lanneagrandis (Moi), Boswelliaserrata (Salai), Cleistanthuscollinus (Karada) and Dalbergiapaniculata (Barabakulia). However Sal, which is the principal species, still constitutes a major proportion of the crop as compared to the miscellaneous species but undoubtedly its survival and status, particularly regeneration status, has deteriorated over the years due to excessive biotic interference.

3.1.3 Except in portions of the Division where Gondwana group of geological formation (Central tract of geology description) are met, bamboos occur in almost all parts of the division over extensive areas of forests. Out of the three species of bamboos found in the Division, extensive areas of forest in southern portion of the division is covered by Dendrocalamusstrictus (Salia bamboo), while Bambusaarundinacea (Daba) is confined to valleys constituting narrow belts along streams. These narrow belts end abruptly as soon as the rich soil of valley ends. The wider range of the thorny bamboo in Banatala Range is undoubtedly due to the greater humidity and better soil condition. Bambusaarundinacea is absent from forest of Jarapada, Chhendipada, Angul, Talcher & Kaniha Ranges except along the southern boundary of Katada block in Jarapada Range, in narrow belts along streams in Krushnachakra, Burti, Kurudu Blocks of Angul Range. Salia bamboo is, however, found throughout the hilly areas but is scarce or absent in northern portion of the Division. Salia bamboo in small quantity is noticed in Bulajhar, Phuljhari, Nailu- Lodhiojhar- Sapkata, Rameswar hill, Saliameda, Sadarkhol blocks of Talcher & Kaniha Ranges on hill slopes. The absence of bamboo from the portion of tract, where Gondwana group of rocks exist, is a remarkable feature. In southern portion of Division bamboos of excellent quality are found. Though in many blocks of Angul and Banatala Range, salia bamboo still forms 25% to 50% of the crop but undoubtedly the bamboo forest has depleted over the years. The third species of bamboo Cephalostachyumpergracile (Bolongi bans) is found very localized in small quantity in portion of Krushnachakra and Burti block in higher portion.

3.1.4 The floristic composition in different storey of crop of different forest type/sub-type will find its place in subsequent paragraphs where attempt has been made to classify the forest types and sub-types as per revised classification of Champion and Seth. However, sub-types as per classification of forests of Orissa circulated by the Silviculturist, Orissa will also find its mention along with the classification adopted by Dr.Mooney. But before proceeding to the classification and description of forests in detail, it is worthwhile to mention in brief the biotic influences, which have affected the composition and quality of the crop in such a way that increasing openness of crop has become a noticeable feature. This openness of forest crop increases as one approaches Angul and Talcher. All the forests of Talcher Range, Kaniha Range Jarapada Range, Chhendipada Range, Angul Range, Nuakheta block and part of Bolong block of Banatala Range have become open and density varies from 0 to 0.4. Forest block wise crown density distribution of all blocks is discussed later in this chapter. The biotic influences responsible for the denudation and its increasing pace are heavy illegal felling and smuggling of timbers, poles, firewood and bamboos; unguided removal of forest produce by permit holders; heavy commercial exploitation in the past especially by repeated coppicing in coppice system; annual forest fire; increasing grazing pressure; soil erosion; invasion of climbers and miscellaneous xerophytic shrubs/ weeds, illegal mining and encroachment of land and these factors are closely linked with the pressure of increasing human and cattle population alongwith rapid industrialization and mining activities in the area. Undoubtedly the degradation and depletion of forest has resulted in environmental degradation, ecological disaster, water scarcity, frequent droughts,more prolonged summer and gradual increase in average temperature. Alongwith the habitat the wildlife of the tract are in constant danger of illegal poaching and epidemics due to invading human and cattle population and thus making the management of living resources an extremely difficult task.

3.1.5 CLASSIFICATION OF FORESTS:

3.1.5.1 All previous Plans including B.P.Singh's Plan have adopted silvicultural classifications made by Champion and Seth in their Revised Survey of Forest Types in India,1962. The forests of Angul Division were broadly classified as 'Tropical Deciduous Forests' which was more moist than the forests of Sambalpur district but never approaches the dampness of forests of Puri Division. Tropical Deciduous Forests were further divided in to two sub-groups, moist and dry types which some times over lap each other. The types and sub-types of forests of Angul Division according to old classification are

Sub-group: - **3C - Noth Indian Moist Deciduous Forests**.

3C/c2e (ii) Moist Penninsular Low level Sal (average density 50%)

Sub-group: - **5B - Nothern Tropical Dry Deciduous Forests**

i) 5B/c1c Dry Penninsular Sal bearing forests (average density 40%)

ii)5B/C2Northern Dry Mixed Deciduous Forests(average density 30%)

Degradation Stages:

iii) 5/DS1 Dry Deciduous & Scrub forest (average density 25%) Edaphic types:

iv) 5/E9 Dry Bamboo brake

Seral types:

v) 5/S1 Dry Tropical reverain forests.

The carbon stock /forest cover of natural plan resources are assessed by Forest Survey of India from satellite imagery data at two year interval i.e. 2015 and 2017 which resulted is given in the following table. 3.1

Table 3.1 Forest Cover Change in Angul Forest Division.

Type of Forest Cover	FC Data – 2015 Data Area in ha.	FC Data – 2017 Data in ha.	Forest Cover Change between 2015 and 2017
Very Dense Forest	5123.61	5127.37	3.96
Moderately Dense Forest	37220.16	37138.92	-81.24
Open Forest	42503.67	44410.56	1906.90
Scrub Forest	4134.73	3199.10	-935.62

Forest Cover Change in Angul Range of Angul Forest Division.

Type of Forest Cover	FC Data – 2015 Data Area in ha.	FC Data – 2017 Data in ha.	Forest Cover Change between 2015 and 2017
Very Dense Forest	722.84	725.01	2.17
Moderately Dense Forest	7898.91	7875.06	-23.85
Open Forest	5660.85	6383.81	722.96
Scrub Forest	1858.78	1268.50	-589.28

Forest Cover Change in Bantala Range of Angul Forest Division.

Type of Forest Cover	FC Data – 2015 Data Area in ha.	FC Data – 2017 Data in ha.	Forest Cover Change between 2015 and 2017
Very Dense Forest	2504.82	2508.44	3.63
Moderately Dense Forest	4291.13	4287.74	-3.39
Open Forest	2443.47	2531.52	78.05
Scrub Forest	195.39	226.22	30.83

Forest Cover Change in Chhendipada Range of Angul Forest Division.

Type of Forest Cover	FC Data – 2015 Data Area in ha.	FC Data – 2017 Data in ha.	Forest Cover Change between 2015 and 2017
Very Dense Forest	580.33	576.97	-3.36
Moderately Dense Forest	6784.44	6756.39	-28.05
Open Forest	8100.72	8542.04	441.32
Scrub Forest	643.04	507.79	-135.25

Forest Cover Change in Jarapada Range of Angul Forest Division.

Type of Forest Cover	FC Data – 2015 Data Area in ha.	FC Data – 2017 Data in ha.	Forest Cover Change between 2015 and 2017
Very Dense Forest	402.73	403.36	0.63
Moderately Dense Forest	10419.94	10412.71	-7.23
Open Forest	3883.32	4424.43	541.10
Scrub Forest	975.81	715.99	-259.82

Forest Cover Change in Kaniha Range of Angul Forest Division.

Type of Forest Cover	FC Data – 2015 Data Area in ha.	FC Data – 2017 Data in ha.	Forest Cover Change between 2015 and 2017
Very Dense Forest	00	00	0
Moderately Dense Forest	3832.36	3821.19	-11.17
Open Forest	12899.15	12930.23	31.07
Scrub Forest	317.72	334.59	16.86

Forest Cover Change in Talcher Range of Angul Forest Division.

Type of Forest Cover	FC Data – 2015 Data Area in ha.	FC Data – 2017 Data in ha.	Forest Cover Change between 2015 and 2017
Very Dense Forest	912.90	913.79	0.89
Moderately Dense Forest	3993.39	3985.83	-7.55
Open Forest	9516.14	9608.54	92.39
Scrub Forest	143.99	145.02	1.04

3.1.5.2 North Indian Moist Deciduous Forests:

In Angul division, North Indian moist deciduous forests are represented by Moist Peninsular Sal forest type. In these forests, top storey trees are typically deciduous trees. Lower storey is predominantly occupied by evergreen trees or shrubs. The forests mostly containing *Shorea robusta* (Sal) and which forms more than 10-66% of total crop and it was delineated using remote sensing data. The other co-dominant species are *Terminalia tomentosa, Cleistanthus collinus, Tectona grandis,Buchanania lanzan, Lannea coromandelica, Anogeissus latifolia Madhuca latifolia, Lagerstroemia parviflora, Diospyros melanoxylon*.

It is interesting to note the occurrence of *Tectona grandis* (Teak) in North Indian moist deciduous forests. According to Champion & Seth (1968), as a rule Sal and Teak does not overlap and they separated by miscellaneous *Cleistanthus collinus* dominated forests.

The shrubby layer consists of *Grewia hirsuta, Grewia disperma, Cipadessa baccifera, Clerodendrum viscosum, Woodfordia fruticosa, Helicteres isora,* and *Zyziphus oenoplia*. The common woody climbers in these forests are, *Milletia racemosa, Bauhinia vahlii, Cryptolepis buchanani, Butea superba*. Grasses like *Arundinella setosa, Thysanolaena maxima, Themeda triandra* form the ground cover. The common herbs of these forests are *Elephantopus scaber*, *Curculigo orchioides, Andrographis paniculata, Vernonia cinerea, Geodorum densiflorum, Hemigraphis hirta, H. latebrosa, Canscora heteroclita* and *Lindernia* spp.

Champion & Seth (1968) further categorized Moist Peninsular Sal forest of Orissa, into (i) Moist peninsular high level Sal, (ii) Moist peninsular low level Sal, and (iii) Moist peninsular valley Sal based on indicative species associations and elevation.

3.1.5.3 Northern Tropical Dry Deciduous Forests:

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.

Champion & Seth (1968) mentioned 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 and it rarely goes up to 10% of the total crop.

3.1.5.4 Classification of Forests for the Current Revised Plan:

Northern dry mixed deciduous forest:

In these forests, *Cleistanthus collinus* is the predominant species. The other co-dominant species are *Anogeissus latifolia, Lannea coromandelica, Lagerstroemia parviflora, Diospyros melanoxylon, Terminalia tomentosa,Aegle marmelos* and *Pterospermum heyneanum.*

Helicteres isora, Thespesia lampas, Flemingia semialata, Indigofera cassioides etc. form the shrubby layer. *Bauhinia vahlii, Hemidesmus indicus, Calycopteris floribunda, Milletia racemosa, Butea superba* are the climbers of these forests. The common herbs of these forests are *Goniogyna hirta, Hybanthus enneaspermus, Indoneesiella echioides, Lindernia ciliata. Lindernia hyssopioides, Bulbostylis barbata, Tacca leontopetaloides, Canscora decussata, Evolvulus nummularius, Biophytum nervifolium* and *Desmodium triflorum.*

3.1.5.5 Dry Deciduous Scrub:

It is generally confined to the foot hills and along the fringes of forests. It is determined by factors like edaphic conditions, climate and biotic pressure in forests. It occupies mainly the drier parts. The vegetation presents a very open appearance and distinctly covered by widely spaced small trees or bushy shrubs.

In this type, three categories of vegetation was found viz. (a) the permanent low canopy vegetation occurring through out the year, with stunted trees and shrubs and (b) the seasonal vegetation consisting of the annuals growing mainly during rainy season and (c) Regenerating vegetation with scattered trees.

Table 3.2 (i) Range wise presentation of dominant tree species

CHHENDIPADA

North Indian moist deciduous forests	Northern dry mixed deciduous forests
Buchanania lanzan	*Lagerstroemia parviflora*
Terminalia tomentosa	*Lannea coromandelica*

Lannea coromandelica	*Aegle marmelos*
Madhuca latifolia	*Azadirachta indica*
Pterocarpus marsupium	*Terminalia tomentosa*
Cleistanthus collinus	*Bridelia retusa*
Aegle marmelos	*Diospyros melanoxylon*
Careya arborea	*Alangium lamarkii*
Gmelina arborea	*Pterospermum heyneanum*

JARAPADA

North Indian moist deciduous forests	Northern dry mixed deciduous forests
Shorea robusta	*Cleistanthus collinus*
Terminalia tomentosa	*Lannea coromandelica*
Cleistanthus collinus	*Lagerstroemia parviflora*
Tectona grandis	*Anogeissus latifolia*
Anogeissus latifolia	*Diospyros melanoxylon*
Lagerstroemia parviflora	*Terminalia tomentosa*
Madhuca latifolia	*Tectona grandis*
Buchanania lanzan	*Aegle marmelos*
Lannea coromandelica	*Alangium lamarkii*

KANIHA

North Indian moist deciduous forests	Northern dry mixed deciduous forests
Shorea robusta	*Cleistanthus collinus*
Lannea coromandelica	*Lannea coromandelica*
Cleistanthus collinus	*Diospyros melanoxylon*
Terminalia tomentosa	*Anogeissus latifolia*
Buchanania lanzan	*Terminalia tomentosa*

Diospyros melanoxylon	*Pterocarpus marsupium*
Madhuca latifolia	*Sterculia urens*
Anogeissus latifolia	*Nyctanthes arbor-tristis*
Acacia catechu	*Buchanania lanzan*

TALCHER

North Indian moist deciduous forests	Northern dry mixed deciduous forests
Shorea robusta	*Cleistanthus collinus*
Lannea coromandelica	*Bridelia retusa*
Terminalia tomentosa	*Lannea coromandelica*
Buchanania lanzan	*Pterospermum heyneanum*
Diospyros melanoxylon	*Grewia tiliaefolia*
Madhuca latifolia	*Acacia leucophloea*
Anogeissus latifolia	*Terminalia tomentosa*
Bridelia retusa	*Buchanania lanzan*
Cleistanthus collinus	*Aegle marmelos*

BANTALA

North Indian moist deciduous forests	Northern dry mixed deciduous forests
Shorea robusta	*Cleistanthus collinus*
Bursera serrata	*Tectona grandis*
Anogeissus latifolia	*Pterospermum heyneanum*
Grewia tiliaefolia	*Bursera serrata*
Lagerstroemia parviflora	*Lagerstroemia parviflora*
Syzigium cumini	*Lannea coromandelica*
Croton oblongifolius	*Aegle marmelos*
Holarrhena antidysentrica	*Dalbergia latifolia*
Cassia fistula	*Dalbergia paniculata*

ANGUL

North Indian moist deciduous forests	Northern dry mixed deciduous forests
Shorea robusta	*Cleistanthus collinus*
Buchanania lanzan	*Holarrhena antidysentrica*
Lannea coromandelica	*Terminalia tomentosa*
Terminalia tomentosa	*Lagerstroemia parviflora*
Lagerstroemia parviflora	*Diospyros melanoxylon*
Terminalia bellirica	*Lannea coromandelica*
Anogeissus latifolia	*Aegle marmelos*
Bursera serrata	*Anogeissus latifolia*
Chloroxylon swietenia	*Chloroxylon swietenia*

3.2 Plant species diversity

Biodiversity assessment in terms of density, frequency, total basal cover, dominance, IVI, etc. should be given. Efforts should be made to make a base year documented species diversity status for future reference using GIS tools. Base year documented species diversity is maintained or enhanced under sustainable management of forests.

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.

Density of a species = Total no of individuals of a species

Total area of quadrats studied

Frequency of a species(%) = No of quadrats in which a species occurs x100

Total number of quadrats studied.

Relative Density = Density of a species x100

Total density of all species

Relative Frequency = Frequency of a speciesx100

Sum of frequencies of all species

Relative basal area of species= Total basal area of a species x100

Total basal area of all species

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 3.3** as follows.

Table 3.3

Biodiversity assessment of tree in Krushnachakra PRF

Name of the Species	Nos	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
Ankula	6	3.529411	0.8287	23.52	1.809955	1.2	1.9966	4.63535625
Amla	3	1.7647058	0.41436	17.64	1.357466	1.6	2.662229	4.43406032
Asana	59	34.705882	8.14917	47.04	3.61991	4.58	7.620632	19.3897131
Anchhu	9	5.2941176	1.24309	23.52	1.809955	1.15	1.913477	4.96652622
Angarua	1	0.5882352	0.13812	5.88	0.452489	5.1	8.485856	9.07646714
Barabakulia	16	9.4117647	2.20994	41.16	3.167421	1.1	1.830282	7.20764844
Bahada	4	2.3529411	0.55248	23.52	1.809955	2.5	4.159733	6.52217472
Bela	27	15.882352	3.72928	35.28	2.714932	0.38	0.632279	7.07649345
Beintha	3	1.7647058	0.41436	17.64	1.357466	3.85	6.40599	8.17782072
Bija	2	1.1764705	0.27623	11.76	0.904977	1.45	2.412645	3.59386606
Bheru	3	1.7647058	0.41436	5.88	0.452489	0.89	1.480865	2.34771855
Bhuincha	3	1.7647058	0.41436	17.64	1.357466	0.17	0.282861	2.05469260
Chara	16	9.4117647	2.20994	35.28	2.714932	0.25	0.415973	5.34085027
Chhuin Batuli	3	1.7647058	0.41436	17.64	1.357466	1.11	1.846921	3.61875250
Chauli	1	0.5882352	0.13812	11.76	0.904977	0.87	1.447587	2.49068627
Dimiri	2	1.1764705	0.27624	5.88	0.452489	0.64	1.064891	1.79362363
Dhaura	87	51.176470	12.0165	76.44	5.882353	0.66	1.098169	18.9970973
Dhamana	15	8.8235294	2.07182	29.4	2.262443	0.54	0.898502	5.23276915
Damghurudu	2	1.1764705	0.27624	11.76	0.904977	0.17	0.282861	1.46408236
Gambhari	3	1.7647058	0.41436	11.76	0.904977	0.24	0.399334	1.71867646
Giringa	1	0.5882352	0.13812	5.88	0.452489	0.18	0.299500	0.89011106

Guhira	1	0.5882352	0.13812	11.76	0.904977	0.33	0.549089	1.5921832
Ghuntuli	3	1.7647058	0.41435	11.76	0.904977	0.1	0.166394	1.48573137
Halada	39	22.941765	5.38674	70.56	5.429864	0.15	0.249584	11.0618865
Harida	5	2.9411747	0.69608	17.64	1.357466	0.19	0.316138	2.36421357
Jamu	5	2.9411647	0.69068	23.52	1.809955	0.18	0.295008	2.80006333
Kanchana	3	1.7647088	0.41435	11.76	0.904977	0.16	0.266223	1.58564981
Karada	68	40	9.39265	70.56	5.429864	0.23	0.382955	15.2048202
Khakada	7	4.1176406	0.96651	23.52	1.809955	0.28	0.468902	3.24269577
Katak	1	0.5882529	0.13812	5.88	0.452489	0.19	0.361398	0.90670003
Kasi	12	7.0588353	1.65749	35.28	2.714932	1.6	2.622296	7.03462319
Kendu	5	2.9411647	0.69608	11.76	0.904977	1.43	2.793677	3.97495836
Khaira	1	0.5882359	0.13822	5.88	0.452489	1.2	1.996722	2.58782449
Kumbi	8	4.7058835	1.14972	35.28	2.714932	1.1	1.802829	5.65018772
Kansa	2	1.1767059	0.26243	5.88	0.452489	1.5	2.495403	3.22457205
Kusuma	5	2.9411747	0.69008	23.52	1.809955	0.79	1.344759	3.81508364
Kuruma	19	11.176706	2.62439	35.28	2.714932	1.54	2.562396	7.90163544
Mahul	2	1.1764059	0.26243	11.76	0.904977	1.6	2.662296	3.84350089
Mitukunia	4	2.3524118	0.55486	17.64	1.357466	4.58	7.620623	9.53058535
Mai	47	27.647088	6.49713	47.04	3.61991	1.15	1.913475	12.0250979
Malanga	1	0.5882329	0.13812	5.88	0.452489	5.1	8.485569	9.07467141
Murha	2	1.1764759	0.27243	5.88	0.452489	1.1	1.830229	2.55901646
Pabakurein	100	58.823294	13.8115	82.32	6.334842	0.33	0.540849	20.6960128
Patali	3	1.7647588	0.41465	11.76	0.904977	0.18	0.295008	1.61842851
Phuluri	6	3.5294176	0.82829	11.76	0.904977	1.70	2.828619	4.56225631
Mai	9	5.2941165	1.24304	17.64	1.357466	0.20	0.332777	2.93338697
Patuli	1	0.5823529	0.13822	5.88	0.452489	0.17	0.282861	0.87347213
Tambala	3	1.7647588	0.41435	17.64	1.357466	0.95	1.580988	3.35529542
Giringa	3	1.7647088	0.41435	11.76	0.904977	0.2	0.332777	1.65212721
Piasal	1	0.5882359	0.13822	5.88	0.452489	0.18	0.299508	0.89011068
Rai	6	3.5294116	0.82829	29.4	2.262443	0.16	0.266223	3.35739588
Sal	16	9.4117671	2.29945	5.88	0.452489	0.22	0.366066	3.02849027
Siris	2	1.1764709	0.27643	5.88	0.452489	0.87	1.447574	2.17631138
Salei	4	2.3529418	0.55286	11.76	0.904977	0.19	0.316398	1.77360334
Sidha	43	25.294176	5.93927	58.8	4.524887	0.38	0.632795	11.0969297
Simili	1	0.5882329	0.13122	5.88	0.452489	0.32	0.524459	1.12305159
Siris	1	0.5882329	0.13822	5.88	0.452489	0.19	0.316198	0.90675003
Sissoo	8	4.7058235	1.10472	5.88	0.452489	0.18	0.295008	1.85696903
Siju	1	0.5882359	0.13122	5.88	0.452489	0.21	0.349416	0.94002773
Tentala	10	5.8823294	1.38115	35.28	2.714932	0.34	0.565738	4.6618714
Total	724	425.882353	100.00	1299.48	100	60.1	100	300.00

Name of the Shrubs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Pichhuli	1	0.01	0.9903	5.88	1.408451	2.3987
Matamati	3	0.02	2.9709	11.76	2.816901	5.7878
Atandi	8	0.05	7.9224	29.4	7.042254	14.9646
Chaunnia	1	0.01	0.9903	5.88	1.408451	2.3987
Ankula	1	0.01	0.9903	5.88	1.408451	2.3987
Atandi	3	0.02	2.9709	11.76	2.816901	5.7878

Dantari	4	0.03	3.9612	17.64	4.225352	8.1865
Pichhuli	4	0.03	3.9612	17.64	4.225352	8.1865
Salara	4	0.03	3.9612	23.52	5.633803	9.5950
Giringa	7	0.05	6.9321	23.52	5.633803	12.5659
Chhuin Patuli	1	0.01	0.9903	5.88	1.408451	2.3987
Gangasiuli	1	0.01	0.9903	5.88	1.408451	2.3987
Karada	2	0.01	1.9806	11.76	2.816901	4.7975
Kumutia	3	0.02	2.9709	11.76	2.816901	5.7878
Tribidi	6	0.04	5.9418	23.52	5.633803	11.5756
Beintha	3	0.02	2.9709	17.64	4.225352	7.1962
Khira Kanchan	1	0.01	0.9903	5.88	1.408451	2.3987
Kusuma	1	0.01	0.9903	5.88	1.408451	2.3987
Bamboo	1	0.01	0.9903	5.88	1.408451	2.3987
Kurein	9	0.06	8.9127	29.4	7.042254	15.9549
Suanai	10	0.07	9.9030	23.52	5.633803	15.5368
Agamathu	1	0.01	0.9903	5.88	1.408451	2.3987
Akanabindu	1	0.01	0.9903	5.88	1.408451	2.3987
Apamarga	1	0.01	0.9903	5.88	1.408451	2.3987
Bhadali	1	0.01	0.9903	5.88	1.408451	2.3987
Damaghurudu	1	0.01	0.9903	5.88	1.408451	2.3987
Murha	7	0.05	6.9321	23.52	5.633803	12.5659
Pingu	4	0.03	3.9612	17.64	4.225352	8.1865
Tamala	1	0.01	0.9903	5.88	1.408451	2.3987
Beintha	2	0.01	1.9806	11.76	2.816901	4.7975
Chara	5	0.03	4.9515	17.64	4.225352	9.1768
Kataka	1	0.01	0.9903	5.88	1.408451	2.3987
Salarakanta	2	0.01	1.9806	5.88	1.408451	3.3890
Sunari	1.324526	0.66	100.02	417.48	100.00	201.344

Name of the Hurbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Murha	6	0.35294118	30	23.52	22.22222	52.2222
Salara	3	0.17647059	15	17.64	16.66667	31.6667
Mitukunia	1	0.05882353	5	5.88	5.555556	10.5556
Kathasundara	2	0.11764706	10	11.76	11.11111	21.1111
Chepti	4	0.23529412	20	23.52	22.22222	42.2222
Bhuin neem	1	0.05882353	5	5.88	5.555556	10.5556
Kumutia	1	0.05882353	5	5.88	5.555556	10.5556
Kansa	1	0.05882353	5	5.88	5.555556	10.5556
Chara	1	0.05882353	5	5.88	5.555556	10.5556
Siari	1	0.05882353	5	5.88	5.555556	10.5556
Total	20	**1.17647059**	**100**	**105.84**	**100**	**200**

Biodiversity assessment of tree in Nisha RF

Name of the Species	Nos	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
Asan	5	25	4.854369	100	11.1111111	0.66	10.1072	26.07268
Anchhu	2	10	1.941748	50	5.55555556	0.54	8.269525	15.76683
Bahada	10	50	9.708738	50	5.55555556	0.17	2.603369	17.86766
Barabakalia	9	45	8.737864	100	11.1111111	0.24	3.675345	23.52432
Bija	2	10	1.941748	50	5.55555556	0.18	2.756508	10.25381
Beintha	1	5	0.970874	50	5.55555556	0.33	5.053599	11.58003
Dhaura	3	15	2.912621	50	5.55555556	0.15	2.29709	10.76527
Kasi	3	15	2.912621	50	5.55555556	0.19	2.909648	11.37782
Kendu	1	5	0.970874	50	5.55555556	0.18	2.756508	9.282938
Kumbhi	2	10	1.941748	50	5.55555556	0.16	2.45023	9.947533
Mahula	2	10	1.941748	50	5.55555556	0.23	3.522205	11.01951
Mai	3	15	2.912621	50	5.55555556	0.28	4.287902	12.75608
Patmasu	1	5	0.970874	50	5.55555556	0.19	2.909648	9.436077
Sal	58	290	56.31068	100	11.1111111	1.6	24.5023	91.92409
Sidha	1	5	0.970874	50	5.55555556	1.43	21.89893	28.42536
	103	515	100	900	100	6.53	100	300

Name of the Shurbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Kurein	3	0.167	37.54	50	20.00	57.54
Khakada	1	0.056	12.51	50	20.00	32.51
Mamuri	2	0.111	25.03	50	20.00	45.03
Maturinai	1	0.056	12.51	50	20.00	32.51
Tamala	1	0.056	12.51	50	20.00	32.51
	8	**0.444**	**100**	**250**	**100.00**	**200**

Name of the Herbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Bhuin nimba	2	1.00	50	50	33.3333333	83.333333
Kaincha	1	0.50	25	50	33.3333333	58.333333
Bana kolatha	1	0.50	25	50	33.3333333	58.33
	4	**2**	**100**	**150**	**100**	**200**

Biodiversity assessment of tree in Malibrahmani RF

Name of the Species	Nos	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
Asan	2	20	3.773584906	100	11.11111	1.6	10.01879	24.90348
Bahada	8	80	15.09433962	100	11.11111	4.58	28.67877	54.88422
Bhalia	2	20	3.773584906	100	11.11111	1.15	7.201002	22.0857
Chara	15	150	28.30188679	100	11.11111	5.1	31.93488	71.34788

Harida	1	10	1.886792453	100	11.11111	1.1	6.887915	19.88582
Kusum	1	10	1.886792453	100	11.11111	0.33	2.066374	15.06428
Mai	3	30	5.660377358	100	11.11111	0.18	1.127113	17.8986
Patmasu	1	10	1.886792453	100	11.11111	1.70	10.64496	23.64286
Sal	20	200	37.73584906	100	11.11111	0.23	1.4402	50.28716
	53	**530**	100	900	100	15.97	100	300

Name of the Herbs	**Nos**	**Density**	**Relative Density**	**Frequency**	**Relative Frequency**	**IVI**
Bana Kulutha	1	1.00	50	100	50	100
Salaparni	1	1.00	50	100	50	100
	2	**2.00**	**100**	**200**	**100**	**200**

Name of the Shurbs	**Nos**	**Density**	**Relative Density**	**Frequency**	**Relative Frequency**	**IVI**
Kurein	4	0.0444444	100.00	100	100.00	200.00
	4	**0.0444444**	**100.0010000**	**100**	**100.00**	**200**

Biodiversity assessment of tree in Kerjang PRF

Name of the Species	**Nos**	**Density**	**Relative Density**	**Frequency**	**Relative Frequency**	**Basal Area Density**	**Relative BAD**	**IVI**
Asan	1	5	1.754386	50	7.142857	0.22	6.896552	15.79379
Bahada	4	20	7.017544	50	7.142857	0.87	27.27273	41.43313
Bela	15	75	26.31579	100	14.28571	0.19	5.956113	46.55762
Dhaura	26	130	45.61404	100	14.28571	0.38	11.91223	71.81198
Gohira	1	5	1.754386	50	7.142857	0.32	10.03135	18.92859
Karada	1	5	1.754386	50	7.142857	0.19	5.956113	14.85336
Kendu	3	15	5.263158	100	14.28571	0.18	5.642633	25.19151
Ramgua	3	15	5.263158	50	7.142857	0.21	6.583072	18.98909
Sunari	1	5	1.754386	50	7.142857	0.16	5.015674	13.91292
Sidha	1	5	1.754386	50	7.142857	0.34	10.65831	19.55555
Tentala	1	5	1.754386	50	7.142857	0.13	4.075235	12.97248
	57	**285.0**	**100**	**700**	**100**	**3.19**	**100**	**300**

Name of the Herbs	**Nos**	**Density**	**Relative Density**	**Frequency**	**Relative Frequency**	**IVI**
Hadakankali	1	0.50	20	50	20	40
Sunarigada	1	0.50	20	50	20	40
Salaparni	1	0.50	20	50	20	40
Gutikhadika	1	0.50	20	50	20	40
Ramagua	1	0.50	20	50	20	40
	5	**2.50**	**100**	**250**	**100**	**200**

Name of the Shurbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Bhuin kuruma	1	0.055556	11.11	50.00	14.28571	25.40
Kurein	2	0.111111	22.22	50.00	14.28571	36.51
Mura	1	0.055556	11.11	50.00	14.28571	25.40
Telkuruma	2	0.111111	22.22	100.00	28.57143	50.79
Atandi	2	0.111111	22.22	50.00	14.28571	36.51
Matmati	1	0.055556	11.11	50.00	14.28571	25.40
	9	**0.500000**	**100.00**	**350.00**	**100**	**200.00**

Biodiversity assessment of tree in Derjang Golabandha RF

Name of the Species	Nos	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
Anchhu	**2**	20	6.25	**100**	6.666667	0.15	0.775996	13.69266
Bahada	**1**	10	3.125	**100**	6.666667	0.19	0.982928	10.77459
Barabakalia	**5**	50	15.625	**100**	6.666667	0.18	0.931195	23.22286
Bheru	**1**	10	3.125	**100**	6.666667	0.16	0.827729	10.6194
Giridhini	**1**	10	3.125	**100**	6.666667	0.23	1.18986	10.98153
Giringa	**1**	10	3.125	**100**	6.666667	0.28	1.448526	11.24019
Karada	**1**	10	3.125	**100**	6.666667	0.19	0.982928	10.77459
Khaira	**2**	20	6.25	**100**	6.666667	1.6	8.277289	21.19396
Kendu	**1**	10	3.125	**100**	6.666667	1.43	7.397827	17.18949
Mai	**3**	30	9.375	**100**	6.666667	8.89	45.99069	62.03235
Neem	**1**	10	3.125	**100**	6.666667	1.2	6.207967	15.99963
Piasal	**1**	10	3.125	**100**	6.666667	1.1	5.690636	15.4823
Rohini	**2**	20	6.25	**100**	6.666667	1.5	7.759959	20.67663
Sidha	**1**	10	3.125	**100**	6.666667	1.3	6.725297	16.51696
Tamala	**9**	90	28.125	**100**	6.666667	0.93	4.811174	39.60284
	32	**320**	100	**1500**	100	19.33	100	300

Name of the Shurbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Agamathu	3	0.3333	60.00	100.00	33.33333	93.33
Gotikhadika	1	0.1111	20.00	100.00	33.33333	53.33
Hada kankali	1	0.1111	20.00	100.00	33.33333	53.33
	5	**0.5556**	**100.00**	**300.00**	**100**	**200.00**

Biodiversity assessment of tree in Durgapur RF

Name of the Species	Nos	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
Anchhu	2	2.898551	100	8.333333	0.19	2.201622	13.43351
Asan	2	2.898551	100	8.333333	0.38	4.403244	15.63513
Barabakalia	10	14.49275	100	8.333333	0.32	3.707995	26.53408
Bheru	1	1.449275	100	8.333333	0.19	2.201622	11.98423
Bija	2	2.898551	100	8.333333	0.18	2.085747	13.31763
Chara	9	13.04348	100	8.333333	0.21	2.433372	23.81018
Chauli	1	1.449275	100	8.333333	0.16	1.853998	11.63661
Kasi	3	4.347826	100	8.333333	0.34	3.939745	16.6209
Mahula	1	1.449275	100	8.333333	0.13	1.506373	11.28898
Mai	3	4.347826	100	8.333333	5.1	59.09618	71.77734
Sahada	1	1.449275	100	8.333333	1.1	12.74623	22.52884
Sal	34	49.27536	100	8.333333	0.33	3.82387	61.43257
Total		**100**	**1200**	**100**	**8.63**	**100**	**300**

Name of the Herbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Bhuin limba	1	1.00	50	100	50	100
Birbinchi	1	1.00	50	100	50	100
	2	**2.00**	**100**	**200**	**100**	**200**

Name of the Shurbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Bhuinkuruma	2	0.22	16.71	100.00	20	36.71
Ghurudu	2	0.22	16.71	100.00	20	36.71
Khakada	1	0.11	8.35	100.00	20	28.35
Kurein	6	0.67	50.13	100.00	20	70.13
Matmati	1	0.11	8.35	100.00	20	28.35
	12	**1.33**	**100.25**	**500.00**	**100**	**200.25**

Biodiversity assessment of tree in Paranga RF

Name of the Species	Nos	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
Asana	1	10	5.555556	100	33.33333	1.6	21.8281	60.71699
Chara	7	70	38.88889	100	33.33333	4.58	62.48295	134.7052
Sal	10	100	55.55556	100	33.33333	1.15	15.68895	104.5778
	18	**180**	**100**	**300**	**100**	**7.33**	**100**	**300**

Name of the Herbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Bhuin limba	1	100.00	100	100	100	200
	1	100.00	**100**	100	100	**200**

Name of the Shurbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Muturi	1	0.111	33.37	100	33.33	66.70
Nirmuli	1	0.111	33.37	100	33.33	66.70
Telkuruma	1	0.111	33.37	100	33.33	66.70
	3	**0.333**	**100.10**	**300**	100.00	**200.10**

Biodiversity assessment of tree in Mandaragiri RF

Name of the Species	Nos	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
Asan	2	5	1.129943503	25	3.703704	0.15	0.54347	5.37712
Akasia	10	25	5.649717514	25	3.703704	0.19	0.68840	10.0418
Bahada	1	2.5	0.564971751	25	3.703704	0.18	0.6521	4.92084
Barabakalia	17	42.5	9.604519774	25	3.703704	0.16	0.57971	13.8879
Bela	10	25	5.649717514	25	3.703704	0.28	1.01449	10.3679
Chara	5	12.5	2.824858757	50	7.407407	0.19	0.68840	10.9206
Dhaura	19	47.5	10.73446328	50	7.407407	1.6	5.79710	23.9389
Dhauranja	6	15	3.389830508	50	7.407407	1.43	5.18115	15.9784
Halda	3	7.5	1.694915254	25	3.703704	1.2	4.34782	9.74644
Jamun	11	27.5	6.214689266	25	3.703704	1.1	3.98550	13.9039
Katak	10	25	5.649717514	25	3.703704	1.5	5.43478	14.7882
Khaira	10	25	5.649717514	25	3.703704	1.3	4.71014	14.0635
Karada	11	27.5	6.214689266	25	3.703704	0.93	3.36956	13.2879
Kumbhi	2	5	1.129943503	25	3.703704	0.79	2.86231	7.69596
Kusum	1	2.5	0.564971751	25	3.703704	1.54	5.57971	9.84838

Mahala	11	27.5	6.214689266	25	3.703704	1.2	4.34782	14.2662
Mai	7	17.5	3.95480226	50	7.407407	1.6	5.79710	17.1593
Paladhuan	4	10	2.259887006	25	3.703704	4.58	16.5942	22.5577
Sunari	5	12.5	2.824858757	25	3.703704	1.15	4.16666	10.6952
Sal	8	20	4.519774011	25	3.703704	5.1	18.4782	26.7017
Sidha	20	50	11.29943503	50	7.407407	1.1	3.98550	22.6923
Simiili	4	10	2.259887006	25	3.703704	0.33	1.19565	7.15924
Total	**177**	**442.5**	100	675	100	27.6	100	300

Name of the Shrub	**Nos**	**Density**	**Relative Density**	**Frequency**	**Relative Frequency**	**IVI**
Bhuinkuruma	1	0.027778	9.090895868	25	14.28571	23.37661
Karada	1	0.027778	9.090895868	25	14.28571	23.37661
Atandi	3	0.083333	27.2726876	**50**	28.57143	55.84412
Kanteikoli	3	0.083333	27.2726876	**25**	14.28571	41.5584
Telkuruma	1	0.027778	9.090895868	**25**	14.28571	23.37661
Bhadala	2	0.055556	18.18179174	**25**	14.28571	32.46751
	11	**0.305556**	**100**	**175**	**100**	**200**

Name of the Herbs		**Nos**	**Density**	**Relative Density**	**Frequency**	**Relative Frequency**	**IVI**
Bhuin neem		1	0.25	100	25	100	200
		1	**0.25**	**100**	**25**	**100**	**200**

Biodiversity assessment of tree in Kuio RF

Name of the Species	**Nos**	**Density**	**Relative Density**	**Frequency**	**Relative Frequency**	**Basal Area Density**	**Relative BAD**	**IVI**
Bela	3	30	2.702703	100	25	0.19	25	52.7027
Mai	10	100	9.009009	100	25	0.18	23.684	57.69322
Piasal	15	150	13.51351	100	25	0.16	21.052	59.56615
Sal	83	830	74.77477	100	25	0.23	30.263	130.0379
Total	**111**	1110	100	400	100	0.76	100	300

Name of the Shurbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Akandabindha	1	0.111	11.11	100	14.29	25.40
Chara	1	0.111	11.11	100	14.29	25.40
Ghurudu	2	0.222	22.22	100	14.29	36.51
Khakada	1	0.111	11.11	100	14.29	25.40
Kurein	2	0.222	22.22	100	14.29	36.51
Muturi	1	0.111	11.11	100	14.29	25.40
Sunaragadi	1	0.111	11.11	100	14.29	25.40
	9	1.000	100	700	100.00	200

Name of the Herbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Bhuinkuruma	1	1.00	25	100	25	50
Gopakanhu	1	1.00	25	100	25	50
Muturi	1	1.00	25	100	25	50
Patamasu	1	1.00	25	100	25	50
	4	4.00	100	400	100	200

Biodiversity assessment of tree in Kurudu RF

Name of the Species	Nos	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
Tala	7	17.5	10	25	3.703704	1.1	9.43396	23.13767
Ankula	1	2.5	1.4285714	25	3.703704	2.5	21.4408	26.5731
Bela	5	12.5	7.1428571	50	7.407407	0.38	3.25900	17.80927
Dhaura	12	30	17.142857	75	11.11111	1.45	12.4356	40.68965
Sissoo	1	2.5	1.4285714	25	3.703704	0.25	2.14408	7.276357
Bandhana	1	2.5	1.4285714	25	3.703704	1.11	9.51972	14.652
Bheru	2	5	2.8571429	50	7.407407	0.87	7.46140	17.72596
Damghurudu	1	2.5	1.4285714	25	3.703704	0.64	5.48885	10.62113
Halda	8	20	11.428571	75	11.11111	0.54	4.63121	27.1709
L.Mai	3	7.5	4.2857143	50	7.407407	0.18	1.54373	13.23686
Mai	5	12.5	7.1428571	25	3.703704	0.33	2.83018	13.67675
Sidha	4	10	5.7142857	75	11.11111	0.15	1.28644	18.11185
Siris	7	17.5	10	25	3.703704	0.19	1.62950	15.33321
Bahada	1	2.5	1.4285714	25	3.703704	0.2	1.71526	6.847541
Barabakalia	9	22.5	12.857143	25	3.703704	0.89	7.63293	24.19378
Kasi	1	2.5	1.4285714	25	3.703704	0.25	2.14408	7.276357
Kusum	1	2.5	1.4285714	25	3.703704	0.45	3.85934	8.991623
Tentela	1	2.5	1.4285714	25	3.703704	0.18	1.54373	6.676014
Total	**44**	**175**	**100**	**675**	**100**	**11.66**	**100**	**300**

Name of the Shurbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Atandi	2	0.05556	13.333227	25	11.11111	24.4443
Beintha	2	0.05556	13.333227	50	22.22222	35.5554

Kurein	1	0.02778	6.6666133	25	11.11111	17.7777
Mura	4	0.11111	26.666453	25	11.11111	37.7775
Pabakurein	4	0.11111	26.666453	75	33.33333	59.9997
Karada	2	0.05556	13.333227	25	11.11111	24.4443
Total	15	0.41667	99.9992	225	100	199.999

Name of the Herbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Sunari	1	0.25	14.285714	25	14.28571	28.5714
Dantiri Nai	2	0.50	28.571429	50	28.57143	57.1428
Bhuin Neem	2	0.50	28.571429	50	28.57143	57.1428
Biribinchi	1	0.25	14.285714	25	14.28571	28.5714
Satabari	1	0.25	14.285714	25	14.28571	28.5714
Total	7	1.75	100	175	100	200

Biodiversity assessment of tree in Madhapur RF

Name of the Species	Nos	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
Bela	1	10	4.545455	100	25	1.5	29.82107	59.36653
Harida	1	10	4.545455	100	25	0.79	15.70577	45.25122
Rohini	6	60	27.27273	100	25	1.54	30.6163	82.88903
Sal	14	140	63.63636	100	25	1.2	23.85686	112.4932
Total	**22**	**220**	**100**	**400**	**100**	**5.03**	**100**	**300**

Name of the Shurbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Telkuruma	1	9.00	100.00	100	100.00	200.00
	1	**9.00**	**100.00**	**100**	**100.00**	**200.00**

Name of the Herbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Kuluthia	1	1.00	100	100	100	200
	1	**1.00**	**100**	**100**	**100**	**200**

Biodiversity assessment of tree in Nandapur Berhampur RF

Name of the Species	Nos	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
Bahada	1	10	3.030303	100	14.28571	3.85	44.81956	62.13557
Bela	22	220	66.66667	100	14.28571	1.45	16.88009	97.83247
Barabakulia	3	30	9.090909	100	14.28571	0.89	10.36088	33.73751
Dhaura	2	20	6.060606	100	14.28571	0.17	1.979045	22.32537
Dhauranja	1	10	3.030303	100	14.28571	0.25	2.910361	20.22638

Mai	2	20	6.060606	100	14.28571	1.11	12.922	33.26832
Neem	2	20	6.060606	100	14.28571	0.87	10.12806	30.47438
Total	33	330	100	700	100	8.59	100	300

Name of the Shurbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Kurein	1	0.111111	20.00	100	33.33	53.33
Matamati	2	0.222222	40.00	100	33.33	73.33
Murha	2	0.222222	40.00	100	33.33	73.33
	5	0.555556	100.00	300	100.00	200.00

Name of the Herbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Bhuin Neem	2	2.00	100.00	100	100.00	200.00
	2	**2**	**100**	**100**	**100**	**200**

Biodiversity assessment of tree in Pokunda PRF

Name of the Species	Nos	Density	Relative Density	Frequency	Relatiove Frequency	Bsal Area Density	Relative BAD	IVI
Asan	10	100	40	100	10	0.14	4.799451	54.799
Barabakalia	2	20	8	100	10	0.15	5.142269	23.142
Beintha	1	10	4	100	10	0.40	13.71272	27.713
Dhaura	3	30	12	100	10	0.30	10.28454	32.285
Ghuntuli	1	10	4	100	10	0.80	27.42544	41.425
Halda	1	10	4	100	10	0.15	5.142269	19.142
L.mai	1	10	4	100	10	0.20	6.856359	20.856
Sidha	2	20	8	100	10	0.40	13.71272	31.713
Kendu	3	30	12	100	10	0.253	8.673294	30.673
Kuruma	1	10	4	100	10	0.124	4.250943	18.251
	25	**250**	**100**	**1000**	**100**	**2.917**	**100**	**300**

Name of the Shurbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Atandi	4	0.444	36.37	100	16.67	53.04
Damaghurudu	1	0.111	9.09	100	16.67	25.76
Karada	1	0.111	9.09	100	16.67	25.76
Khakada	1	0.111	9.09	100	16.67	25.76
Kurein	3	0.333	27.28	100	16.67	43.94
Pamaghurudu	1	0.111	9.09	100	16.67	25.76
	11	**1.222**	**100.02**	**600**	**100.00**	**200.02**

Name of the Herbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Suanai	1	1	100	100	100	200
	1	**1**	**100**	**100**	**100**	**200**

Biodiversity assessment of tree in Burti PRF								
Name of the Species	**Nos**	**Density**	**Relative Density**	**Frequency**	**Relatiove Frequency**	**Bsal Area Density**	**Relative BAD**	**IVI**
Asan	75	35.7	12.6052	56.4	6.779661017	5.8	17.1242988	36.5092
Bhalia	9	4.3	1.5126	14.1	1.694915254	0.19	0.56096841	3.7685
Dhaura	85	40.5	14.2859	61.1	7.344632768	1.19	3.51343372	25.1439
Guhira	6	2.9	1.0084	14.1	1.694915254	0.19	0.56096841	3.2643
Halada	57	27.1	9.5799	84.6	10.16949153	2.89	8.53262474	28.2821
Kendu	25	11.9	4.2017	51.7	6.214689266	2.14	6.31827576	16.7347
Sidha	66	31.4	11.0926	70.5	8.474576271	5.54	16.3566578	35.9238
Bela	20	9.5	3.3614	42.3	5.084745763	0.2	0.59049306	9.0366
Teak	27	12.9	4.5379	4.7	0.564971751	0.54	1.59433127	6.6972
Kuruma	8	3.8	1.3446	28.2	3.389830508	6.54	19.3091231	24.0435
Pabakurein	100	47.6	16.8069	70.5	8.474576271	3.25	9.59551225	34.8770
Sal	7	3.3	1.1765	14.1	1.694915254	0.38	1.12193682	3.9933
Amla	4	1.9	0.6723	14.1	1.694915254	0.19	0.56096841	2.9282
Chhuinpatuli	1	0.5	0.1681	4.7	0.564971751	0.19	0.56096841	1.2940
Dama ghurudu	5	2.4	0.8403	9.4	1.129943503	0.22	0.64954237	2.6198
Kataka	7	3.3	1.1765	14.1	1.694915254	0.16	0.47239445	3.3438
Mai	28	13.3	4.7059	32.9	3.95480226	0.35	1.03336286	9.6941
Sissoo	8	3.8	1.3446	18.8	2.259887006	0.35	1.03336286	4.6378
Barabakalia	30	14.3	5.0421	56.4	6.779661017	0.17	0.5019191	12.3237
Kumbhi	3	1.4	0.5042	103.4	12.42937853	0.17	0.5019191	13.4355
Dhauranja	3	1.4	0.5042	9.4	1.129943503	0.49	1.446708	3.0809
Harida	1	0.5	0.1681	4.7	0.564971751	0.2	0.59049306	1.3235
Anchhu	7	3.3	1.1765	4.7	0.564971751	0.45	1.32860939	3.0701
Angarua	1	0.5	0.1681	4.7	0.564971751	0.19	0.56096841	1.2940
Dhamana	1	0.5	0.1681	4.7	0.564971751	0.23	0.67906702	1.4121
Tentela	3	1.4	0.5042	9.4	1.129943503	0.16	0.47239445	2.1065
Karanja	3	1.4	0.5042	9.4	1.129943503	0.2	0.59049306	2.2246
Mahula	1	0.5	0.1681	4.7	0.564971751	0.5	1.47623265	2.2093
Bahada	4	1.9	0.6723	14.1	1.694915254	0.8	2.36197225	4.7292
	595	**283.33**	**100.00**	**831.9**	**100.00**	**33.87**	**100**	**300.00**

Name of the Shurbs	**Nos**	**Density**	**Relative Density**	**Frequency**	**Relatiove Frequency**	**IVI**
Karada	38	0.20	34.0777	66.64	25.92592593	60.0036
Khakada	1	0.01	0.8968	4.76	1.851851852	2.7486
Agamathu	1	0.01	0.8968	4.76	1.851851852	2.7486
Kurein	21	0.11	18.8324	52.36	20.37037037	39.2028

Atandi	24	0.13	21.5227	52.36	20.37037037	41.8931
Bhadali	1	0.01	0.8968	4.76	1.851851852	2.7486
Sunarigada	1	0.01	0.8968	4.76	1.851851852	2.7486
Beintha	2	0.01	1.7936	9.52	3.703703704	5.4973
Pabakurein	6	0.03	5.3807	23.8	9.259259259	14.6399
Ankula	1	0.01	0.8968	4.76	1.851851852	2.7486
Dantari kanta	1	0.01	0.8968	4.76	1.851851852	2.7486
Jatiki	15	0.08	13.4517	23.8	9.259259259	22.7110
	112	**0.59**	**100**	**257.04**	**100**	**200**

Name of the Herbs	Nos	Density	Relative Density	Frequency	Relatiove Frequency	IVI
Suanai	8	0.30	29.6296	23.8	26.31578947	55.9454
Bhuincha	1	0.04	3.7037	4.76	5.263157895	8.9669
Pichhuli	1	0.04	3.7037	4.76	5.263157895	8.9669
Salara	1	0.04	3.7037	4.76	5.263157895	8.9669
Bhalupadi	1	0.04	3.7037	4.76	5.263157895	8.9669
Bhuin neem	8	0.30	29.6296	23.8	26.31578947	55.9454
Bisalyakarani	1	0.04	3.7037	4.76	5.263157895	8.9669
Ankaranti	5	0.19	18.5185	14.28	15.78947368	34.3080
Krushnaparni	1	0.04	3.7037	4.76	5.263157895	8.9669
	27	**1.00**	**100**	**90.44**	**100**	**200**

Biodiversity assessment of tree in Badadandasahi RF

Name of the Species	Nos	Density	Relative Density	Frequency	Relatiove Frequency	Bsal Area Density	Relative BAD	IVI
Bheru	1	10	7.14286	100	25.0000	0.0250	0.310327706	32.4532
Dhaura	3	30	21.4286	100	25.0000	1.2540	15.56603774	61.9946
Dhauranja	4	40	28.5714	100	25.0000	2.2540	27.97914598	81.5506
Sal	6	60	42.8571	100	25.0000	4.5230	56.14448858	124.001
	14	**140**	**100**	**400**	**100**	**8.0560**	**100.00**	**300.00**

Name of the Shurbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Kurein	2	0.2222	100.01	100	100.00	200.01
	2	**0.2222**	**100.01**	**100**	**100.00**	**200.01**

Name of the Herbs	Nos	Density	Relative Density	Frequency	Relative Frequency	IVI
Banatulasi	1	1.0000	75.018755	100	50.00	125.02
Gudmari	3	0.3333	25.006252	100	50.00	75.01
	4	1.3333	100.03	200	66.67	200.03

Biodiversity assessment of tree in Chandanpur PRF

Name of the Species	Nos	Density	Relative Density	Frequency	Relatiove Frequency	Bsal Area Density	Relative BAD	IVI
Asana	**13**	43.333333	**14.942529**	33.3000	3.33333	9.91	27.6893	45.96516
Bahada	**1**	3.3333333	**1.1494253**	33.3000	3.33333	0.49	1.369098	5.851856
Barabakalia	**3**	10	**3.4482759**	66.6000	6.66667	2.24	6.258731	16.37367
Bauntha	**2**	6.6666667	**2.2988506**	66.6000	6.66667	3.49	9.751327	18.71684
Dhaura	**17**	56.666667	**19.54023**	99.9000	10	0.96	2.682313	32.22254
Halada	**8**	26.666667	**9.1954023**	99.9000	10	0.39	1.08969	20.28509
Kuruma	**1**	3.3333333	**1.1494253**	33.3000	3.33333	0.18	0.502934	4.985692
Mahula	**1**	3.3333333	**1.1494253**	33.3000	3.33333	1.97	5.504331	9.987089
Sal	**9**	30	**10.344828**	33.3000	3.33333	11.42	31.90835	45.58652
Sida	**2**	6.6666667	**2.2988506**	33.3000	3.33333	0.22	0.614697	6.246881
Amla	**1**	3.3333333	**1.1494253**	33.3000	3.33333	0.35	0.977927	5.460685
Anchu	**1**	3.3333333	**1.1494253**	33.3000	3.33333	0.36	1.005868	5.488626
Angarua	**2**	6.6666667	**2.2988506**	33.3000	3.33333	0.26	0.72646	6.358644
Bela	**2**	6.6666667	**2.2988506**	33.3000	3.33333	0.27	0.754401	6.386585
Bheru	**10**	33.333333	**11.494253**	66.6000	6.66667	0.18	0.502934	18.66385
Dhauranja	**1**	3.3333333	**1.1494253**	33.3000	3.33333	0.20	0.558815	5.041574
Kusuma	**1**	3.3333333	**1.1494253**	33.3000	3.33333	0.78	2.17938	6.662138
Mai	**3**	10	**3.4482759**	33.3000	3.33333	0.49	1.369098	8.150707
Patuli	**1**	3.3333333	**1.1494253**	33.3000	3.33333	0.18	0.502934	4.985692
Kataka	**5**	16.666667	**5.7471264**	66.6000	6.66667	0.18	0.502934	12.91673
Bhalia	**1**	3.3333333	**1.1494253**	33.3000	3.33333	0.33	0.922045	5.404804
Kendu	**2**	6.6666667	**2.2988506**	33.3000	3.33333	0.94	2.626432	8.258616
	87	**290.00**	**100.00**	**999.00**	**100**	**35.79**	**100.00**	**300**

Name of the Shurbs	Nos	Density	Relative Density	Frequency	Relatiove Frequency	IVI
Atandi	2	0.074074	16.666683	33.33	16.6667	33.33335
Tiribiri	5	0.185185	41.666708	66.66	33.3333	75.00004
Karada	4	0.148148	33.333367	66.66	33.3333	66.6667
Damaghurudu	1	0.037037	8.3333417	33.33	16.6667	25.00001
	12	**0.444444**	**100.0001**	**199.98**	**100**	**200.0001**

Name of the Herbs	Nos	Density	Relative Density	Frequency	Relatiove Frequency	IVI
Bhuin neem	5	1.66666	23.809	66.66	25	48.809
Bisalya karani	5	1.66666	23.809	66.66	25	48.809
Krushna parni	5	1.6666	23.809	66.66	25	48.809
Tiribini	6	2	28.571	66.66	25	53.571
	21	7.000	100	266.64	100	200

Angul Forest Division

Biodiversity assessment of tree in Sorispal RF

Name of the Species	Nos	Density	Relative Density	Frequency	Relatiove Frequency	Bsal Area Density	Relative BAD	IVI
Asan	**4**	40	**11.7647**	100	9.09091	1.34	28.450106	49.305
Bandhana	**1**	10	**2.94118**	100	9.09091	0.19	4.0339703	16.066
Bela	**3**	30	**8.82353**	100	9.09091	0.27	5.7324841	23.646
Bheru	**7**	70	**20.5882**	100	9.09091	0.18	3.8216561	33.500
Dauranja	**4**	40	**11.7647**	100	9.09091	0.20	4.2462845	25.101
Dhaura	**5**	50	**14.7059**	100	9.09091	0.50	10.615711	34.412
Kendu	**1**	10	**2.94118**	100	9.09091	0.94	19.957537	31.989
Kurum	**3**	30	**8.82353**	100	9.09091	0.18	3.8216561	21.736
Sidha	**3**	30	**8.82353**	100	9.09091	0.22	4.670913	22.585
Tamala	**1**	10	**2.94118**	100	9.09091	0.20	4.2462845	16.278
Tentla	**2**	20	**5.88235**	100	9.09091	0.49	10.403397	25.376
Total	**34**	**340**	**100**	**1100**	**100**	**4.71**	**100.00**	**300.00**

Name of the Shurbs	Nos	Density	Relative Density	Frequency	Relatiove Frequency	IVI
Kurein	**4**	0.44444	66.6663	100	33.333333	99.9997
Telkuruma	**1**	0.11111	16.6666	100	33.333333	49.9999
Karada	**1**	0.11111	16.6666	100	33.333333	49.9999
	6	**0.66667**	**100.00**	**300**	**100**	**200**

Name of the Herbs	Nos	Density	Relative Density	Frequency	Relatiove Frequency	IVI
Bhuin Neem	**2**	2	50	100	33.333333	83.3333
Bisayakaani	**1**	1	25	100	33.333333	58.3333
Akaranti	**1**	1	25	100	33.333333	58.3333
	4	**4**	**100**	**300**	**100**	**200**

Biodiversity assessment of tree in Hinsar Sorispal RF

Name of the Species	Nos	Density	Relative Density	Frequency	Relatiove Frequency	Bsal Area Density	Relative BAD	IVI
Amla	**4**	8	**3.57143**	40	3.9215686	1.35	5.46337	12.686121
Asana	**7**	14	**6.25**	60	5.8823529	1.34	5.42290	19.922039
Bahada	**1**	2	**0.89286**	20	1.9607843	0.28	1.13314	5.4502036
Bheru	**9**	18	**8.03571**	60	5.8823529	0.18	0.72845	21.707754
Chara	**2**	4	**1.78571**	40	3.9215686	0.42	1.69971	10.900407
Dhaura	**9**	18	**8.03571**	80	7.8431373	0.50	2.02347	26.2651
Halda	**12**	24	**10.7143**	100	9.8039216	0.39	1.57830	33.501018
Harida	**3**	6	**2.67857**	20	1.9607843	0.40	1.61877	7.2359178
Karanja	**3**	6	**2.67857**	40	3.9215686	0.30	1.21408	11.793264
Kendu	**18**	36	**16.0714**	100	9.8039216	1.29	5.22055	38.858161
Mahula	**1**	2	**0.89286**	20	1.9607843	1.97	7.97248	5.4502036
Saguan	**11**	22	**9.82143**	40	3.9215686	0.27	1.09267	18.936121

Sidha	**8**	16	**7.14286**	60	5.8823529	0.22	0.89032	20.814896
Kasi	**2**	4	**1.78571**	40	3.9215686	0.25	1.01173	10.900407
Sirisa	**3**	6	**2.67857**	40	3.9215686	0.21	0.84985	11.793264
Giringa	**1**	2	**0.89286**	20	1.9607843	0.24	0.97126	2.8975482
Katak	**6**	12	**5.35714**	60	5.8823529	0.29	1.17361	11.295599
Kurum	**3**	6	**2.67857**	40	3.9215686	**0.18**	0.72845	6.8684589
Piasala	**2**	4	**1.78571**	20	1.9607843	0.41	1.65924	3.7830875
Sal	**2**	4	**1.78571**	40	3.9215686	11.42	46.2161	6.219528
Barabakulia	**2**	4	**1.78571**	20	1.9607843	2.24	9.06515	3.7904053
Bela	**1**	2	**0.89286**	20	1.9607843	0.18	0.72845	3.1341566
Bhalia	**1**	2	**0.89286**	20	1.9607843	0.2	0.80938	2.8951089
Tentela	**1**	2	**0.89286**	20	1.9607843	0.18	0.72845	2.9024267
	112	**224.0**	**100**	**1020**	**100**	**24.71**	**100.00**	**300**

Name of the Shurbs	Nos	Density	Relative Density	Frequ ency	Relatiove Frequency	IVI
Jhatiki	3	0.0667	6.81803	20	5.5555556	12.3736
Karada	12	0.2667	27.2721	80	22.222222	49.4943
Kurein	2	0.0444	4.54535	40	11.111111	15.6565
Palas	13	0.2889	29.5448	100	27.777778	57.3226
Telkuruma	6	0.1333	13.6361	60	16.666667	30.3027
jhatiki	4	0.0889	9.0907	40	11.111111	20.2018
Atandi	4	0.0889	9.0907	20	5.5555556	14.6463
	44	**0.9778**	**100**	**360**	**100**	**200**

Name of the Herbs	Nos	Density	Relative Density	Frequ ency	Relatiove Frequency	IVI
Gudumari	2	0.40000	15.3846	20	11.111111	26.4957
Krushnaparni	2	0.40000	15.3846	20	11.111111	26.4957
Salaparni	1	0.20000	7.69231	20	11.111111	18.8034
bhuin neem	3	0.60000	23.0769	60	33.333333	56.4103
Banatulasi	1	0.20000	7.69231	20	11.111111	18.8034
Ankaranti	3	0.60000	23.0769	20	11.111111	34.188
Ganga Siuli	1	0.20000	7.69231	20	11.111111	18.8034
	13	**2.60000**	**100**	**180**	**100**	**200**

Biodiversity assessment of tree in Kalapat PRF

Name of the Species	Nos	Density	Relative Density	Frequency	Relatiove Frequency	Bsal Area Density	Relative BAD	IVI
Amala	1	1	0.42017	14.2	1.4493	1.2	4.11664	5.986082
Asana	44	63	18.4874	99.4	10.145	1.1	3.77358	32.40591
Bandhan	12	17	5.04202	85.2	8.6957	0.79	2.71012	16.44779

Barabakulia	3	4	1.2605	14.2	1.4493	1.54	5.28302	7.992798
Bela	17	24	7.14286	99.4	10.145	1.2	4.11664	21.40442
Bheru	32	46	13.4454	99.4	10.145	1.6	5.48885	29.07916
Dhaura	35	50	14.7059	99.4	10.145	4.58	15.7118	40.56265
Kuruma	26	37	10.9244	99.4	10.145	5.1	17.4957	38.56501
Neem	6	9	2.52101	56.8	5.7971	1.1	3.77358	12.09169
Sidha	24	34	10.084	71	7.2464	2.5	8.57633	25.90674
Dhauranja	21	30	8.82353	85.2	8.6957	3.85	13.2075	30.72673
Kendu	1	1	0.42017	14.2	1.4493	0.89	3.05317	4.922617
Tentala	8	11	3.36134	42.6	4.3478	0.17	0.58319	8.292361
Karanja	2	3	0.84034	28.4	2.8986	0.25	0.85763	4.59652
Halda	3	4	1.2605	28.4	2.8986	1.11	3.80789	7.966945
Bahada	1	1	0.42017	14.2	1.4493	0.87	2.98456	4.854006
Kasi	1	1	0.42017	14.2	1.4493	0.64	2.19554	4.064984
Phasi	1	1	0.42017	14.2	1.4493	0.66	2.26415	4.133594
	238	**340**	**100**	**979.8**	**100**	**29.15**	**100**	**300**

Name of the Shurbs	Nos	Density	Relative Density	Frequency	Relatiove Frequency	IVI
Jhatki	3	0.04762	11.5384	28.56	15.385	26.923
Telakuruma	8	0.12698	30.7691	57.12	30.769	61.5383
Karada	13	0.20635	49.9998	85.68	46.154	96.1537
Kurein	2	0.03175	7.69228	14.28	7.6923	15.3846
	26	**0.41270**	**100**	**185.64**	**100**	**200**

Name of the Herbs	Nos	Density	Relative Density	Frequency	Relatiove Frequency	IVI
Bhuin neem	9	1.286	75.0125	57.12	66.667	141.679
Agamathu	1	0.143	8.33472	14.28	16.667	25.0014
Banatulasi	2	0.286	16.6694	14.28	16.667	33.3361
	12	**1.714**	**100**	**85.68**	**100**	**200**

Biodiversity assessment of tree in Kulasinga PRF

Name of the Species	Nos	Density	Relative Density	Frequency	Relatiove Frequency	Bsal Area Density	Relative BAD	IVI
Jamun	**1**	1.7	**0.6369**	16.6	2.7778	1.2	4.76758	8.182293
Mahula	**9**	15.0	**5.7324**	49.8	8.3333	1.6	6.35677	20.42252
Rohini	**8**	13.3	**5.0955**	49.8	8.3333	4.58	18.1963	31.62508
Bheru	**12**	20.0	**7.6432**	49.8	8.3333	1.15	4.56893	20.54548
Sal	**52**	86.7	**33.121**	49.8	8.3333	5.1	20.2622	61.71615

Asana	**16**	26.7	**10.191**	66.4	11.111	1.1	4.37028	25.67235
Jammu	**2**	3.3	**1.2739**	33.2	5.5556	0.38	1.50973	8.339158
Kendu	**3**	5.0	**1.9108**	33.2	5.5556	3.85	15.296	22.76235
Barabakalia	**4**	6.7	**2.5477**	33.2	5.5556	1.45	5.76083	13.86412
Bela	**2**	3.3	**1.2739**	33.2	5.5556	0.89	3.53596	10.36538
Dhaura	**24**	40.0	**15.286**	33.2	5.5556	0.17	0.67541	21.51739
Kuruma	**4**	6.7	**2.5477**	33.2	5.5556	0.25	0.99325	9.09654
Mai	**2**	3.3	**1.2739**	16.6	2.7778	1.11	4.41001	8.461659
Sidha	**6**	10.0	**3.8216**	33.2	5.5556	0.87	3.4565	12.83366
Bhalia	**1**	1.7	**0.6369**	16.6	2.7778	0.64	2.54271	5.957422
Halda	**9**	15.0	**5.7324**	33.2	5.5556	0.66	2.62217	13.91014
Bahada	**2**	3.3	**1.2739**	16.6	2.7778	0.17	0.67541	4.727054
	157	**261.67**	**100.00**	**597.6**	**100**	**25.17**	**100**	**300.00**

Name of the Shurbs	**Nos**	**Density**	**Relative Density**	**Frequency**	**Relatiove Frequency**	**IVI**
Ankaranti	**2**	0.0370	7.9994	16.6	7.6923	15.6917
Chara	**6**	0.1111	23.998	49.8	23.077	47.075
Jhatiki	**3**	0.0556	11.999	33.2	15.385	27.3837
Karada	**5**	0.0926	19.998	33.2	15.385	35.383
Kurein	**2**	0.0370	7.9994	16.6	7.6923	15.6917
Matmati	**1**	0.0185	3.9997	16.6	7.6923	11.692
Palasa	**4**	0.0741	15.999	16.6	7.6923	23.691
Telkurma	**1**	0.0185	3.9997	16.6	7.6923	11.692
Sunari	**1**	0.0185	3.9997	16.6	7.6923	11.692
	25	**0.4630**	**100**	**215.8**	**100**	**200**

Name of the Herbs	**Nos**	**Density**	**Relative Density**	**Frequency**	**Relatiove Frequency**	**IVI**
Bhuin Neem	**6**	1.0000	40	49.98	33.333	73.3333
Bisalya Karani	**1**	0.1667	6.6667	16.66	11.111	17.7778
Pokusunga	**2**	0.3333	13.333	16.66	11.111	24.4444
Gudmari	**2**	0.3333	13.333	33.32	22.222	35.5556
Salaparni	**3**	0.5000	20	16.66	11.111	31.1111
Dalasinga	**1**	0.1667	6.6667	16.66	11.111	17.7778
	15	**2.5000**	**100**	**149.94**	**100**	**200**

Biodiversity assessment of Trees in Katada RF									
Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
1	Asana	41	22.8	10.9	55.0	7.2	1.8	9.8	27.9
2	Dhaura	56	31.1	14.9	93.5	12.3	2.1	11.4	38.6
3	Karada	61	33.9	16.2	66.0	8.7	2.4	13.0	37.9

4	Sal	62	34.4	16.4	33.0	4.3	2.4	13.0	33.8
5	Giringa	12	6.7	3.2	33.0	4.3	0.8	4.2	11.8
6	Patuli	3	1.7	0.8	16.5	2.2	0.2	1.1	4.1
7	Sidha	18	10.0	4.8	33.0	4.3	0.9	4.8	14.0
8	Chara	5	2.8	1.3	22.0	2.9	0.3	1.4	5.6
9	Kendu	18	10.0	4.8	49.5	6.5	0.5	2.4	13.7
10	Rohini	2	1.1	0.5	11.0	1.4	0.2	1.0	3.0
11	Telkuruma	4	2.2	1.1	22.0	2.9	0.2	1.0	5.0
12	Amla	1	0.6	0.3	5.5	0.7	0.2	1.0	2.0
13	Gohira	1	0.6	0.3	5.5	0.7	0.2	0.9	1.9
14	Amthi	1	0.6	0.3	5.5	0.7	0.2	0.9	1.9
15	Barabakalia	9	5.0	2.4	38.5	5.1	1.0	5.2	12.6
16	Mahula	5	2.8	1.3	22.0	2.9	0.2	1.1	5.3
17	Sisoo	2	1.1	0.5	11.0	1.4	0.2	1.0	3.0
18	Kumbhi	1	0.6	0.3	5.5	0.7	0.2	0.9	1.9
19	Kusuma	8	4.4	2.1	22.0	2.9	0.2	1.2	6.2
20	Mai	18	10.0	4.8	44.0	5.8	0.9	4.7	15.3
21	Khakada	3	1.7	0.8	5.5	0.7	0.2	1.0	2.6
22	Bela	9	5.0	2.4	27.5	3.6	0.4	2.1	8.1
23	Kurei	7	3.9	1.9	27.5	3.6	0.3	1.7	7.2
24	Accacia	2	1.1	0.5	5.5	0.7	0.2	1.0	2.3
25	Kataka	3	1.7	0.8	16.5	2.2	0.2	1.0	3.9
26	Neem	5	2.8	1.3	5.5	0.7	0.2	1.1	3.2
27	Patas	2	1.1	0.5	5.5	0.7	0.2	0.9	2.1
28	Halada	6	3.3	1.6	16.5	2.2	0.3	1.8	5.6
29	Sunari	3	1.7	0.8	5.5	0.7	0.3	1.4	2.9
30	Bhalia	1	0.6	0.3	5.5	0.7	0.2	1.0	2.0
31	Bhuinneem	1	0.6	0.3	5.5	0.7	0.2	0.9	1.9
32	Kasi	1	0.6	0.3	5.5	0.7	0.2	1.0	2.0
33	Chauli	1	0.6	0.3	5.5	0.7	0.2	1.0	2.0
34	Dhamana	1	0.6	0.3	5.5	0.7	0.2	0.9	1.9
35	Saluani	1	0.6	0.3	5.5	0.7	0.2	1.0	2.0
36	Tentela	2	1.1	0.5	11.0	1.4	0.2	1.1	3.1
37	Simili	1	0.6	0.3	5.5	0.7	0.2	1.1	2.1
	Total	377	209.44	100	759	100	18.42	100	300

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Biodiversity Assessment of Shrubs in Katada RF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Mura	29	0.02	0.64	66.00	60.00	60.64
2	Patuli	1	0.50	18.66	5.50	5.00	23.66
3	Telkuruma	2	0.25	9.33	11.00	10.00	19.33
4	Mamuri	1	0.50	18.66	5.50	5.00	23.66

5	Bhuinneem	1	0.50	18.66	5.50	5.00	23.66
6	Bhalupadi	2	0.25	9.33	5.50	5.00	14.33
7	Madamadi	3	0.17	6.22	5.50	5.00	11.22
8	Tenteikuli	1	0.50	18.66	5.50	5.00	23.66
	Total	**40**	**2.68**	**100.00**	**110.00**	**100.00**	**200.00**

Biodiversity Assessment of Herbs in Katada RF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Murha	8	0.01	1.24	33	17.14	18.38
2	Kurei	10	0.01	0.99	33	17.14	18.13
3	Bhuinneem	10	0.01	0.99	44	22.86	23.85
4	Satabari	1	0.06	9.92	5.5	2.86	12.78
5	Hadakankali	1	0.06	9.92	5.5	2.86	12.78
6	Telkuruma	3	0.02	3.31	16.5	8.57	11.88
7	Salapani	2	0.03	4.96	5.5	2.86	7.82
8	Khakada	1	0.06	9.92	5.5	2.86	12.78
9	Madamadi	2	0.03	4.96	11	5.71	10.67
10	Bhalupadi	1	0.06	9.92	5.5	2.86	12.78
11	Rani	1	0.06	9.92	5.5	2.86	12.78
12	Pichhuli	2	0.03	4.96	5.5	2.86	7.82
13	Puksunga	1	0.06	9.92	5.5	2.86	12.78
14	Dantari	1	0.06	9.92	5.5	2.86	12.78
15	Gopakanhu	1	0.06	9.92	5.5	2.86	12.78
	Total	**45**	**0.56**	**100.00**	**192.5**	**100.00**	**200.00**

Biodiversity assessment of Trees in Similipathar RF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
1	Asana	16	14.55	3.75	54.54	4.88	1.60	3.30	11.92
2	Chara	17	15.45	3.98	54.54	4.88	1.43	2.95	11.81
3	Dhaura	76	69.09	17.80	63.63	5.69	8.89	18.33	41.82
4	Harida	11	10.00	2.58	54.54	4.88	1.20	2.47	9.93
5	Jamu	4	3.64	0.94	18.18	1.63	1.10	2.27	4.83
6	Khakada	13	11.82	3.04	54.54	4.88	1.50	3.09	11.02
7	Kumbhi	7	6.36	1.64	36.36	3.25	0.79	1.63	6.52
8	Mahula	14	12.73	3.28	45.45	4.07	1.54	3.18	10.52
9	Mai	4	3.64	0.94	27.27	2.44	1.20	2.47	5.85
10	Patmasu	6	5.45	1.41	9.09	0.81	1.60	3.30	5.52
11	Sal	50	45.45	11.71	54.54	4.88	4.58	9.45	26.03
12	Halda	8	7.27	1.87	36.36	3.25	1.15	2.37	7.50
13	Karada	53	48.18	12.41	81.81	7.32	5.10	10.52	30.25
14	Kendu	6	5.45	1.41	45.45	4.07	1.10	2.27	7.74
15	Kurei	19	17.27	4.45	54.54	4.88	2.50	5.16	14.48
16	Kusuma	5	4.55	1.17	36.36	3.25	0.38	0.78	5.21
17	Sidha	46	41.82	10.77	81.81	7.32	3.85	7.94	26.03
18	Sunari	4	3.64	0.94	27.27	2.44	1.45	2.99	6.37

19	Bahada	4	3.64	0.94	27.27	2.44	0.89	1.84	5.21
20	Bija	2	1.82	0.47	18.18	1.63	0.17	0.35	2.44
21	Anchhu	4	3.64	0.94	18.18	1.63	0.25	0.52	3.08
22	BadaKurei	11	10.00	2.58	27.27	2.44	1.11	2.29	7.30
23	Bara	7	6.36	1.64	9.09	0.81	0.87	1.79	4.25
24	Bela	4	3.64	0.94	18.18	1.63	0.64	1.32	3.88
25	Bheru	5	4.55	1.17	18.18	1.63	0.66	1.36	4.16
26	Kasi	4	3.64	0.94	18.18	1.63	0.54	1.11	3.68
27	Raj Mai	1	0.91	0.23	9.09	0.81	0.17	0.35	1.40
28	Katak	6	5.45	1.41	27.27	2.44	0.24	0.49	4.34
29	Bhuincha	1	0.91	0.23	9.09	0.81	0.18	0.37	1.42
30	Piasal	5	4.55	1.17	9.09	0.81	0.33	0.68	2.66
31	Chauli	1	0.91	0.23	9.09	0.81	0.10	0.21	1.25
32	Amthi	1	0.91	0.23	9.09	0.81	0.15	0.31	1.36
33	Dhamana	1	0.91	0.23	9.09	0.81	0.19	0.39	1.44
34	Mitkunia	1	0.91	0.23	9.09	0.81	0.18	0.37	1.42
35	Pabkurei	3	2.73	0.70	9.09	0.81	0.16	0.33	1.85
36	Beuntha	4	3.64	0.94	9.09	0.81	0.23	0.47	2.22
37	Guhira	2	1.82	0.47	9.09	0.81	0.28	0.58	1.86
38	Jari	1	0.91	0.23	9.09	0.81	0.19	0.39	1.44
	Total	**427**	**388.18**	**100**	**1118.07**	**100**	**48.49**	**100**	**300**

Biodiversity Assessment of Shrubs in Similipathar RF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Banakhajuri	3	0.27	4.98	27.27	8.82	13.80
2	Kulthia	4	0.20	3.73	36.36	11.76	15.50
3	Kurei	5	0.16	2.99	36.36	11.76	14.75
4	Suanai	20	0.04	0.75	81.81	26.47	27.22
5	Bhuinkuruma	6	0.14	2.49	36.36	11.76	14.25
6	Bhuincha	2	0.41	7.47	18.18	5.88	13.35
7	Bhuinneem	1	0.82	14.93	9.09	2.94	17.87
8	Gopakanhu	1	0.82	14.93	9.09	2.94	17.87
9	Mutha	1	0.82	14.93	9.09	2.94	17.87
10	Atandi	5	0.16	2.99	27.27	8.82	11.81
11	Bhadali	1	0.82	14.93	9.09	2.94	17.87
12	Mura	1	0.82	14.93	9.09	2.94	17.87
	Total	**50**	**5.48**	**100.00**	**309.06**	**100.00**	**200.00**

Biodiversity Assessment of Herbs in Similipathar RF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Bhuinneem	14	0.01	0.95	72.72	33.33	34.29
2	Muturi	1	0.09	13.35	9.09	4.17	17.52
3	Mutha	1	0.09	13.35	9.09	4.17	17.52
4	Suanai	11	0.01	1.21	54.54	25.00	26.21
5	Thalkhudi	1	0.09	13.35	9.09	4.17	17.52
6	Kuluthia	3	0.03	4.45	18.18	8.33	12.78

7	Daba Grass	2	0.05	6.67	9.09	4.17	10.84
8	Bajramuli	1	0.09	13.35	9.09	4.17	17.52
9	Chauladhua	1	0.09	13.35	9.09	4.17	17.52
10	Bhadali	1	0.09	13.35	9.09	4.17	17.52
11	Atandi	2	0.05	6.67	9.09	4.17	10.84
	Total	**38**	**0.68**	**100.00**	**218.16**	**100.00**	**200.00**

Biodiversity assessment of Trees in Sulia-Arisulia RF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
1	Bheru	4	40	30.77	100	20	0.33	12.50	63.27
2	Dhaura	1	10	7.69	100	20	0.18	6.82	34.51
3	Karada	6	60	46.15	100	20	1.70	64.39	130.55
4	Kurei	1	10	7.69	100	20	0.23	8.71	36.40
5	Sisoo	1	10	7.69	100	20	0.20	7.58	35.27
	Total	**13**	**130**	**100**	**500**	**100**	**2.64**	**100**	**300**

Biodiversity Assessment of Herbs in Arisulia-Sulia RF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Bhiunneem	1	1	50	100	50	100
2	Madmadi	1	1	50	100	50	100
	Total	**2**	**2**	**100**	**200**	**100**	**200**

Biodiversity Assessment of Herbs in Kandhakuruda RF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Suanai	3	0.33	40.02	100.00	50.00	90.02
2	Bhiunneem	2	0.50	60.02	100.00	50.00	110.02
	Total	**5**	**0.83**	**100.04**	**200.00**	**100.00**	**200.04**

Biodiversity assessment of Trees in Kandhakuruda RF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
1	Ankula	5	50	7.04	100	7.69	0.45	6.96	21.71
2	Barbakalia	2	20	2.81	100	7.69	0.2	3.09	13.6
3	Bela	1	10	1.40	100	7.69	0.17	2.63	11.7
4	Bheru	1	10	1.40	100	7.69	0.18	2.78	11.8

5	Dhamana	4	40	5.63	100	7.69	0.23	3.56	16.8
6	Dhaura	6	60	8.45	100	7.69	1.1	17.02	33.1
7	Halada	1	10	1.40	100	7.69	0.15	2.32	11.4
8	Karada	34	340	47.88	100	7.69	2.1	32.50	88.08
9	Khakada	2	20	2.811	100	7.69	0.18	2.78	13.2
10	Kurei	9	90	12.67	100	7.69	1.15	17.80	38.17
11	Kuruma	1	10	1.40	100	7.69	0.17	2.63	11.7
12	Mai	2	20	2.81	100	7.69	0.18	2.78	13.29
13	Sidha	3	30	4.22	100	7.69	0.2	3.09	15.01
	Total	**71**	**710**	**100**	**1300**	**100**	**6.46**	**100**	**300**

Biodiversity Assessment of Shrubs in Kandhakuruda RF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Gopakanhu	1	9	40	100	33.33	73.33
2	Kulathia	1	9	40	100	33.33	73.33
3	Suanai	2	4.5	20	100	33.33	53.33
	Total	**4**	**22.5**	**100**	**300**	**100**	**200**

Biodiversity assessment of Trees in Antulia Tabada RF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
1	Ankula	3	2.00	0.55	19.8	1.65	0.18	0.41	2.61
2	Arjuna	9	6.00	1.64	6.6	0.55	0.25	0.58	2.76
3	Batara	2	1.33	0.36	13.2	1.10	0.19	0.44	1.90
4	Bhuincha	1	0.67	0.18	6.6	0.55	0.18	0.41	1.15
5	Dimiri	1	0.67	0.18	6.6	0.55	0.17	0.39	1.12
6	Halda	30	20.00	5.46	66	5.49	2.54	5.84	16.80
7	Karada	66	44.00	12.02	59.4	4.95	5.8	13.35	30.31
8	Kuhalu	1	0.67	0.18	6.6	0.55	0.19	0.44	1.17
9	Kurei	6	4.00	1.09	33	2.75	0.55	1.27	5.11
10	Kuruma	21	14.00	3.83	52.8	4.40	1.19	2.74	10.96
11	Makarakanda	2	1.33	0.36	6.6	0.55	0.19	0.44	1.35
12	Sidha	45	30.00	8.20	66	5.49	2.89	6.65	20.34
13	Barabakalia	15	10.00	2.73	66	5.49	0.38	0.87	9.10
14	Asana	34	22.67	6.19	66	5.49	2.14	4.92	16.61
15	Dhaura	55	36.67	10.02	66	5.49	5.54	12.75	28.26
16	Harida	2	1.33	0.36	13.2	1.10	0.2	0.46	1.92
17	Mahula	8	5.33	1.46	39.6	3.30	0.54	1.24	6.00
18	Sal	63	42.00	11.48	39.6	3.30	6.54	15.05	29.82
19	Saguan	41	27.33	7.47	26.4	2.20	3.25	7.48	17.14
20	Amthi	4	2.67	0.73	26.4	2.20	0.22	0.51	3.43
21	Mai	8	5.33	1.46	26.4	2.20	0.35	0.81	4.46

22	Pabkurei	32	21.33	5.83	33	2.75	1.25	2.88	11.45
23	Bara	1	0.67	0.18	6.6	0.55	0.18	0.41	1.15
24	Chara	11	7.33	2.00	52.8	4.40	0.38	0.87	7.27
25	Kendu	2	1.33	0.36	13.2	1.10	0.19	0.44	1.90
26	Kusuma	2	1.33	0.36	13.2	1.10	0.19	0.44	1.90
27	Sisoo	4	2.67	0.73	26.4	2.20	0.22	0.51	3.43
28	Jamu	1	0.67	0.18	6.6	0.55	0.16	0.37	1.10
29	Kasi	5	3.33	0.91	26.4	2.20	0.35	0.81	3.91
30	Khakada	4	2.67	0.73	19.8	1.65	0.33	0.76	3.14
31	Bela	9	6.00	1.64	19.8	1.65	0.48	1.10	4.39
32	Bhalia	5	3.33	0.91	19.8	1.65	0.35	0.81	3.36
33	Bheru	1	0.67	0.18	6.6	0.55	0.19	0.44	1.17
34	Kurumi	4	2.67	0.73	13.2	1.10	0.36	0.83	2.66
35	Mamuri	1	0.67	0.18	6.6	0.55	0.17	0.39	1.12
36	Nal sindiri	1	0.67	0.18	6.6	0.55	0.17	0.39	1.12
37	Sunari	4	2.67	0.73	19.8	1.65	0.36	0.83	3.21
38	Anchhu	4	2.67	0.73	6.6	0.55	0.38	0.87	2.15
39	D. Mai	4	2.67	0.73	13.2	1.10	0.44	1.01	2.84
40	Ghuntia Patuli	2	1.33	0.36	6.6	0.55	0.2	0.46	1.37
41	Tentela	6	4.00	1.09	26.4	2.20	0.49	1.13	4.42
42	Damghurudu	1	0.67	0.18	6.6	0.55	0.18	0.41	1.15
43	L.Mai	2	1.33	0.36	13.2	1.10	0.2	0.46	1.92
44	Amla	5	3.33	0.91	13.2	1.10	0.45	1.04	3.05
45	Angarua	2	1.33	0.36	13.2	1.10	0.2	0.46	1.92
46	Bana Kurumi	1	0.67	0.18	6.6	0.55	0.19	0.44	1.17
47	Patmasu	2	1.33	0.36	13.2	1.10	0.22	0.51	1.97
48	Rai	6	4.00	1.09	19.8	1.65	0.45	1.04	3.78
49	B.Sal	1	0.67	0.18	6.6	0.55	0.19	0.44	1.17
50	Bahada	3	2.00	0.55	13.2	1.10	0.23	0.53	2.17
51	Chaipatuli	1	0.67	0.18	6.6	0.55	0.19	0.44	1.17
52	Kumbhi	2	1.33	0.36	13.2	1.10	0.18	0.41	1.88
53	Mitkunia	1	0.67	0.18	6.6	0.55	0.16	0.37	1.10
54	Tamala	1	0.67	0.18	6.6	0.55	0.2	0.46	1.19
55	Bija	1	0.67	0.18	6.6	0.55	0.1	0.23	0.96
	Total	**549**	**366.00**	**100.00**	**1201.20**	**100.00**	**43.46**	**100.00**	**300.00**

Biodiversity Assessment of Shrubs in Antulia Tabada RF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Lalbhali	1	0.60	13.25	6.60	5.26	18.51
2	Mura	9	0.07	1.47	33.00	26.32	27.79
3	Pabkurei	4	0.15	3.31	19.80	15.79	19.10
4	Kurumi	5	0.12	2.65	19.80	15.79	18.44

5	Nalsindiri	1	0.60	13.25	6.60	5.26	18.51
6	Jhatki	1	0.60	13.25	6.60	5.26	18.51
7	Kurei	2	0.30	6.62	6.60	5.26	11.89
8	Nalbali	2	0.30	6.62	6.60	5.26	11.89
9	Salara	1	0.60	13.25	6.60	5.26	18.51
10	Chauli	1	0.60	13.25	6.60	5.26	18.51
11	Atandi	1	0.60	13.25	6.60	5.26	18.51
	Total	**28**	**4.54**	**100.00**	**125.40**	**100.00**	**200.00**

Biodiversity Assessment of Herbs in Antulia Tabada RF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Pabkurei	3	0.02	4.08	13.20	7.14	11.23
2	Mura	2	0.03	6.13	13.20	7.14	13.27
3	Kurei	2	0.03	6.13	6.60	3.57	9.70
4	Kurumi	3	0.02	4.08	13.20	7.14	11.23
5	Nalsindiri	1	0.07	12.25	6.60	3.57	15.83
6	Atandi	4	0.02	3.06	26.40	14.29	17.35
7	Bausuni	3	0.02	4.08	19.80	10.71	14.80
8	Iswarajata	12	0.01	1.02	33.00	17.86	18.88
9	Siali	1	0.07	12.25	6.60	3.57	15.83
10	Suanai	2	0.03	6.13	13.20	7.14	13.27
11	Pichhuli	3	0.02	4.08	13.20	7.14	11.23
12	Mayurachulia	1	0.07	12.25	6.60	3.57	15.83
13	Chermura	1	0.07	12.25	6.60	3.57	15.83
14	Bhuinneem	1	0.07	12.25	6.60	3.57	15.83
	Total	**39**	**0.54**	**100.00**	**184.80**	**100.00**	**200.00**

Biodiversity assessment of Trees in Devinagar PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
1	Asana	13	14.44	6.13	88.88	10.53	0.87	4.72	21.38
2	Chara	12	13.33	5.66	66.66	7.89	1.25	6.79	20.34
3	Jamu	3	3.33	1.42	22.22	2.63	0.2	1.09	5.13
4	Kasi	3	3.33	1.42	22.22	2.63	0.23	1.25	5.30
5	Kendu	4	4.44	1.89	22.22	2.63	0.27	1.47	5.98
6	Patmasu	4	4.44	1.89	44.44	5.26	0.32	1.74	8.89
7	Sal	107	118.89	50.47	100	11.84	6.65	36.10	98.42
8	Sunari	6	6.67	2.83	55.55	6.58	0.45	2.44	11.85
9	Dhaura	8	8.89	3.77	44.44	5.26	0.98	5.32	14.36
10	Ghurudu	4	4.44	1.89	33.33	3.95	0.33	1.79	7.63
11	Jhataki	1	1.11	0.47	11.11	1.32	0.18	0.98	2.76

12	Karada	4	4.44	1.89	22.22	2.63	0.35	1.90	6.42
13	Mahula	3	3.33	1.42	33.33	3.95	0.29	1.57	6.94
14	Patuli	1	1.11	0.47	11.11	1.32	0.19	1.03	2.82
15	Rohini	3	3.33	1.42	11.11	1.32	0.64	3.47	6.21
16	Anchhu	3	3.33	1.42	33.33	3.95	0.38	2.06	7.43
17	Bhuincha	1	1.11	0.47	11.11	1.32	0.19	1.03	2.82
18	D.Sal	1	1.11	0.47	11.11	1.32	0.21	1.14	2.93
19	Ghuntuli	1	1.11	0.47	11.11	1.32	0.11	0.60	2.38
20	Kataka	1	1.11	0.47	11.11	1.32	0.19	1.03	2.82
21	Khakada	4	4.44	1.89	22.22	2.63	0.18	0.98	5.50
22	Kusuma	3	3.33	1.42	22.22	2.63	0.69	3.75	7.79
23	Chauli	1	1.11	0.47	11.11	1.32	0.18	0.98	2.76
24	Piasal	2	2.22	0.94	11.11	1.32	0.18	0.98	3.24
25	Tilei	1	1.11	0.47	11.11	1.32	0.16	0.87	2.66
26	Dhamana	1	1.11	0.47	11.11	1.32	0.23	1.25	3.04
27	Kasi	1	1.11	0.47	11.11	1.32	0.29	1.57	3.36
28	L.mai	10	11.11	4.72	33.33	3.95	1.23	6.68	15.34
29	Mai	2	2.22	0.94	11.11	1.32	0.49	2.66	4.92
30	Kumbhi	1	1.11	0.47	11.11	1.32	0.15	0.81	2.60
31	Mamuri	1	1.11	0.47	11.11	1.32	0.16	0.87	2.66
32	Kurei	2	2.22	0.94	11.11	1.32	0.2	1.09	3.34
	Total.	**212**	**235.56**	**100.00**	**844.37**	**100.00**	**18.42**	**100.00**	**300.00**

Biodiversity Assessment of Shrubs in Devinagar PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Bhuinneem	2	0.50	17.67	22.22	13.33	31.00
2	Kurei	13	0.08	2.72	88.88	53.33	56.05
3	Bhuinkuruma	1	1.00	35.34	11.11	6.67	42.00
4	Muturi	4	0.25	8.83	33.33	20.00	28.83
5	Atandi	1	1.00	35.34	11.11	6.67	42.00
	Total	**21**	**2.83**	**100.00**	**166.65**	**100.00**	**200.00**

Biodiversity Assessment of Herbs in Devinagar PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Muturi	19	0.01	1.78	100.00	20.93	22.71
2	Panasi	3	0.04	11.26	11.11	2.33	13.58
3	Siali	5	0.02	6.75	44.44	9.30	16.06
4	Suanai	14	0.01	2.41	100.00	20.93	23.34
5	Mutha	7	0.02	4.82	55.55	11.63	16.45
6	Pichhuli	6	0.02	5.63	55.55	11.63	17.26
7	Tenda	4	0.03	8.44	44.44	9.30	17.75
8	Bhiunneem	2	0.06	16.89	22.22	4.65	21.54
9	Ghuntuli	1	0.11	33.77	11.11	2.33	36.10
10	Atandi	4	0.03	8.44	33.33	6.98	15.42
	Total	**65**	**0.33**	**100.00**	**477.75**	**100.00**	**200.00**

Biodiversity assessment of Trees in Pitachari PRF									
Sl. No.	**Name of the Species**	**Nos.**	**Density**	**Relative Density**	**Frequency**	**Relative Frequency**	**Basal Area Density**	**Relative BAD**	**IVI**
1	Anchhu	1	10	3.03	100	8.33	0.18	3.97	15.34
2	Bela	1	10	3.03	100	8.33	0.2	4.42	15.78
3	Bheru	5	50	15.15	100	8.33	0.19	4.19	27.68
4	Bhuincha	1	10	3.03	100	8.33	0.18	3.97	15.34
5	Chara	1	10	3.03	100	8.33	1.1	24.28	35.65
6	Dhaura	10	100	30.30	100	8.33	0.55	12.14	50.78
7	Karada	7	70	21.21	100	8.33	1.26	27.81	57.36
8	Kendu	2	20	6.06	100	8.33	0.16	3.53	17.93
9	Mahula	1	10	3.03	100	8.33	0.18	3.97	15.34
10	Salui	2	20	6.06	100	8.33	0.23	5.08	19.47
11	Sidha	1	10	3.03	100	8.33	0.14	3.09	14.45
12	Sunari	1	10	3.03	100	8.33	0.16	3.53	14.90
	Total	**33**	**330**	**100.00**	**1200**	**100**	**4.53**	**100**	**300**

TABLE No.3.1 Biodiversity Assessment of Shrubs in Pitachari PRF							
Sl. No.	**Name of the Species**	**Nos.**	**Density**	**Relative Density**	**Frequency**	**Relative Frequency**	**IVI**
1	Bhuinkuruma	2	4.5	33.33	100.00	50.00	83.33
2	Kurei	1	9	66.67	100.00	50.00	116.67
	Total	**3**	**13.5**	**100.00**	**200.00**	**100.00**	**200.00**

TABLE No.3.1 Biodiversity Assessment of Herbs in Pitachari PRF							
Sl. No.	**Name of the Species**	**Nos.**	**Density**	**Relative Density**	**Frequency**	**Relative Frequency**	**IVI**
1	Bhuinneem	2	0.5	14.29	100.00	25.00	39.29
2	Suanai	1	1	28.57	100.00	25.00	53.57
3	Pichhuli	1	1	28.57	100.00	25.00	53.57
4	Mutha	1	1	28.57	100.00	25.00	53.57
	Nos.	**5**	**3.5**	**100.00**	**400.00**	**100.00**	**200.00**

TABLE No. 3.1 Biodiversity assessment of Trees in Sudagolasar PRF									
Sl. No.	**Name of the Species**	**Nos.**	**Density**	**Relative Density**	**Frequency**	**Relative Frequency**	**Basal Area Density**	**Relative BAD**	**IVI**
1	Asana	6	60	15.38	100	8.33	1.6	27.59	51.30
2	Chara	8	80	20.51	100	8.33	0.94	16.21	45.05
3	Dhaura	2	20	5.13	100	8.33	0.19	3.28	16.74
4	Jamu	1	10	2.56	100	8.33	0.18	3.10	14.00
5	Khakada	1	10	2.56	100	8.33	0.16	2.76	13.66
6	Kurei	1	10	2.56	100	8.33	0.2	3.45	14.35

7	Kusuma	1	10	2.56	100	8.33	0.14	2.41	13.31
8	Mai	3	30	7.69	100	8.33	0.73	12.59	28.61
9	Patmasu	2	20	5.13	100	8.33	0.36	6.21	19.67
10	Sal	11	110	28.21	100	8.33	1.05	18.10	54.64
11	Sidha	2	20	5.13	100	8.33	0.09	1.55	15.01
12	Tilei	1	10	2.56	100	8.33	0.16	2.76	13.66
	Total	**39**	**390**	**100**	**1200**	**100**	**5.8**	**100**	**300**

TABLE No.3.1 Biodiversity Assessment of Shrubs in Sudogolasar PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Banakhajuri	2	4.5	14.29	100.00	25.00	39.29
2	Ghurudu	1	9	28.57	100.00	25.00	53.57
3	Suanai	1	9	28.57	100.00	25.00	53.57
4	Thalkudi	1	9	28.57	100.00	25.00	53.57
	Total	**5**	**31.5**	**100.00**	**400.00**	**100.00**	**200.00**

TABLE No.3.1 Biodiversity Assessment of Herbs in Sudogolasar PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Suanai	2	0.5	25	100	33.33	58.33
2	Suganthia	2	0.5	25	100	33.33	58.33
3	Thalkudi	1	1	50	100	33.33	83.33
	Total	**5**	**2**	**100**	**300**	**100**	**200**

TABLE No. 3.1 Biodiversity assessment of Trees in Para PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
1	Saguan	9	15.00	10.71	16.66	3.13	1.6	9.73	23.57
2	Bela	2	3.33	2.38	33.32	6.25	0.94	5.72	14.35
3	Bheru	4	6.67	4.76	16.66	3.13	0.36	2.19	10.08
4	Karada	8	13.33	9.52	33.32	6.25	1.62	9.85	25.63
5	Kurumi	3	5.00	3.57	33.32	6.25	0.23	1.40	11.22
6	Sisoo	1	1.67	1.19	16.66	3.13	0.7	4.26	8.57
7	Bhalia	1	1.67	1.19	16.66	3.13	0.14	0.85	5.17
8	Chara	1	1.67	1.19	16.66	3.13	0.18	1.09	5.41
9	Dhaura	4	6.67	4.76	49.98	9.38	0.62	3.77	17.91
10	Karada	8	13.33	9.52	33.32	6.25	1.44	8.76	24.53
11	Kuruma	2	3.33	2.38	33.32	6.25	0.36	2.19	10.82
12	Mai	3	5.00	3.57	33.32	6.25	0.72	4.38	14.20
13	Sal	10	16.67	11.90	33.32	6.25	1.1	6.69	24.85
14	Ankula	1	1.67	1.19	16.66	3.13	0.19	1.16	5.47
15	Barbakalia	1	1.67	1.19	16.66	3.13	0.18	1.09	5.41

16	Halada	6	10.00	7.14	16.66	3.13	2.92	17.76	28.03
17	Sidha	14	23.33	16.67	33.32	6.25	2.29	13.93	36.85
18	Giringa	1	1.67	1.19	16.66	3.13	0.19	1.16	5.47
19	Patuli	1	1.67	1.19	16.66	3.13	0.16	0.97	5.29
20	Asana	1	1.67	1.19	16.66	3.13	0.14	0.85	5.17
21	Kendu	2	3.33	2.38	16.66	3.13	0.16	0.97	6.48
22	Mahula	1	1.67	1.19	16.66	3.13	0.2	1.22	5.53
	Total	**84**	**140.00**	**100.00**	**533.12**	**100.00**	**16.44**	**100.00**	**300.00**

TABLE No.3.1 Biodiversity Assessment of Shrubs in Para PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Kurumi	2.00	0.09	16.45	33.32	18.18	34.63
2	Mura	3.00	0.06	10.96	49.98	27.27	38.24
3	Gutikhadika	5.00	0.04	6.58	33.32	18.18	24.76
4	Khakada	2.00	0.09	16.45	33.32	18.18	34.63
5	Pichhuli	2.00	0.09	16.45	16.66	9.09	25.54
6	Telkuruma	1.00	0.19	32.89	16.66	9.09	41.99
	Total	**15.00**	**0.57**	**100.00**	**183.26**	**100.00**	**200.00**

TABLE No.3.1 Biodiversity Assessment of Herbs in Para PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Atandi	1	0.17	16.67	16.66	6.67	23.33
2	Bhiunneem	7	0.02	2.38	99.96	40.00	42.38
3	Madamadi	3	0.06	5.56	33.32	13.33	18.89
4	Bhalupadi	1	0.17	16.67	16.66	6.67	23.33
5	Siali	1	0.17	16.67	16.66	6.67	23.33
6	Telkuruma	2	0.08	8.33	33.32	13.33	21.67
7	Kurei	1	0.17	16.67	16.66	6.67	23.33
8	Kurumi	1	0.17	16.67	16.66	6.67	23.33
	Total	**17**	**1.00**	**100.00**	**249.90**	**100.00**	**200.00**

TABLE No. 3.1 Biodiversity assessment of Trees in Pathargarh PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
1	Ankula	17	17	9.71	40	5.13	0.57	1.83	16.67
2	Dhaura	24	24	13.71	90	11.54	3.6	11.56	36.81
3	Phasi	1	1	0.57	10	1.28	0.19	0.61	2.46
4	Halada	11	11	6.29	50	6.41	5.28	16.95	29.65
5	Karada	36	36	20.57	70	8.97	6.48	20.80	50.35
6	Kuruma	7	7	4.00	30	3.85	1.26	4.04	11.89
7	Kurumi	10	10	5.71	30	3.85	1.8	5.78	15.34

8	Mai	17	17	9.71	70	8.97	4.08	13.10	31.79
9	Sidha	7	7	4.00	40	5.13	1.12	3.60	12.72
10	Anchhu	3	3	1.71	30	3.85	0.33	1.06	6.62
11	Bela	7	7	4.00	60	7.69	1.26	4.04	15.74
12	Bheru	2	2	1.14	10	1.28	0.36	1.16	3.58
13	Tamala	2	2	1.14	20	2.56	0.34	1.09	4.80
14	Bahada	2	2	1.14	20	2.56	0.16	0.51	4.22
15	Barabakali	3	3	1.71	30	3.85	0.24	0.77	6.33
16	Sunari	1	1	0.57	10	1.28	0.18	0.58	2.43
17	Angarua	1	1	0.57	10	1.28	0.16	0.51	2.37
18	Chara	1	1	0.57	10	1.28	0.19	0.61	2.46
19	Dhauranja	1	1	0.57	10	1.28	0.22	0.71	2.56
20	Kataka	4	4	2.29	20	2.56	0.19	0.61	5.46
21	Kurei	6	6	3.43	40	5.13	1.08	3.47	12.02
22	Pualadhuan	2	2	1.14	10	1.28	0.22	0.71	3.13
23	Amthi	1	1	0.57	10	1.28	0.19	0.61	2.46
24	Beuntha	1	1	0.57	10	1.28	0.16	0.51	2.37
25	Patuli	5	5	2.86	20	2.56	0.9	2.89	8.31
26	Giringa	1	1	0.57	10	1.28	0.19	0.61	2.46
27	Bara	1	1	0.57	10	1.28	0.18	0.58	2.43
28	Patmasu	1	1	0.57	10	1.28	0.22	0.71	2.56
	Total	**175**	**175**	**100**	**780**	**100**	**31.15**	**100**	**300**

TABLE No.3.1 Biodiversity Assessment of Shrubs in Pathargarh PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Kurumi	4.00	0.23	36.89	40.00	33.33	70.22
2	Mura	11.00	0.08	13.41	60.00	50.00	63.41
3	Kurei	3.00	0.30	49.18	20.00	16.67	65.85
	Total	**18.00**	**0.61**	**100.00**	**120.00**	**100.00**	**200.00**

TABLE No.3.1 Biodiversity Assessment of Herbs in Pathargarh PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Mura	3	0.03	9.52	30.00	21.43	30.95
2	Kurumi	2	0.05	14.29	20.00	14.29	28.57
3	Bhiunneem	5	0.02	5.71	50.00	35.71	41.43
4	Atandi	2	0.05	14.29	20.00	14.29	28.57
5	Kurei	1	0.10	28.57	10.00	7.14	35.71
6	Madamadi	1	0.10	28.57	10.00	7.14	35.71
	Total	**14**	**0.35**	**100.00**	**140.00**	**100.00**	**200.00**

TABLE No. 3.1 Biodiversity assessment of Trees in Tabada PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI

1	Bandhana	3	10	4.55	33.33	3.85	0.43	3.47	11.86
2	Barabakalia	2	6.67	3.03	66.66	7.69	0.94	7.59	18.32
3	Bela	6	20.00	9.09	100	11.54	2.36	19.06	39.69
4	Chara	1	3.33	1.52	33.33	3.85	0.36	2.91	8.27
5	Dhaura	4	13.33	6.06	33.33	3.85	0.56	4.52	14.43
6	Halada	7	23.33	10.61	66.66	7.69	1.2	9.69	27.99
7	Karada	23	76.67	34.85	100	11.54	2.6	21.00	67.39
8	Kendu	1	3.33	1.52	33.33	3.85	0.18	1.45	6.82
9	Kumbhi	1	3.33	1.52	33.33	3.85	0.18	1.45	6.82
10	Kuruma	3	10.00	4.55	33.33	3.85	0.98	7.92	16.31
11	Mahula	1	3.33	1.52	33.33	3.85	0.92	7.43	12.79
12	Pabkurei	6	20.00	9.09	66.66	7.69	0.48	3.88	20.66
13	Sal	1	3.33	1.52	33.33	3.85	0.18	1.45	6.82
14	Sidha	1	3.33	1.52	33.33	3.85	0.18	1.45	6.82
15	Tentela	1	3.33	1.52	33.33	3.85	0.18	1.45	6.82
16	Ankula	2	6.67	3.03	33.33	3.85	0.18	1.45	8.33
17	Khakada	1	3.33	1.52	33.33	3.85	0.12	0.97	6.33
18	Kurei	1	3.33	1.52	33.33	3.85	0.12	0.97	6.33
19	Bahada	1	3.33	1.52	33.33	3.85	0.23	1.86	7.22
	Total	**66**	**220**	**100**	**866.6**	**100**	**12.38**	**100**	**300**

TABLE No.3.1 Biodiversity Assessment of Shrubs in Tabada PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Chauli	1.00	3.00	41.38	33.33	16.67	58.05
2	Mura	1.00	3.00	41.38	33.33	16.67	58.05
3	Pabkurei	6.00	0.50	6.90	66.66	33.33	40.23
4	Kurei	4.00	0.75	10.34	66.66	33.33	43.68
	Total	**12**	**7.25**	**100.00**	**100.00**	**100.00**	**200.00**

TABLE No.3.1 Biodiversity Assessment of Herbs in Tabada PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Pabkurei	1	0.333	66.667	33.330	50.000	116.667
2	Kurei	2	0.167	33.333	33.330	50.000	83.333
	Total	**3**	**0.500**	**100.000**	**66.660**	**100.000**	**200.000**

TABLE No. 3.1 Biodiversity assessment of Trees in Rodasingha PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
1	Ankula	1	10	2.86	100	10	0.18	2.10	14.96
2	Barabakalia	1	10	2.86	100	10	0.94	10.96	23.81
3	Chauli	1	10	2.86	100	10	0.18	2.10	14.96
4	Halada	10	100	28.57	100	10	2.2	25.64	64.21

5	Jamu	1	10	2.86	100	10	0.89	10.37	23.23
6	Karada	7	70	20.00	100	10	2	23.31	53.31
7	Khakada	2	20	5.71	100	10	0.36	4.20	19.91
8	Kurei	3	30	8.57	100	10	0.45	5.24	23.82
9	Sidha	8	80	22.86	100	10	1.2	13.99	46.84
10	Sunari	1	10	2.86	100	10	0.18	2.10	14.96
	Total	**35**	**350**	**100**	**1000**	**100**	**8.58**	**100**	**300**

TABLE No.3.1 Biodiversity Assessment of Herbs in Rodasingha PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Kurei	1	1	50	100	50	100
2	Srikanchan	1	1	50	100	50	100
	Total	**2**	**2**	**100**	**200**	**100**	**200**

TABLE No.3.1 Biodiversity Assessment of Shrubs in Rodasingha PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
1	Chauli	1.00	0.50	100.00	100.00	100.00	200.00
	Total	**1**	**0.5**	**100**	**100**	**100**	**200**

TABLE No. 3.1 Biodiversity assessment of Trees in Dandasingha Bhagatpur PRF

Sl. No.	Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative BAD	IVI
1	Asana	7	35	11.48	50	4.35	0.80	5.90	21.73
2	Bela	4	20	6.56	100	8.70	1.90	14.02	29.28
3	Bheru	1	5	1.64	50	4.35	0.18	1.33	7.32
4	Dhaura	3	15	4.92	100	8.70	0.89	6.57	20.18
5	Jamu	1	5	1.64	50	4.35	0.50	3.69	9.68
6	Kendu	4	20	6.56	100	8.70	1.23	9.08	24.33
7	Kuruma	3	15	4.92	100	8.70	0.89	6.57	20.18
8	L.Mai	5	25	8.20	100	8.70	0.18	1.33	18.22
9	Mai	1	5	1.64	50	4.35	0.18	1.33	7.32
10	Rai	4	20	6.56	50	4.35	0.18	1.33	12.23
11	Sal	4	20	6.56	50	4.35	0.48	3.54	14.45
12	Sidha	10	50	16.39	100	8.70	1.80	13.28	38.37
13	Sunari	2	10	3.28	50	4.35	0.18	1.33	8.95
14	Chara	8	40	13.11	50	4.35	1.50	11.07	28.53
15	Khakada	1	5	1.64	50	4.35	0.18	1.33	7.32
16	Mahula	2	10	3.28	50	4.35	2.30	16.97	24.60
17	Pabkurei	1	5	1.64	50	4.35	0.18	1.33	7.32
	Total	**61**	**305**	**100**	**1150**	**100**	**13.55**	**100**	**300**

TABLE No.3.1 Biodiversity Assessment of Herbs in Dandasingha Bhagatpur PRF							
Sl. No.	**Name of the Species**	**Nos.**	**Density**	**Relative Density**	**Frequency**	**Relative Frequency**	**IVI**
1	Chareigudi	1	0.5	50	50	50	100
2	Kurei	1	0.5	50	50	50	100
	Total	**2**	**1**	**100**	**100**	**100**	**200**

TABLE No.3.1 Biodiversity Assessment of Shrubs in Dandasingha Bhagatpur PRF							
Sl. No.	**Name of the Species**	**Nos.**	**Density**	**Relative Density**	**Frequency**	**Relative Frequency**	**IVI**
1	Pabkurei	2.00	2.25	11.11	50.00	20.00	31.11
2	Chauli	1.00	4.50	22.22	50.00	20.00	42.22
3	Kurei	1.00	4.50	22.22	50.00	20.00	42.22
4	Palasa	1.00	4.50	22.22	50.00	20.00	42.22
5	Siari	1.00	4.50	22.22	50.00	20.00	42.22
	Total	**6**	**20.25**	**100.00**	**250.00**	**100.00**	**200.00**

Angul Forest Division

Biodiversity Assesment of DURGAPUR RF							
Name of the Tree Species	**Density**	**Relative Density**	**Frequency (%)**	**Relative Frequency**	**Basal Area Density**	**Relative BAD**	**IVI**
Anchhu	2.5	0.628930818	15	2.027027027	1	1.901140684	4.5571
Amla	1	0.251572327	10	1.351351351	1.3	2.47148289	4.07441
Asan	54	13.58490566	55	7.432432432	2.3	4.372623574	25.39
Bela	11.5	2.893081761	45	6.081081081	2.5	4.752851711	13.727
Chara	19	4.779874214	40	5.405405405	1.6	3.041825095	13.2271
Chauli	0.5	0.125786164	5	0.675675676	0.9	1.711026616	2.51249
Dhaura	16.5	4.150943396	35	4.72972973	0.7	1.330798479	10.2115
Halada	6	1.509433962	25	3.378378378	5.2	9.885931559	14.7737
karada	17	4.27672956	30	4.054054054	0.3	0.570342205	8.90113
Kendu	3.5	0.880503145	25	3.378378378	0.8	1.520912548	5.77979
Kumbhi	2.5	0.628930818	15	2.027027027	0.7	1.330798479	3.98676
Kusuma	1.5	0.377358491	5	0.675675676	0.9	1.711026616	2.76406
Mahula	10.5	2.641509434	35	4.72972973	0.4	0.760456274	8.1317
Phulari	0.5	0.125786164	5	0.675675676	2.5	4.752851711	5.55431
Sal	146.5	36.85534591	60	8.108108108	16.9	32.12927757	77.0927
Sidha	1	0.251572327	10	1.351351351	2.3	4.372623574	5.97555
Simili	1	0.251572327	10	1.351351351	3.1	5.893536122	7.49646
Dhauranja	0.5	0.125786164	5	0.675675676	0.6	1.140684411	1.94215
Khaira	1	0.251572327	5	0.675675676	0.4	0.760456274	1.6877
Ram Goa	0.5	0.125786164	5	0.675675676	0.5	0.950570342	1.75203
Kuruma	7.5	1.886792453	20	2.702702703	0.2	0.380228137	4.96972
Teak	16	4.025157233	10	1.351351351	0.32	0.608365019	5.98487
Rohini	3.5	0.880503145	15	2.027027027	0.25	0.475285171	3.38282
Palasa	2	0.503144654	5	0.675675676	0.14	0.266159696	1.44498
Mai	8	2.012578616	40	5.405405405	0.52	0.988593156	8.40658
Kasi	1.5	0.377358491	15	2.027027027	0.23	0.437262357	2.84165
Gohira	4	1.006289308	20	2.702702703	0.32	0.608365019	4.31736
Dhamana	1.5	0.377358491	10	1.351351351	0.25	0.475285171	2.204
Tentela	1.5	0.377358491	5	0.675675676	0.42	0.798479087	1.85151
Karanja	3	0.754716981	5	0.675675676	0.27	0.513307985	1.9437
Giringa	13	3.270440252	10	1.351351351	0.23	0.437262357	5.05905
Tambula	2.5	0.628930818	25	3.378378378	0.37	0.703422053	4.71073
Chara	19	4.779874214	20	2.702702703	0.33	0.627376426	8.10995
Bijasal	6	1.509433962	20	2.702702703	0.52	0.988593156	5.20073
Bhalia	2	0.503144654	10	1.351351351	0.63	1.197718631	3.05221
Khakada	0.5	0.125786164	5	0.675675676	0.42	0.798479087	1.59994
Katak	1	0.251572327	10	1.351351351	0.21	0.399239544	2.00216
Angarua	2	0.503144654	10	1.351351351	0.23	0.437262357	2.29176
Patamasu	2	0.503144654	10	1.351351351	0.54	1.02661597	2.88111
Dhauranja	1	0.251572327	5	0.675675676	0.26	0.494296578	1.42154
Simili	1	0.251572327	10	1.351351351	0.42	0.798479087	2.4014
Tentuli	0.5	0.125786164	5	0.675675676	0.12	0.228136882	1.0296

Amithi	0.5	0.125786164	5	0.675675676	0.23	0.437262357	1.23872
Arjuna	0.5	0.125786164	5	0.675675676	0.11	0.209125475	1.01059
Bakala	0.5	0.125786164	5	0.675675676	0.19	0.36121673	1.16268
Total	397.5	100	740	100	52.63	100	300

Shrub Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Mamuri	0.15	4.395604396	5	3.03030303	7.42590743
Murha	0.045	1.318681319	20	12.12121212	13.4398934
Giringa	0.225	6.593406593	5	3.03030303	9.62370962
Kurein	0.03	0.879120879	50	30.3030303	31.1821512
Tambula	0.15	4.395604396	10	6.060606061	10.4562105
Karada	0.1125	3.296703297	10	6.060606061	9.35730936
Khakada	0.1125	3.296703297	15	9.090909091	12.3876124
Gutikharika	0.45	13.18681319	10	6.060606061	19.2474192
Dhataki	0.1125	3.296703297	10	6.060606061	9.35730936
Bhuikuruma	0.225	6.593406593	10	6.060606061	12.6540127
Bhadala	0.45	13.18681319	5	3.03030303	16.2171162
Pichuli	0.45	13.18681319	5	3.03030303	16.2171162
Patua	0.45	13.18681319	5	3.03030303	16.2171162
Atandi	0.45	13.18681319	5	3.03030303	16.2171162
Total	3.4125	100	165	100	200

Herbs species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Salapani	0.0166667	2.354324966	15	14.28571429	16.6400393
Bhuineem	0.01	1.412594979	25	23.80952381	25.2221188
Sunarigada	0.05	7.062974897	5	4.761904762	11.8248797
Kuluthia	0.05	7.062974897	5	4.761904762	11.8248797
Suamalata	0.00625	0.882871862	30	28.57142857	29.4543004
Dantari	0.05	7.062974897	5	4.761904762	11.8248797
Salara	0.05	7.062974897	5	4.761904762	11.8248797
Bhuincha	0.45	63.56677407	5	4.761904762	68.3286788
Muturi	0.025	3.531487448	10	9.523809524	13.055297
Total	0.7079167	100	105	100	200

Biodiversity Assesment of Chhendipada RF

Name of the Tree Species	Density	Relative Density	Frequency (%)	Relative Frequency	Basal Area Density	Relative BAD	IVI
Accacia	40	14.285714	50	11.111111	1.3	12.440191	37.837017
Bahada	5	1.7857143	50	11.111111	0.1	0.9569378	13.853763
Eucalyptus	5	1.7857143	50	11.111111	0.12	1.1483254	14.045151
Mahula	80	28.571429	50	11.111111	1.2	11.483254	51.165793
Sal	20	7.1428571	50	11.111111	2.1	20.095694	38.349662
Asan	20	7.1428571	50	11.111111	0.08	0.7655502	19.019518

Bela	5	1.7857143	50	11.111111	0.05	0.4784689	13.375294
Gohira	25	8.9285714	50	11.111111	2	19.138756	39.178439
Khaira	80	28.571429	50	11.111111	3.5	33.492823	73.175363
Total	280	100	450	100	10.45	100	300

Shrub Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Telakuruma	0.1111111	12.500083	100	50	62.500083
Gangasiuli	0.1666667	18.750124	50	25	43.750124
Karada	0.6111111	68.750455	50	25	93.750455
Total	0.8888889	100	200	100	200

Herb Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Bhuinlimba	1	15.384615	50	25	40.384615
Bajramuli	5	76.923077	100	50	126.92308
Muturi	0.5	7.6923077	50	25	32.692308
Total	6.5	100	200	100	200

Biodiversity Assesment of Kankurpal RF

Sl. No.	Name of the R.F	Name of the Species	Density	Relative Density	Frequency (%)	Relative Frequency	Basal Area Density	Relative BAD	IVI
1	Kankurpal RF	Sal	310	100	100	100	12.3	100	300
Total			310	100	100	100	12.3	100	300

Biodiversity Assesment of Sunarijharan RF

Name of the Tree Species	Density	Relative Density	Frequency (%)	Relative Frequency	Basal Area Density	Relative BAD	IVI
Asan	40	5.06329	100.00000	8.69565	1.50000	4.78927	18.54822
Barabakulia	5	0.63291	50.00000	4.34783	0.30000	0.95785	5.93859
Chara	30	3.79747	100.00000	8.69565	0.90000	2.87356	15.36668
Kendu	10	1.26582	50.00000	4.34783	0.50000	1.59642	7.21007
Mahula	10	1.26582	50.00000	4.34783	0.40000	1.27714	6.89079
Mai	125	15.82278	100.00000	8.69565	5.60000	17.87995	42.39839
Sal	500	63.29114	100.00000	8.69565	16.00000	51.08557	123.07236
Sirisa	5	0.63291	50.00000	4.34783	0.20000	0.63857	5.61931
Tentuli	5	0.63291	50.00000	4.34783	0.10000	0.31928	5.30002
Achhu	5	0.63291	50.00000	4.34783	0.10000	0.31928	5.30002
Chauli	10	1.26582	50.00000	4.34783	0.01000	0.03193	5.64558
Dhaura	10	1.26582	50.00000	4.34783	0.30000	0.95785	6.57150
Gambhari	5	0.63291	50.00000	4.34783	0.11000	0.35121	5.33195
Karada	5	0.63291	50.00000	4.34783	0.30000	0.95785	5.93859

Kasi	5	0.63291	50.00000	4.34783	0.40000	1.27714	6.25788
Kendu	5	0.63291	50.00000	4.34783	0.10000	0.31928	5.30002
Kusum	5	0.63291	50.00000	4.34783	1.10000	3.51213	8.49287
Mahula	5	0.63291	50.00000	4.34783	2.10000	6.70498	11.68572
Rohini	5	0.63291	50.00000	4.34783	1.30000	4.15070	9.13144
Total	790	100	1150	100	31.32	100	300

Name of the Shrub Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Kurein	0.3	62.5	100.0	40.0	102.5
Khakada	0.1	12.5	50.0	20.0	32.5
Bhuikuruma	0.1	25.0	100.0	40.0	65.0
Total	0.44	100	250	100	200

Name of the Herb Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Bhuineem	0.1	100	100	100	200
Total	0.1	100	100	100	200

Biodiversity Assesment of Bramhanbil RF

Name of the Tree Species	Density	Relative Density	Frequency (%)	Relative Frequency	Basal Area Density	Relative BAD	IVI
Kasi	10	2	100	50	0.5	3.91	55.91
Sal	490	98	100	50	12.3	96.09	244.09
Total	500	100	200	100	12.8	100	300

Name of the Shrub Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Patua	0.11	4.55	100	20	24.55
Muturi	0.56	22.73	100	20	42.73
Kurein	0.89	36.36	100	20	56.36
Bhuincha	0.22	9.09	100	20	29.09
Bhuikuruma	0.67	27.27	100	20	47.27
Total	2.44	100	500	100	200

Name of the Herb Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Suamalata	0.1	2.44	100	20	22.44
Mutha	1	24.39	100	20	44.39
Gopa Kanhu	1	24.39	100	20	44.39
Dadaya	1	24.39	100	20	44.39
Apa Maranga	1	24.39	100	20	44.39
Total	4.1	100	500	100	200

Biodiversity Assesment of Jaipur RF

Name of the Tree Species	Density	Relative Density	Frequency (%)	Relative Frequency	Basal Area Density	Relative BAD	IVI
Char	20	4.44	100	50	1.8	10.53	64.97
Sal	430	95.56	100	50	15.3	89.47	235.03
Total	450	100	200	100	17.1	100	300

Name of the Shrub Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Bhuikuruma	3	76.92	100	50	126.92
Banakulathia	0.9	23.08	100	50	73.08
Total	3.9	100	200	100	200

Name of the Herb Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Suamalata	0.25	28.00	100	33.33	61.33
Bhuineem	0.5	56.00	100	33.33	89.33
Banakuluthia	0.14	16.00	100	33.33	49.33
Total	0.89	100	300	100	200

Biodiversity Assesment of Kosala RF

Name of the Tree Species	Density	Relative Density	Frequency (%)	Relative Frequency	Basal Area Density	Relative BAD	IVI
Bahada	10	1	100	50	0.6	3.1746	54.1746
Sal	990	99	100	50	18.3	96.8254	245.8254
Total	1000	100	200	100	18.9	100	300

Name of the Shrub Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Kurein	1.5	6.25	100	25	31.25
Kanteikoli	9	37.5	100	25	62.5
Bhuincha	9	37.5	100	25	62.5
Bhuikuruma	4.5	18.75	100	25	43.75
Total	24	100	400	100	200

Name of the Herb Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Suamalata	0.1	33.3333	100	50	83.3333
Periperia	0.2	66.6667	100	50	116.6667
Total	0.3	100	200	100	200

Biodiversity Assesment of Khalpal RF

Name of the Tree Species	Density	Relative Density	Frequency (%)	Relative Frequency	Basal Area Density	Relative BAD	IVI
Sal	630	100	100	100	15.3	100	300
Total	630	100	100	100	15.3	100	300

Name of the Shrub Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Kurein	2.25	31.915	100	33.333	65.248
Khakada	1.8	25.532	100	33.333	58.865
Bhuikuruma	3	42.553	100	33.333	75.887
Total	7.05	100	300	100	200

Name of the Herb Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Suamalata	0.063	11.111	100	33.333	44.444
Mutha	0.167	29.630	100	33.333	62.963
Banakuluthia	0.333	59.259	100	33.333	92.593
Total	0.5625	100	300	100	200

Biodiversity Assesment of Jaltap RF

Name of the Tree Species	Density	Relative Density	Frequency (%)	Relative Frequency	Basal Area Density	Relative BAD	IVI
Anchhu	20	3.226	100	12.5	0.6	3.209	18.934
Asan	20	3.226	100	12.5	0.8	4.278	20.004
Chara	170	27.419	100	12.5	1.2	6.417	46.336
Jamu	10	1.613	100	12.5	1.6	8.556	22.669
Mahula	10	1.613	100	12.5	0.9	4.813	18.926
Mamuri	10	1.613	100	12.5	0.4	2.139	16.252
Rohini	20	3.226	100	12.5	0.6	3.209	18.934
Sal	360	58.065	100	12.5	12.6	67.380	137.944
Total	620	100	800	100	18.7	100	300

Name of the Shrub Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Mamuri	4.5	13.636	100	20	33.636
Kurein	9	27.273	100	20	47.273
Kumbharchikini	9	27.273	100	20	47.273
Bhuikuruma	1.5	4.545	100	20	24.545
Bhadalia	9	27.273	100	20	47.273
Total	33	100	500	100	200

Name of the Herb Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Marichia	1	100	100	100	200
Total	1	100	100	100	200

Biodiversity Assesment of Chakundapal DPF

Name of the Tree Species	Density	Relative Density	Frequency (%)	Relative Frequency	Basal Area Density	Relative BAD	IVI
Patamasu	5	0.654	50	14.286	1	4.926	19.865
Asan	5	0.654	50	14.286	0.3	1.478	16.417
Batra	5	0.654	50	14.286	0.5	2.463	17.402
Chara	20	2.614	50	14.286	0.8	3.941	20.841
Kumbhi	5	0.654	50	14.286	0.9	4.433	19.373
Sal	725	94.771	100	28.571	16.8	82.759	206.101
Total	**765**	**100**	**350**	**100**	**20.3**	**100**	**300**

Name of the Shrub Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Kurein	0.265	3.003	100	28.571	31.574
Sunargada	2.250	25.526	50	14.286	39.811
Kumbharchikini	4.500	51.051	50	14.286	65.337
Ghurudu	1.500	17.017	50	14.286	31.303
Bhuikuruma	0.300	3.403	100	28.571	31.975
Total	8.815	100	350	100	200

Name of the Herb Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Suamalata	0.167	16.327	50	20	36.327
Bhuimeem	0.167	16.327	50	20	36.327
Bhuta Bhairabi	0.063	6.122	50	20	26.122
Pinchha	0.500	48.980	50	20	68.980
Bhalupadi	0.125	12.245	50	20	32.245
Total	1.021	100	250	100	200

Biodiversity Assesment of Nunmati PRF

Name of the Tree Species	Density	Relative Density	Frequency (%)	Relative Frequency	Basal Area Density	Relative BAD	IVI
Barabakalia	10	10	100	25	0.3	4.167	39.167
Mahula	20	20	100	25	0.4	5.556	50.556
Mai	10	10	100	25	0.2	2.778	37.778
Sal	60	60	100	25	6.3	87.500	172.500
Total	100	100	400	100	7.2	100	300

Name of the Shrub Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Telakuruma	9	42.857	100	33.333	76.190
Ghuntuli	9	42.857	100	33.333	76.190
Kurein	3	14.286	100	33.333	47.619
Total	21	100	300	100	200

Name of the Herb Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Suamalata	1	100	100	100	200
Total	1	100	100	100	200

Biodiversity Assesment of Marudhipa PRF

Name of the Tree Species	Density	Relative Density	Frequency (%)	Relative Frequency	Basal Area Density	Relative BAD	IVI
Asan	6	6.250	40	7.692	0.1	0.453	14.395
Dhaura	4	4.167	40	7.692	3	13.587	25.446
Kendu	6	6.250	40	7.692	0.12	0.543	14.486
Mahula	4	4.167	40	7.692	0.6	2.717	14.576
Rohini	4	4.167	40	7.692	0.4	1.812	13.671
Sal	42	43.750	100	19.231	15.3	69.293	132.274
Veru	2	2.083	20	3.846	0.12	0.543	6.473
Chara	4	4.167	40	7.692	0.23	1.042	12.901
Kumbhi	6	6.250	40	7.692	0.21	0.951	14.893
Mai	10	10.417	60	11.538	0.5	2.264	24.220
Mango	2	2.083	20	3.846	1	4.529	10.458
Barabakalia	4	4.167	20	3.846	0.2	0.906	8.919
Arjuna	2	2.083	20	3.846	0.3	1.359	7.288
Total	96	100	520	100	22.08	100	300

Name of the Shrub Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Kurein	0.3	5.761	80	23.529	29.291
Dhataki	0.257	4.938	80	23.529	28.468
Telakuruma	0.45	8.642	60	17.647	26.289
Karada	0.9	17.284	20	5.882	23.166
Ghurudu	0.6	11.523	60	17.647	29.170
Khakada	1.8	34.568	20	5.882	40.450
Kumbhi	0.9	17.284	20	5.882	23.166
Total	5.207	100	340	100	200

Name of the Herb Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Suamlata	0.033	1.493	80	44.444	45.937
Bhuincha	0.1	4.478	40	22.222	26.700
Panasi	0.1	4.478	20	11.111	15.589
Bhuincha	1.8	80.597	20	11.111	91.708
Kumarchikini	0.2	8.955	20	11.111	20.066
Total	2.233	100	180	100	200

Biodiversity Assesment of Dangapal RF

Name of the Tree Species	Density	Relative Density	Frequency (%)	Relative Frequency	Basal Area Density	Relative BAD	IVI
Barabakalia	5	2.128	50	6.667	1.3	5.553	14.348
Chara	15	6.383	100	13.333	0.2	0.854	20.571
Gandhari	5	2.128	50	6.667	0.11	0.470	9.264
Katak	5	2.128	50	6.667	0.4	1.709	10.503

Kusuma	5	2.128	50	6.667	0.6	2.563	11.357
Mahula	35	14.894	50	6.667	0.9	3.845	25.405
Sal	120	51.064	100	13.333	16.5	70.483	134.880
Saluui	10	4.255	50	6.667	0.23	0.982	11.904
Asan	10	4.255	50	6.667	0.58	2.478	13.400
Dhaura	5	2.128	50	6.667	0.69	2.947	11.742
Ghuntuli	5	2.128	50	6.667	0.89	3.802	12.596
Mai	10	4.255	50	6.667	0.65	2.777	13.699
Mankada Kendu	5	2.128	50	6.667	0.36	1.538	10.332
Total	235	100	750	100	23.41	100	300

Name of the Shrub Species	**Density**	**Relative Density**	**Frequency (%)**	**Relative Frequency**	**IVI**
Kurein	0.75	3.279	100	20	23.279
Kirikinchi	4.5	19.672	50	10	29.672
Telkuruma	1.5	6.557	50	10	16.557
Ghuntuli	4.5	19.672	50	10	29.672
Kataka	4.5	19.672	50	10	29.672
Karada	4.5	19.672	50	10	29.672
Ghurudu	1.5	6.557	100	20	26.557
Dhatiki	1.125	4.918	50	10	14.918
Total	22.875	100	500	100	200

Name of the Herb Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Suamlata	0.25	33.333	50	50	83.333
Muturi Lata	0.5	66.667	50	50	116.667
Total	0.75	100	100	100	200

Biodiversity Assesment of Devinagar PRF

Name of the Tree Species	**Density**	**Relative Density**	**Frequency (%)**	**Relative Frequency**	**Basal Area Density**	**Relative BAD**	**IVI**
Asan	6.923	4.688	53.830	9.589	0.3	0.307	14.583
Bela	2.308	1.563	23.070	4.109	0.2	0.204	5.876
Chara	5.385	3.646	38.450	6.849	0.33	0.337	10.832
Dhaura	3.077	2.083	38.450	6.849	0.25	0.256	9.188
Kendu	3.846	2.604	38.450	6.849	0.26	0.266	9.719
Piasal	6.923	4.688	53.830	9.589	0.32	0.327	14.603
Sal	91.538	61.980	100.000	17.813	25.3	25.861	105.654
Barakulia	3.846	2.604	23.070	4.109	0.5	0.511	7.225
Kumbhi	2.308	1.563	23.070	4.109	0.36	0.368	6.040
Sidha	3.846	2.604	30.760	5.479	0.15	0.153	8.237
Achhu	1.538	1.042	15.380	2.740	0.25	0.256	4.037
Harida	0.769	0.521	7.690	1.370	0.35	0.358	2.248
Simili	0.769	0.521	7.690	1.370	0.32	0.327	2.218
Mai	6.154	4.167	38.450	6.849	0.25	0.256	11.271
Bhalia	0.769	0.521	7.690	1.370	0.32	0.327	2.218
Bandhan	0.769	0.521	7.690	1.370	0.14	0.143	2.034
Kuruma	1.538	1.042	7.690	1.370	0.25	0.256	2.667
Sirisa	0.769	0.521	7.690	1.370	0.36	0.368	2.259
Kanta Sidha	0.769	0.521	7.690	1.370	35	35.776	37.667

Karada	0.769	0.521	7.690	1.370	0.22	0.225	2.116
Rohini	0.769	0.521	7.690	1.370	0.15	0.153	2.044
Chauli	0.769	0.521	7.690	1.370	0.25	0.256	2.146
Kusuma	1.538	1.042	7.690	1.370	32	32.710	35.121
Total	147.692	100	561.4	100	97.83	100	300

Name of the Shrub Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Pichuli	0.231	14.028	23.070	13.043	27.071
Dhataki	0.692	42.083	7.690	4.348	46.431
Kurein	0.063	3.826	46.140	26.087	29.913
Karada	0.063	3.826	46.140	26.087	29.913
Dantari	0.346	21.041	15.380	8.696	29.737
Atandi	0.173	10.521	15.380	8.696	19.216
Khakada	0.077	4.676	23.070	13.043	17.719
Total	1.645104895	100	176.87	100	200

Name of the Herb Species	Density	Relative Density	Frequency (%)	Relative Frequency	IVI
Gopakanhu	0.019	27.718	23.070	10.737	38.455
Siali	0.006	8.529	46.140	21.473	30.002
Muturi	0.010	13.859	38.450	17.895	31.754
Bhuincha	0.019	27.718	23.070	10.737	38.455
Suamalata	0.008	11.087	30.760	14.316	25.403
Dantari	0.008	11.087	53.380	24.843	35.930
Total	0.069	100	214.87	100	200

Biodiversity Assesment of Kanloi RF

Name of the Tree Species	Density	Relative Density	Frequency (%)	Relative Frequency	Basal Area Density	Relative BAD	IVI
Bandhan	4.286	2.113	28.560	2.684	0.200	0.499	5.296
Barabakulia	7.857	3.873	57.120	5.369	0.120	0.299	9.542
Dhaura	13.571	6.690	71.400	6.711	0.150	0.374	13.776
Mai	5.000	2.465	42.840	4.027	0.350	0.873	7.365
Patamasu	10.714	5.282	64.260	6.040	0.150	0.374	11.696
Sal	60.000	29.577	100.000	9.399	18.900	47.167	86.144
Damaghurud	2.857	1.408	21.420	2.013	0.210	0.524	3.946
Karada	19.286	9.507	78.540	7.382	3.300	8.236	25.125
Rajmai	5.000	2.465	35.700	3.356	0.690	1.722	7.542
Sunari	5.000	2.465	49.980	4.698	0.530	1.323	8.485
Tentala	0.714	0.352	7.140	0.671	0.450	1.123	2.146
Achhu	2.857	1.408	28.560	2.684	0.520	1.298	5.391
Barada	0.714	0.352	7.140	0.671	0.250	0.624	1.647
Kendu	10.000	4.930	64.260	6.040	0.210	0.524	11.494
Kuruma	4.286	2.113	21.420	2.013	0.130	0.324	4.450
Neem	0.714	0.352	7.140	0.671	0.320	0.799	1.822

Salui	0.714	0.352	7.140	0.671	0.210	0.524	1.547
Tentera	2.143	1.056	21.420	2.013	0.240	0.599	3.669
Bhalia	2.857	1.408	28.560	2.684	0.140	0.349	4.442
Chara	3.571	1.761	21.420	2.013	0.130	0.324	4.098
Dhauranja	0.714	0.352	7.140	0.671	0.190	0.474	1.497
Giridhini	1.429	0.704	14.280	1.342	0.530	1.323	3.369
Kumbhi	7.143	3.521	42.840	4.027	4.500	11.230	18.778
Ramagua	0.714	0.352	7.140	0.671	0.800	1.997	3.020
Ankula	0.714	0.352	7.140	0.671	0.450	1.123	2.146
Dhamana	0.714	0.352	7.140	0.671	0.650	1.622	2.645
Jamu	4.286	2.113	35.700	3.356	0.580	1.447	6.916
Kaunchia	2.857	1.408	28.560	2.684	0.240	0.599	4.692
Sidha	2.143	1.056	21.420	2.013	0.240	0.599	3.669
Ankula	0.714	0.352	7.140	0.671	0.650	1.622	2.645
Asan	5.714	2.817	35.700	3.356	0.620	1.547	7.720
Piasal	3.571	1.761	21.420	2.013	0.780	1.947	5.720
Sirisa	0.714	0.352	7.140	0.671	0.720	1.797	2.820
Chauli	1.429	0.704	14.280	1.342	0.690	1.722	3.768
Kusuma	2.143	1.056	21.420	2.013	0.450	1.123	4.193
Halada	5.000	2.465	14.280	1.342	0.540	1.348	5.155
Bahada	0.714	0.352	7.140	0.671	0.240	0.599	1.622
Total	202.857	100	1063.9	100	40.07	100	300

Biodiversity assessment of Balanga RF

Name of the Tree	Nos.	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative Basal Area Density	IVI
Barabakulia	37	14.8	4.97	56	4.78	1.25	5.22	14.96
Bheru	39	15.6	5.23	52	4.44	0.23	0.96	10.63
Dhamana	17	6.8	2.28	32	2.73	0.15	0.63	5.64
Giringa	11	4.4	1.48	20	1.71	0.12	0.50	3.68
Halada	33	13.2	4.43	56	4.78	0.34	1.42	10.63
Karada	34	13.6	4.56	32	2.73	0.15	0.63	7.92
Kuruma	25	10	3.36	28	2.39	0.12	0.50	6.25
Mai	54	21.6	7.25	48	4.10	0.47	1.96	13.31
Salara	3	1.2	0.40	12	1.02	0.14	0.58	2.01
Amla	3	1.2	0.40	12	1.02	0.29	1.21	2.64
Anchhu	16	6.4	2.15	40	3.41	0.16	0.67	6.23
Asana	20	8	2.68	28	2.39	0.98	4.09	9.16
Bentha	13	5.2	1.74	16	1.37	0.15	0.63	3.74
Chauli	4	1.6	0.54	16	1.37	0.13	0.54	2.44
Dhauranja	6	2.4	0.81	8	0.68	0.14	0.58	2.07
Dhaura	86	34.4	11.54	64	5.46	0.45	1.88	18.88
Jammu	13	5.2	1.74	16	1.37	0.87	3.63	6.74
Kasi	2	0.8	0.27	8	0.68	0.46	1.92	2.87
Kataka	6	2.4	0.81	20	1.71	0.26	1.09	3.60
Kathasundara	4	1.6	0.54	8	0.68	0.25	1.04	2.26

Kumbhi	2	0.8	0.27	8	0.68	0.12	0.50	1.45
Patuli	10	4	1.34	28	2.39	0.17	0.71	4.44
Piasala	4	1.6	0.54	16	1.37	0.16	0.67	2.57
Sala	30	12	4.03	20	1.71	2.34	9.77	15.50
Sidha	28	11.2	3.76	40	3.41	0.18	0.75	7.92
Siju	1	0.4	0.13	4	0.34	0.25	1.04	1.52
Tentala	5	2	0.67	8	0.68	0.37	1.54	2.90
Ambthi	2	0.8	0.27	8	0.68	0.35	1.46	2.41
Bela	25	10	3.36	36	3.07	0.37	1.54	7.97
Ghuntuli	5	2	0.67	8	0.68	0.24	1.00	2.36
Ghurudu	2	0.8	0.27	4	0.34	0.16	0.67	1.28
Harida	5	2	0.67	20	1.71	0.15	0.63	3.00
Kendu	9	3.6	1.21	28	2.39	0.37	1.54	5.14
Khaira	1	0.4	0.13	4	0.34	0.15	0.63	1.10
Khakada	9	3.6	1.21	20	1.71	0.13	0.54	3.46
Kusuma	10	4	1.34	20	1.71	0.45	1.88	4.93
Pabakurein	45	18	6.04	44	3.75	0.11	0.46	10.25
Bahada	4	1.6	0.54	16	1.37	0.25	1.04	2.95
Chara	5	2	0.67	16	1.37	0.38	1.59	3.62
Lemburamai	8	3.2	1.07	16	1.37	0.24	1.00	3.44
Sunari	15	6	2.01	32	2.73	0.16	0.67	5.41
Bandhan	7	2.8	0.94	16	1.37	0.18	0.75	3.06
Kurein	5	2	0.67	8	0.68	0.10	0.42	1.77
Rai	7	2.8	0.94	12	1.02	0.67	2.80	4.76
Karanja	2	0.8	0.27	4	0.34	0.26	1.09	1.69
Teak	12	4.8	1.61	4	0.34	1.34	5.59	7.54
Palasa	1	0.4	0.13	4	0.34	0.18	0.75	1.23
Chuin Patuli	3	1.2	0.40	12	1.02	0.13	0.54	1.97
Patamasu	9	3.6	1.21	16	1.37	0.26	1.09	3.66
Sisoo	8	3.2	1.07	20	1.71	0.45	1.88	4.66
Mahula	2	0.8	0.27	4	0.34	1.24	5.18	5.79
Mitkunia	4	1.6	0.54	12	1.02	0.24	1.00	2.56
Angarua	4	1.6	0.54	12	1.02	0.15	0.63	2.19
Bhuincha	3	1.2	0.40	4	0.34	0.17	0.71	1.45
Jayasandha	1	0.4	0.13	4	0.34	0.12	0.50	0.98
Phasi	1	0.4	0.13	4	0.34	0.35	1.46	1.94
Neem	1	0.4	0.13	4	0.34	0.38	1.59	2.06
Bara	3	1.2	0.40	4	0.34	0.46	1.92	2.66
Girdhini	4	1.6	0.54	12	1.02	0.23	0.96	2.52
Simili	4	1.6	0.54	8	0.68	0.45	1.88	3.10
Ambada	1	0.4	0.13	4	0.34	0.23	0.96	1.44
Ankula	1	0.4	0.13	4	0.34	0.15	0.63	1.10
Osta	1	0.4	0.13	4	0.34	0.65	2.71	3.19
Jari	5	2	0.67	8	0.68	0.45	1.88	3.23
Chhatian	1	0.4	0.13	4	0.34	0.25	1.04	1.52
Damaghurudu	1	0.4	0.13	4	0.34	0.15	0.63	1.10
Sirisa	2	0.8	0.27	8	0.68	0.36	1.50	2.45
Salui	1	0.4	0.13	4	0.34	0.15	0.63	1.10
Total	**745**	**298**	**100**	**1172**	**100**	**23.96**	**100.00**	**300.00**

Name of the Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Paba Kurein	17	0.0756	60.71	40	52.63	113.35
Kurein	2	0.0089	7.14	8	10.53	17.67
Gutikhadika	3	0.0133	10.71	8	10.53	21.24
Telkuruma	1	0.0044	3.57	4	5.26	8.83
Khakada	1	0.0044	3.57	4	5.26	8.83
Kauchia	2	0.0089	7.14	4	5.26	12.41
Siju	1	0.0044	3.57	4	5.26	8.83
Bentha	1	0.0044	3.57	4	5.26	8.83
Total	**28**	**0.1244**	**100.00**	**76**	**100**	**200.00**

Biodiversity assessment of Baragaunia RF

Name of the Tree	Nos.	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative Basal Area Density	IVI
Barabakulia	8	80	17.02	100	12.5	1.37	46.76	76.28
Bheru	1	10	2.13	100	12.5	0.15	5.12	19.75
Kuruma	4	40	8.51	100	12.5	0.12	4.10	25.11
Kasi	1	10	2.13	100	12.5	0.25	8.53	23.16
Sidha	1	10	2.13	100	12.5	0.18	6.14	20.77
Bela	16	160	34.04	100	12.5	0.24	8.19	54.73
Pabakurein	8	80	17.02	100	12.5	0.17	5.80	35.32
Neem	8	80	17.02	100	12.5	0.45	15.36	44.88
Total	**47**	**470**	**100**	**800**	**100**	**2.93**	**100.00**	**300.00**

Name of the Shrub	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Pabakurein	2	4.5	33.33	100	50	83.33
Karada	1	9	66.67	100	50	116.67
Total	**3**	**13.5**	**100**	**200**	**100**	**200**

Biodiversity assesment of Nuakheta RF

Name of the Tree	Nos	Density	Relative Density	Frequency	Relative Frequency	Basal Area Density	Relative Basal Area Density	IVI
Barabakulia	31	14.76	4.34	52.38	3.91	1.45	8.92	17.17
Dhamana	64	30.48	8.95	61.90	4.63	0.18	1.11	14.68
Mai	17	8.10	2.38	23.81	1.78	0.38	2.34	6.49
Dhaura	45	21.43	6.29	76.19	5.69	0.46	2.83	14.82
Sidha	31	14.76	4.34	76.19	5.69	0.19	1.17	11.20
Bela	42	20.00	5.87	57.14	4.27	0.17	1.05	11.19
Ghuntuli	5	2.38	0.70	19.05	1.42	0.13	0.80	2.92
Chuin Patuli	3	1.43	0.42	4.76	0.36	0.15	0.92	1.70

Sisoo	16	7.62	2.24	42.86	3.20	0.52	3.20	8.64
Anchhu	5	2.38	0.70	9.52	0.71	0.28	1.72	3.13
Bentha	2	0.95	0.28	9.52	0.71	0.17	1.05	2.04
Giringa	35	16.67	4.90	47.62	3.56	0.16	0.98	9.44
Karada	40	19.05	5.59	47.62	3.56	0.17	1.05	10.20
Kasi	37	17.62	5.17	47.62	3.56	0.14	0.86	9.59
Piasal	2	0.95	0.28	9.52	0.71	0.16	0.98	1.98
Sunari	9	4.29	1.26	28.57	2.14	0.23	1.41	4.81
Chara	6	2.86	0.84	23.81	1.78	0.35	2.15	4.77
Halada	14	6.67	1.96	33.33	2.49	0.29	1.78	6.23
Kauchia	13	6.19	1.82	28.57	2.14	0.18	1.11	5.06
Kendu	14	6.67	1.96	38.10	2.85	0.47	2.89	7.70
Kusuma	7	3.33	0.98	19.05	1.42	0.54	3.32	5.72
Lemburamai	50	23.81	6.99	57.14	4.27	0.23	1.41	12.68
Mahula	3	1.43	0.42	14.29	1.07	1.12	6.89	8.38
Patamasu	10	4.76	1.40	33.33	2.49	0.17	1.05	4.94
Amla	3	1.43	0.42	14.29	1.07	0.26	1.60	3.09
Patuli	12	5.71	1.68	23.81	1.78	0.10	0.62	4.07
Rai	7	3.33	0.98	28.57	2.14	0.85	5.23	8.34
Bandhana	12	5.71	1.68	28.57	2.14	0.19	1.17	4.98
Bhalia	3	1.43	0.42	14.29	1.07	0.27	1.66	3.15
Damaghurudu	7	3.33	0.98	14.29	1.07	0.16	0.98	3.03
Khakada	6	2.86	0.84	23.81	1.78	0.15	0.92	3.54
Kumbhi	1	0.48	0.14	4.76	0.36	0.13	0.80	1.30
Sirisa	12	5.71	1.68	42.86	3.20	0.17	1.05	5.93
Bheru	7	3.33	0.98	19.05	1.42	0.17	1.05	3.45
Dhampamai	34	16.19	4.76	47.62	3.56	0.12	0.74	9.05
Kamalagundi	3	1.43	0.42	14.29	1.07	0.14	0.86	2.35
Mitkunia	9	4.29	1.26	23.81	1.78	0.16	0.98	4.02
Kuruma	4	1.90	0.56	19.05	1.42	0.18	1.11	3.09
Salara	2	0.95	0.28	9.52	0.71	0.13	0.80	1.79
Simili	1	0.48	0.14	4.76	0.36	0.37	2.28	2.77
Asana	16	7.62	2.24	23.81	1.78	0.67	4.12	8.14
Sal	40	19.05	5.59	23.81	1.78	1.37	8.43	15.80
Jammu	3	1.43	0.42	9.52	0.71	0.59	3.63	4.76
Gandhapalasa	2	0.95	0.28	9.52	0.71	0.14	0.86	1.85
Kataka	7	3.33	0.98	23.81	1.78	0.16	0.98	3.74
Kurein	1	0.48	0.14	4.76	0.36	0.12	0.74	1.23
Mankarkenda	7	3.33	0.98	4.76	0.36	0.15	0.92	2.26
Osta	4	1.90	0.56	14.29	1.07	0.46	2.83	4.46
Telkuruma	4	1.90	0.56	4.76	0.36	0.09	0.55	1.47
Gambhari	1	0.48	0.14	4.76	0.36	0.25	1.54	2.03
Chadeigudi	2	0.95	0.28	9.52	0.71	0.10	0.62	1.61
Barada	1	0.48	0.14	4.76	0.36	0.15	0.92	1.42
Karanja	3	1.43	0.42	4.76	0.36	0.17	1.05	1.82
	715	340.48	100.00	1338.10	100.00	16.26	100.00	300.00

Name of the Shrub	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Pabakurein	12	0.063492	54.55	33.33	43.75	98.30
Karada	5	0.026455	22.73	19.05	25.00	47.73
Khakada	5	0.026455	22.73	23.81	31.25	53.98
Total	**22**	**0.116402**	**100.00**	**76.19**	**100.00**	**200.00**

Biodiversity assessment in Nailu Lodhajhari RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Mahula	8	16	5.80	60	5.88	1.6	12.02	23.70
Kendu	12	24	8.70	100	9.80	0.94	7.06	25.56
Mai	18	36	13.04	100	9.80	0.55	4.13	26.98
Tentela	3	6	2.17	20	1.96	0.25	1.88	6.01
Sal	41	82	29.71	100	9.80	2.5	18.78	58.30
Chara	3	6	2.17	40	3.92	1.05	7.89	13.98
Kumbhi	2	4	1.45	40	3.92	0.18	1.35	6.72
Salui	1	2	0.72	20	1.96	0.15	1.13	3.81
Anchu	1	2	0.72	20	1.96	0.14	1.05	3.74
Bela	1	2	0.72	20	1.96	0.15	1.13	3.81
Bheru	4	8	2.90	40	3.92	0.4	3.01	9.83
Damgurudu	2	4	1.45	40	3.92	0.23	1.73	7.10
Dhaura	9	18	6.52	60	5.88	0.3	2.25	14.66
Karada	4	8	2.90	40	3.92	0.8	6.01	12.83
Kataka	1	2	0.72	20	1.96	0.15	1.13	3.81
Mitikunia	3	6	2.17	40	3.92	0.3	2.25	8.35
Patamasu	1	2	0.72	20	1.96	0.2	1.50	4.19
Patulu	2	4	1.45	20	1.96	0.4	3.01	6.42
Amthi	2	4	1.45	20	1.96	0.4	3.01	6.42
Khakada	1	2	0.72	20	1.96	0.12	0.90	3.59
Kusuma	1	2	0.72	20	1.96	0.15	1.13	3.81
Sidha	1	2	0.72	20	1.96	0.15	1.13	3.81
Asana	5	10	3.62	40	3.92	0.5	3.76	11.30
Kuruma	2	4	1.45	20	1.96	0.3	2.25	5.66
Rai	3	6	2.17	40	3.92	0.6	4.51	10.60
Karanja	4	8	2.90	20	1.96	0.45	3.38	8.24
Rohani	3	6	2.17	20	1.96	0.35	2.63	6.76
Total	**138**	**276**	**100**	**1020**	**100**	**13.31**	**100**	**300**

Name of the Shrub Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Khakada	1	0.02	25.00	20	25	50.00
Kurei	1	0.02	25.00	20	25	50.00
Kuruma	2	0.04	50.00	40	50	100.00
Total	**4**	**0.0889**	**100.00**	**80**	**100**	**200.00**

Name of the Herb Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Bhuineem	4	0.8	36.36	40.00	28.57	64.94
Banakolatha	2	0.4	18.18	20.00	14.29	32.47
Pokasunga	1	0.2	9.09	20.00	14.29	23.38
Satabari	3	0.6	27.27	40.00	28.57	55.84
Sumanai	1	0.2	9.09	20.00	14.29	23.38
Total	**11**	**2.2**	**100**	**140**	**100**	**200**

Biodiversity assessment in Sadarkhol RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Mahula	1	3.33	1.09	30	2.03	0.70	5.42	8.54
Kendu	5	16.67	5.43	100	6.76	0.33	2.56	14.75
Mai	16	53.33	17.39	100	6.76	0.98	7.59	31.74
Tentela	1	3.33	1.09	30	2.03	0.65	5.03	8.15
Chara	4	13.33	4.35	100	6.76	0.40	3.10	14.20
Anchu	4	13.33	4.35	60	4.05	0.45	3.49	11.89
Bela	5	16.67	5.43	100	6.76	0.50	3.87	16.06
Bheru	1	3.3	1.09	30	2.03	0.50	3.87	6.99
Damgurudu	2	6.7	2.17	60	4.05	0.60	4.65	10.88
Dhaura	15	50.0	16.30	100	6.76	0.98	7.59	30.65
Karada	13	43.3	14.13	100	6.76	0.89	6.89	27.78
Mitikunia	2	6.7	2.17	60	4.05	0.65	5.03	11.26
Patamasu	2	6.7	2.17	60	4.05	0.55	4.26	10.49
Kusuma	1	3.3	1.09	30	2.03	0.70	5.42	8.54
Sidha	1	3.3	1.09	30	2.03	0.65	5.03	8.15
Asana	2	6.7	2.17	60	4.05	0.55	4.26	10.49
Kuruma	1	3.3	1.09	30	2.03	0.55	4.26	7.37
Rohani	1	3.3	1.09	30	2.03	0.45	3.49	6.60
Halda	4	13.3	4.35	100	6.76	0.78	6.04	17.15
Kasi	2	6.7	2.17	60	4.05	0.18	1.39	7.62
Salai	2	6.7	2.17	30	2.03	0.17	1.32	5.52
Banta	2	6.7	2.17	60	4.05	0.15	1.16	7.39
Paladhua	1	3.3	1.09	30	2.03	0.15	1.16	4.28
Sunari	2	6.7	2.17	60	4.05	0.20	1.55	7.78
Sisoo	2	6.7	2.17	30	2.03	0.20	1.55	5.75
Total	**92**	**306.67**	**100.00**	**1480**	**100**	**12.91**	**100.00**	**300.00**

Name of the Shrub Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Bhuineem	5	0.18519	18.52	100	27.32	45.84
Mura	1	0.03704	3.70	33	9.02	12.72
Katak	1	0.03704	3.70	33	9.02	12.72
Kuruma	9	0.33333	33.33	100	27.32	60.66
Karada	11	0.40741	40.74	100	27.32	68.06
Total	**27**	**1.00000**	**100.0**	**366**	**100**	**200**

Name of the Herb Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Muturi	8	2.67	66.67	100	75.19	141.85
Sumnai	4	1.33	33.33	33	24.81	58.15
Total	**12**	**4.0**	**100.000**	**133**	**100.00**	**200.00**

Biodiversity assessment in Badakathia RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Mai	3	10.00	2.53	100	25.00	0.25	5.85	33.38
Tentela	1	3.33	0.84	20	5.00	0.35	8.20	14.04
Sal	62	206.67	52.19	40	10.00	0.98	22.95	85.14
Chara	7	23.33	5.89	40	10.00	0.45	10.54	26.43
Kumbhi	3	10.00	2.53	20	5.00	0.18	4.22	11.74
Harida	1	3.33	0.84	20	5.00	0.15	3.51	9.35
Sidha	25	83.33	21.04	20	5.00	0.45	10.54	36.58
Asana	2	6.67	1.68	20	5.00	0.18	4.22	10.90
Rohani	1	3.33	0.84	20	5.00	0.17	3.98	9.82
Jamu	2	6.67	1.68	20	5.00	0.28	6.56	13.24
Kasi	8	26.67	6.73	40	10.00	0.35	8.20	24.93
Bahada	3	10.00	2.53	20	5.00	0.3	7.03	14.55
Anla	1	3.33	0.84	20	5.00	0.18	4.22	10.06
Total	**119**	**396.67**	**100.17**	**400**	**100.00**	**4.27**	**100.00**	**300.17**

Shrub Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Karada	1	0.03704	100.0	33	100.00	200.0
Total	**1**	**0.03704**	**100.0**	**33**	**100.00**	**200.0**

Herb Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Banakolatha	9	3.00	24.33	66	33.333	57.664
Bhuincha	2	0.67	5.41	33	16.667	22.074
Pokasunga	1	0.33	2.70	33	16.667	19.370
Sumnai	25	8.33	67.59	66	33.333	100.919
Total	**37**	**12.33**	**100.03**	**198**	**100.000**	**200.027**

Biodiversity assessment in Biripal RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Kendu	2	6.67	1.65	60	6.59	0.20	1.86	10.10
Mai	23	76.67	19.01	100	10.99	1.20	11.13	41.13
Sal	38	126.67	31.41	30	3.30	3.80	35.25	69.95
Chara	4	13.33	3.31	60	6.59	0.14	1.30	11.20
Angarua	1	3.33	0.83	30	3.30	0.10	0.93	5.05
Gandhari	1	3.33	0.83	30	3.30	0.15	1.39	5.51
Dhaura	8	26.67	6.61	30	3.30	0.80	7.42	17.33
Karada	23	76.67	19.01	60	6.59	1.49	13.82	39.42
Giridhini	2	6.67	1.65	60	6.59	0.20	1.86	10.10
Khakada	1	3.33	0.83	60	6.59	0.10	0.93	8.35
Sidha	6	20.00	4.96	30	3.30	0.60	5.57	13.82
Asana	2	6.67	1.65	60	6.59	0.40	3.71	11.96
Kuruma	1	3.33	0.83	30	3.30	0.30	2.78	6.91
Barunga	1	3.33	0.83	30	3.30	0.20	1.86	5.98
Kurein	1	3.33	0.83	30	3.30	0.20	1.86	5.98
Salai	2	6.67	1.65	60	6.59	0.20	1.86	10.10
Patuli	2	6.67	1.65	60	6.59	0.30	2.78	11.03
Bhuincha	1	3.33	0.83	30	3.30	0.15	1.39	5.51
Sunari	2	6.67	1.65	60	6.59	0.25	2.32	10.57
Total	**121**	**403.33**	**100.00**	**910**	**100.00**	**10.78**	**100.00**	**300.00**

Shrub Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Karada	2	0.07407	16.667	33	14.22	30.891
Katak	1	0.03704	8.333	33	14.22	22.558
Kurei	1	0.03704	8.333	33	14.22	22.558
Maturi	7	0.25926	58.334	100	43.10	101.437
Kumbhi	1	0.03704	8.333	33	14.22	22.558
Total	**12**	**0.44444**	**100.001**	**232**	**100.00**	**200.001**

Name of the Herb Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Bhuineem	5	1.6667	17.86	100	23.095	40.952
Muturi	9	3.0000	32.14	100	23.095	55.238
Salai	6	2.0000	21.43	100	23.095	44.523
Satabari	1	0.3333	3.57	33	7.621	11.193
Sumanai	7	2.3333	25.00	100	23.095	48.095
Total	**28**	**9.3333**	**100.00**	**433**	**100.00**	**200.000**

Biodiversity assessment in Phuljhariei RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Mahula	1	3.3	1.67	30	10	0.18	2.82	14.49
Mai	18	60.0	30.00	60	20	1.80	28.21	78.21
Tentela	6	20.0	10.00	30	10	0.60	9.40	29.40
Sal	22	73.3	36.67	60	20	2.20	34.48	91.15
Karada	1	3.3	1.67	30	10	0.20	3.13	14.80
Asana	1	3.3	1.67	30	10	0.30	4.70	16.37
Kuruma	2	6.7	3.33	30	10	0.20	3.13	16.47
Kasi	9	30.0	15.00	30	10	0.90	14.11	39.11
Total	**60**	**200.0**	100.00	**300**	**100**	**6.38**	**100**	**300.00**

Shrub Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Dhatiki	5	0.01701	20.00	66	25.00	45.00
Karada	7	0.02381	28.00	66	25.00	53.00
Kurei	8	0.02721	32.00	66	25.00	57.00
Kuruma	2	0.00680	8.00	33	12.50	20.50
Muturi	3	0.01020	12.00	33	12.50	24.50
Total	**25**	**0.08503**	**100.00**	**264**	**100.00**	**200.00**

Herb Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Bhuineem	2	0.6667	66.667	33	50.00	116.667
Sumnai	1	0.3333	33.333	33	50.00	83.333
Total	**3**	**1.0000**	**100.000**	**66**	**100.00**	**200.000**

Biodiversity assessment in Dhanakoili RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Mahula	1	5	1.54	50	7.14	0.18	2.75	11.43
Kendu	1	5	1.54	50	7.14	0.15	2.29	10.97
Mai	5	25	7.69	100	14.29	0.50	7.63	29.61
Sal	34	170	52.31	100	14.29	3.40	51.91	118.50
Chara	1	5	1.54	50	7.14	0.10	1.53	10.21
Kumbhi	2	10	3.08	50	7.14	0.20	3.05	13.27
Dhaura	2	10	3.08	50	7.14	0.20	3.05	13.27
Jamu	2	10	3.08	50	7.14	0.20	3.05	13.27
Bhalia	1	5	1.54	50	7.14	0.12	1.83	10.51
Asana	12	60	18.46	50	7.14	1.10	16.79	42.40
Rohani	4	20	6.15	100	14.29	0.40	6.11	26.55
Total	**65**	**325**	**100.00**	**700**	**100**	**6.55**	**100.00**	300.00

Name of the Shrub Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Karada	3	0.1667	29.9976	50	16.67	46.66
Katak	1	0.0556	9.9992	50	16.67	26.67
Halda	1	0.0556	9.9992	50	16.67	26.67
Kurei	4	0.2222	39.9968	100	33.33	73.33
Kuruma	1	0.0556	9.9992	50	16.67	26.67
Total	**10**	**0.5556**	**100.0**	**300**	**100.00**	**200.0**

Name of the Herb Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Bhuineem	11	5.50	61.111	100	33.33	94.444
Banakolatha	2	1.00	11.111	50	16.67	27.778
Sumanai	1	0.50	5.556	50	16.67	22.222
Satabari	4	2.00	22.222	100	33.33	55.556
Total	**18**	**9.00**	**100.000**	**300**	**100.00**	**200.000**

Biodiversity assessment in Tangiri RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Mai	7	70	33.33	100	20	0.70	34.15	87.48
Sal	11	110	52.38	100	20	1.00	48.78	121.16
Kasi	1	10	4.76	100	20	0.10	4.88	29.64
Mango	1	10	4.76	100	20	0.10	4.88	29.64
Asana	1	10	4.76	100	20	0.15	7.32	32.08
Total	**21**	**210**	**100.00**	**500**	**100**	**2.05**	**100.00**	**300.00**

Name of the Shrub Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Mura	2	0.2222	39.997	100	50.00	89.997
Karada	3	0.3333	59.995	100	50.00	109.995
Total	**5**	0.5556	**99.992**	**200**	**100.00**	**199.992**

Name of the Herb Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Bhuineem	2	2.00	16.67	100	25.00	41.67
Siali	2	2.00	16.67	100	25.00	41.67
Muturi	4	4.00	33.33	100	25.00	58.33
Sumanai	4	4.00	33.33	100	25.00	58.33
Total	**12**	**12.00**	**100.00**	**400**	**100.00**	**200.00**

Biodiversity assessment in Saleimada RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Mai	3	30	10.71	100	6.67	0.30	9.26	26.64
Chara	1	10	3.57	100	6.67	0.10	3.09	13.32
Bela	7	70	25.00	100	6.67	0.70	21.60	53.27
Giridhirni	2	20	7.14	100	6.67	0.20	6.17	19.98
Dhaura	1	10	3.57	100	6.67	0.30	9.26	19.50
Karada	3	30	10.71	100	6.67	0.30	9.26	26.64
Dhamana	1	10	3.57	100	6.67	0.10	3.09	13.32
Gandhari	1	10	3.57	100	6.67	0.15	4.63	14.87
Sidha	1	10	3.57	100	6.67	0.18	5.56	15.79
Asana	1	10	3.57	100	6.67	0.17	5.25	15.49
Jari	1	10	3.57	100	6.67	0.16	4.94	15.18
Kataka	1	10	3.57	100	6.67	0.15	4.63	14.87

Kurei	3	30	10.71	100	6.67	0.14	4.32	21.70
Salai	1	10	3.57	100	6.67	0.15	4.63	14.87
Banta	1	10	3.57	100	6.67	0.14	4.32	14.56
Total	**27**	**280**	**100**	**1500**	**100.00**	**3.24**	**100.00**	**300.00**

Name of the Shrub Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Karada	2	0.22	50.505	100	33.33	83.838
Katak	1	0.11	25.253	100	33.33	58.586
Kurei	1	0.11	25.253	100	33.33	58.586
Total	**4**	**0.44**	**101.010**	**300**	**100.00**	**201.010**

Biodiversity assessment in Pedi RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Chara	3	30	8.82	100	10.00	0.30	9.38	28.20
Bela	4	40	11.76	100	10.00	0.40	12.50	34.26
Kendu	4	40	11.76	100	10.00	0.50	15.63	37.39
Dhaura	5	50	14.71	100	10.00	0.10	3.13	27.83
Harida	1	10	2.94	100	10.00	0.10	3.13	16.07
Sidha	3	30	8.82	100	10.00	0.30	9.38	28.20
Asana	1	10	2.94	100	10.00	0.10	3.13	16.07
Karada	10	100	29.41	100	10.00	1.10	34.38	73.79
Salai	2	20	5.88	100	10.00	0.10	3.13	19.01
Rahani	1	10	2.94	100	10.00	0.20	6.25	19.19
Total	**34**	**340**	**100.00**	**1000**	**100**	**3.2**	**100.00**	300.00

Name of the Shrub Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Mura	1	0.11	9.11	100	20.00	29.11
Bhadali	1	0.11	9.11	100	20.00	29.11
Karada	5	0.56	45.54	100	20.00	65.54
Katak	1	0.11	9.11	100	20.00	29.11
Kurei	3	0.33	27.32	100	20.00	47.32
Total	**11**	**1.22**	**100.18**	**500**	**100.00**	**200.18**

Herb Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Satabari	2	2.00	50.000	100	50.00	100.000
Bhuineem	2	2.00	50.000	100	50.00	100.00
Total	**4**	**4**	**100**	**200**	**100**	**200**

Biodiversity assessment in Sardhapur RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Sal	31	310	44.29	100	20	3.10	61.39	125.67
Mai	1	10	1.43	100	20	0.10	1.98	23.41
Anchu	2	20	2.86	100	20	0.20	3.96	26.82
Asana	1	10	1.43	100	20	0.20	3.96	25.39
Total	35	350	50.00	100	20	1.45	28.71	98.71
		700	**100.00**	**500**	**100**	**5.05**	**100.00**	**300.00**

Name of the Shrub Species	Nos.	Density	Relative Density	Frequency	Relative Frequency	IVI
Bhuin kurma	3	0.33	14.31	100	33.33333	47.64
Karada	2	0.22	9.54	100	33.33333	42.87
Kurei	16	1.78	76.30	100	33.33333	109.63
Total	**21**	**2.33**	**100.14**	**300**	**100**	**200.14**

Biodiversity assessment in Durgapr Danda RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Mai	10	100	32.26	100	16.67	0.980	33.68	82.60
Chara	5	50	16.13	100	16.67	0.450	15.46	48.26
Bija	1	10	3.23	100	16.67	0.100	3.44	23.33
Sal	11	110	35.48	100	16.67	0.980	33.68	85.83
Asana	3	30	9.68	100	16.67	0.300	10.31	36.65
Kataka	1	10	3.23	100	16.67	0.100	3.44	23.33
Total	**31**	**310**	**100.00**	**600**	**100.00**	**2.91**	**100.00**	300.00

Name of the Shrub Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Karada	4	1.00	25.000	100	50.00	75.000
Kurei	12	3.00	75.000	100	50.00	125.000
	16	**4.00**	**100.000**	**200**	**100.00**	**200.000**

Name of the Herb Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Bhuineem	12	12.00	54.545	100	25.00	79.55
Banakolatha	7	7.00	31.818	100	25.00	56.82
Satabari	1	1.00	4.545	100	25.00	29.55
Sumnai	2	2.00	9.091	100	25.00	34.09
Total	**22**	**22.00**	**100.000**	**400**	**100.00**	**200.00**

Biodiversity assessment in Pattakhaman RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Kendu	1	10	1.45	100	9.09	0.10	1.45	11.99
Chara	11	110	15.94	100	9.09	1.01	14.62	39.65
Anchu	2	20	2.90	100	9.09	0.20	2.89	14.88
Sal	8	80	11.59	100	9.09	0.80	11.58	32.26
Dhaura	5	50	7.25	100	9.09	0.50	7.24	23.57
Bahada	3	30	4.35	100	9.09	0.30	4.34	17.78
Gandhari	15	150	21.74	100	9.09	1.50	21.71	52.54
Asana	1	10	1.45	100	9.09	0.10	1.45	11.99
Mai	21	210	30.43	100	9.09	2.10	30.39	69.92
Kusuma	1	10	1.45	100	9.09	0.20	2.89	13.43
Piasal	1	10	1.45	100	9.09	0.10	1.45	11.99
Total	**69**	**690**	100.00	**1100**	**100.00**	**6.91**	**100.00**	**300.00**

Shrub Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Dhatiki	2	0.2222	18.182	100	25.00	43.182
Chauli	1	0.1111	9.091	100	25.00	34.091
Kurei	2	0.2222	18.182	100	25.00	43.182
Karada	6	0.6667	54.546	100	25.00	79.546
Total	**11**	**1.2222**	**100.002**	**400**	**100.00**	200.002

Name of the Herb Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Bhuineem	1	1.00	14.29	100	33.33	47.62
Gandhari	4	4.00	57.14	100	33.33	90.48
Sumanai	2	2.00	28.57	100	33.33	61.90
Total	**7**	**7.00**	**100.00**	**300**	**100.00**	**200.00**

Angul Forest Division

Biodiversity assessment in Chandrapada RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Chara	2	20	2.67	100	12.50	0.20	3.74	18.90
Anchu	1	10	1.33	100	12.50	0.10	1.87	15.70
Sal	49	490	65.33	100	12.50	2.45	45.79	123.63
Mai	10	100	13.33	100	12.50	1.00	18.69	44.52
Giridhini	1	10	1.33	100	12.50	0.80	14.95	28.79
Asana	8	80	10.67	100	12.50	0.40	7.48	30.64
Mahula	3	30	4.00	100	12.50	0.30	5.61	22.11
Kurei	1	10	1.33	100	12.50	0.10	1.87	15.70
Total	**75**	**750**	**100.00**	**800**	**100.00**	**5.35**	**100.00**	300.00

Name of the Shrub Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Kurei	6	0.66667	100.00	100	100.00	200.00
	6	**0.66667**	**100.00**	**100**	**100**	**200.00**

Name of the Herb Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Bhuincha	2	2.00	40.00	100	50.00	90.00
Sumnai	3	3.00	60.00	100	50.00	110.00
Total	**5**	**5**	**100**	**200**	**100**	**200**

Biodiversity assessment in Kiajhara RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Kendu	2	20	4.65	100	7.14	0.20	4.89	16.68
Sidha	1	10	2.33	100	7.14	0.10	2.44	11.91
Anchu	4	40	9.30	100	7.14	0.50	12.22	28.67
Teltala	1	10	2.33	100	7.14	0.40	9.78	19.25
Dhaura	7	70	16.28	100	7.14	0.70	17.11	40.54
Kataka	5	50	11.63	100	7.14	0.50	12.22	31.00
Barabakulia	1	10	2.33	100	7.14	0.10	2.44	11.91
Kasi	10	100	23.26	100	7.14	0.75	18.34	48.74
Asana	1	10	2.33	100	7.14	0.15	3.67	13.14
Mai	4	40	9.30	100	7.14	0.34	8.31	24.76
Anla	1	10	2.33	100	7.14	0.03	0.73	10.20
Karada	3	30	6.98	100	7.14	0.02	0.49	14.61
Neem	2	20	4.65	100	7.14	0.10	2.44	14.24
Ghuntuli	1	10	2.33	100	7.14	0.2	4.89	14.36
Total	**43**	**430**	**100.00**	**1400**	**100.00**	**4.09**	**100.00**	**300.00**

Name of the Shrub Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density
Katak	3	0.33333	37.500	100	33.33	70.833
Karada	4	0.44444	50.000	100	33.33	83.333
Kurei	1	0.11111	12.500	100	33.33	45.833
Total	**8**	**0.88889**	**100.000**	**300**	**100.00**	**200.000**

Biodiversity assessment in Arakhadiha RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Kendu	2	20	5.56	100	6.67	0.20	5.52	17.75
Chauli	2	20	5.56	100	6.67	0.20	5.52	17.75
Bela	1	10	2.78	100	6.67	0.15	4.14	13.59
Tentela	1	10	2.78	100	6.67	0.10	2.76	12.21
Kataka	5	50	13.89	100	6.67	0.50	13.81	34.37
Mitikunia	2	20	5.56	100	6.67	0.20	5.52	17.75
Kuruma	1	10	2.78	100	6.67	0.20	5.52	14.97
Veru	1	10	2.78	100	6.67	0.10	2.76	12.21
Mai	7	70	19.44	100	6.67	0.45	12.43	38.54
Teak	1	10	2.78	100	6.67	0.10	2.76	12.21
Karada	9	90	25.00	100	6.67	0.90	24.86	56.53
Damgurudu	1	10	2.78	100	6.67	0.15	4.14	13.59
Ghuntuli	1	10	2.78	100	6.67	0.10	2.76	12.21
Salai	1	10	2.78	100	6.67	0.12	3.31	12.76
Rai	1	10	2.78	100	6.67	0.15	4.14	13.59
Total	**36**	**360**	**100.00**	**1500**	**100.00**	**3.62**	**100.00**	**300.00**

Name of the Shrub Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Mura	12	1.3333	92.311	100	50.00	142.311
Kuruma	1	0.1111	7.693	100	50.00	57.693
Total	**13**	**1.4444**	**100.003**	**200**	**100**	**200.003**

Biodiversity assessment in Godigotha RF

Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Rahani	7	70	10.45	100	7.143	0.55	11.00	28.5906
Chara	1	10	1.49	100	7.143	0.10	2.00	10.6354
Anchu	4	40	5.97	100	7.143	0.40	8.00	21.1130

Sal	19	190	28.36	100	7.143	1.15	23.00	58.5011
Dhaura	1	10	1.49	100	7.143	0.10	2.00	10.6354
Mahula	3	30	4.48	100	7.143	0.30	6.00	17.6205
Asana	10	100	14.93	100	7.143	0.10	2.00	24.0682
Kuruma	1	10	1.49	100	7.143	0.10	2.00	10.6354
Karada	3	30	4.48	100	7.143	0.30	6.00	17.6205
Bela	1	10	1.49	100	7.143	0.10	2.00	10.6354
Kasi	3	30	4.48	100	7.143	0.40	8.00	19.6205
Bhalia	1	10	1.49	100	7.143	0.10	2.00	10.6354
Khaira	6	60	8.96	100	7.143	0.60	12.00	28.0981
Mai	7	70	10.45	100	7.143	0.70	14.00	31.5906
Total	**67**	**670**	**100.00**	**1400**	**100.000**	**5**	**100.00**	**300.0000**

Shrub Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Mura	1	0.11111	14.29	100	25.00	39.29
Karada	4	0.44444	57.14	100	25.00	82.14
Muturi	1	0.11111	14.29	100	25.00	39.29
Kurei	1	0.11111	14.29	100	25.00	39.29
Total	**7**	**0.77778**	**100.00**	**400**	**100.00**	**200.00**

Biodiversity assessment in Dalak Poipal RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Amla	1	10	2.44	100	6.25	0.10	2.56	11.25
Chara	5	50	12.20	100	6.25	0.50	12.82	31.27
Asana	6	60	14.63	100	6.25	0.60	15.38	36.27
Anchu	1	10	2.44	100	6.25	0.10	2.56	11.25
Bahada	1	10	2.44	100	6.25	0.10	2.56	11.25
Banta	1	10	2.44	100	6.25	0.10	2.56	11.25
Bhuincha	1	10	2.44	100	6.25	0.13	3.33	12.02
Dhaura	7	70	17.07	100	6.25	0.56	14.36	37.68
Halda	2	20	4.88	100	6.25	0.20	5.13	16.26
Kendu	2	20	4.88	100	6.25	0.20	5.13	16.26
Karada	2	20	4.88	100	6.25	0.20	5.13	16.26
Kusuma	1	10	2.44	100	6.25	0.10	2.56	11.25
Kasi	3	30	7.32	100	6.25	0.30	7.69	21.26
Sidha	1	10	2.44	100	6.25	0.01	0.26	8.95
Sisoo	1	10	2.44	100	6.25	0.10	2.56	11.25
Mai	6	60	14.63	100	6.25	0.60	15.38	36.27
Total	**41**	**410**	**100.00**	**1600**	**100**	**3.9**	**100.00**	**300.00**

Name of the Shrub Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Kurei	8	0.88889	100.00	100	100.00	200.00
Total	**8**	**0.88889**	**100.00**	**100**	**100**	**200.00**

Biodiversity assessment in Rameswar RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Bahada	2	20	33.33	100	33.33	0.180	31.03448	97.70
Bela	3	30	50.00	100	33.33	0.300	51.72414	135.06
Barabakulia	1	10	16.67	100	33.33	0.100	17.24138	67.24
Total	**6**	**60**	**100.00**	**300**	**100.00**	**0.58**	**100**	**300.00**

Name of the Shrub Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Muturi	2	0.22222	22.22	100	20.00	42.22
Katak	2	0.22222	22.22	100	20.00	42.22
Gangasiuli	1	0.11111	11.11	100	20.00	31.111
Karada	3	0.33333	33.33	100	20.00	53.33
Kurei	1	0.11111	11.11	100	20.00	31.11
Total	**9**	**1**	**100**	**500**	**100.00**	**200.00**

Name of the Herb Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Bhuineem	4	4.00	57.143	100	33.33	90.476
Agamathu	1	1.00	14.286	100	33.33	47.619
Sumnai	2	2.00	28.571	100	33.33	61.905
Total	**7**	**7**	**100.000**	**300**	**100.00**	**200.000**

Biodiversity assessment in Sachi RF

Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Mai	2	20	16.67	100	20	0.20	16.00	52.67
Chauli	1	10	8.33	100	20	0.10	8.00	36.33
Bela	6	60	50.00	100	20	0.60	48.00	118.00
Barabakulia	1	10	8.33	100	20	0.15	12.00	40.33
Saluei	2	20	16.67	100	20	0.20	16.00	52.67
Total	**12**	**120**	**100.00**	500	**100**	**1.25**	**100.00**	**300.00**

Shrub Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Bhadali	1	1.00	20.00	100	25.00	45.00
Khaura	1	1.00	20.00	100	25.00	45.00
Mura	2	2.00	40.00	100	25.00	65.00
Karada	1	1.00	20.00	100	25.00	45.00
Total	**5**	**5.00**	**100.00**	**400**	**100.00**	**200.00**
Herb Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Bhuineem	2	1.00	16.67	100	33.33	50.00
Salai	4	4.00	66.67	100	33.33	100.00
Sumnai	1	1.00	16.67	100	33.33	50.00
Total	**7**	**6**	**100**	**300**	**100**	**200**

Biodiversity assessment in Budhia RF

Name of the Tree Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	Basal Area Density	Relative BAD	IVI
Mai	1	10	3.23	100	7.692	0.1	3.34	14.26
Halada	4	40	12.90	100	7.692	0.4	13.38	33.97
Anchu	2	20	6.45	100	7.692	0.2	6.69	20.83
Karada	3	30	9.68	100	7.692	0.3	10.03	27.40
Dhaura	2	20	6.45	100	7.692	0.02	0.67	14.81
Damgurudu	1	10	3.23	100	7.692	0.01	0.33	11.25
Asana	4	40	12.90	100	7.692	0.5	16.72	37.32
Ghuntuli	1	10	3.23	100	7.692	0.01	0.33	11.25
Bara	7	70	22.58	100	7.692	0.7	23.41	53.68
Bela	3	30	9.68	100	7.692	0.35	11.71	29.08
Kasi	1	10	3.23	100	7.692	0.1	3.34	14.26
Neem	1	10	3.23	100	7.692	0.15	5.02	15.93
Pahadi Sisoo	1	10	3.23	100	7.692	0.15	5.02	15.93
Total	**31**	**310**	**100.00**	1300	**100.000**	**2.99**	**100.00**	**300.00**

Name of the Shrub Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Mura	2	0.22222	50.00	100	33.33	83.33
Karada	1	0.11111	25.00	100	33.33	58.33
Kurei	1	0.11111	25.00	100	33.33	58.33

Total	**4**	**0.44444**	**100.00100**	**300.00000**	**100.00000**	**200.00**
Name of the Herb Species	Nos.	Density	Relative Density	Frequency %	Relative Frequency	IVI
Muturi	1	1.00	20.00	100	33.33	53.33
Bhuineem	3	3.00	60.00	100	33.33	93.33
Saluei	1	1.00	20.00	100	33.33	53.33
Total	**5**	**5.00**	**100.00**	**300**	**100.00**	**200.00**

3.3 Status of biodiversity conservation in forests

In Angul Division at present 90 nos. of Biodiversity Management Committee has been constituted under section 41 (1) of Biological Diversity Act, 2002 and Rule 22 of Biological Diversity, Rule 2004 and Rule 21 of Odisha Biological Diversity Rule, 2012. It was duly approved by the concerned Gram Panchayat in Table no. 3.3.

Table No. 3.4

SL No.	Name of Forest Division	Name of Block	Name of Grampanchayat	Name of BMC	Date of selection of Members	Date of Constitution of BMC
1	2	3	4	5	6	7
1	Angul	Banarpal	Gadasantri	Gadasantri	20-11-2018	22-11-2018
2	Angul	Banarpal	Bhogabereni	Bhogabereni	27-11-2018	27-11-2018
3	Angul	Banarpal	Benagaida	Benagaida	26-11-2018	28-11-2018
4	Angul	Banarpal	Balaramprasad	Balaramprasad	26-11-2018	03-12-2018
5	Angul	Banarpal	Sakosingha	Sakosingha	22-11-2018	22-11-2018
6	Angul	Banarpal	Jamunali	Jamunali	29-11-2018	29-11-2018
7	Angul	Angul	Balasingha	Balasingha	27-11-2018	28-11-2018
8	Angul	Angul	Dhokuta	Dhokuta	20-11-2018	20-11-2018
9	Angul	Angul	Angarbandh	Angarbandh	29-11-2018	29-11-2018
10	Angul	Angul	Nuamauza	Nuamauza	28-11-2018	29-11-2018
11	Angul	Angul	Sankhapur	Sankhapur	21-11-2018	21-11-2018
12	Angul	Angul	Bantala	Bantala	29-11-2018	29-11-2018
13	Angul	Angul	Inkarbandha	Inkarbandha	28-11-2018	28-11-2018
14	Angul	Angul	Saradhapur	Saradhapur	28-11-2018	28-11-2018
15	Angul	Angul	Pokatunga	Raneswar Pokatunga	20-11-2018	20-11-2018
16	Angul	Angul	Chheliapada	Chheliapada	25-11-2018	25-11-2018
17	Angul	Angul	Susuda	Susuda	20-11-2018	06-12-2018
18	Angul	Angul	Kangula	Kangula	27-11-2018	27-11-2018
19	Angul	Angul	Khalari	Khalari	25-11-2018	25-11-2018
20	Angul	Angul	Baragania	Baragania	28-11-2018	28-11-2018
21	Angul	Angul	Basantapur	Basantapur	13-11-2018	13-11-2018
22	Angul	Angul	Parang	Parang	26-11-2018	26-11-2018
23	Angul	Angul	Barapada	Barapada	22-10-2018	23-10-2018
24	Angul	Angul	Kushakila	Kushakila	28-10-2018	28-10-2018

25	Angul	Angul	Brahmanbila	Brahmanbila	27-11-2018	27-11-2018
26	Angul	Angul	Patrapada	Patrapada	16-11-2018	20-11-2018
27	Angul	Angul	Kampsala	Kampsala	31-10-2018	31-10-2018
28	Angul	Angul	Machakuta	Machakuta	26-11-2018	26-11-2018
29	Angul	Angul	Bagedia	Bagedia	28-11-2018	28-11-2018
30	Angul	Angul	Chheliapada	Chheliapada	29-11-2018	29-11-2018
31	Angul	Angul	Kukurpeta	Kukurpeta	26-11-2018	26-11-2018
32	Angul	Angul	Patakamunda	Patakamunda	27-11-2018	27-11-2018
33	Angul	Angul	Similipal	Similipal	13-11-2018	13-11-2018
34	Angul	Angul	Barasahi	Barasahi	05-12-2018	05-12-2018
35	Angul	Angul	Bahalsahi	Bahalsahi	11-12-2018	11-12-2018
36	Angul	Angul	Tukuda	Tukuda	30-11-2018	30-11-2018
37	Angul	Angul	Tentulikodasahi	Tentulikodasahi	11-11-2018	11-11-2018
38	Angul	Talcher	Gopalprasad	Gopalprasad	27-11-2018	30-11-2018
39	Angul	Talcher	Karanapur	Karanapur	28-09-2018	30-09-2018
40	Angul	Talcher	Bantol	Bantol	31-10-2018	31-10-2018
41	Angul	Talcher	Dharmapur	Dharmapur	11-12-2018	11-12-2018
42	Angul	Kaniha	Gadasila	Gadasila	30-10-2018	02-11-2018
43	Angul	Kaniha	Bijigol	Bijigol	30-10-2018	30-10-2018
44	Angul	Kaniha	Kaniha	Kaniha	29-11-2018	29-11-2018
45	Angul	Kaniha	Gandamala	Gandamala	12-12-2018	12-12-2018
46	Angul	Kaniha	Karanapal	Karanapal	28-11-2018	28-11-2018
47	Angul	Banarpal	Karadagadia	Karadagadia	20-12-2018	20-12-2018
48	Angul	Banarpal	Badahinsar	Badahinsar	22-10-2018	22-10-2018
49	Angul	Banarpal	Tubey	Tubey	28-11-2018	28-11-2018
50	Angul	Banarpal	Talamul Sasan	Talamul Sasan	27-12-2018	27-12-2018
51	Angul	Banarpal	Giranga	Giranga	22-12-2018	22-12-2018
52	Angul	Banarpal	Kandasar	Kandasar	12-11-2018	12-11-2018
53	Angul	Banarpal	Talamul	Talamul	06-12-2018	06-12-2018
54	Angul	Banarpal	Ranigoda	Ranigoda	28-11-2018	28-11-2018
55	Angul	Banarpal	Kurudol	Kurudol	21-12-2018	21-12-2018
56	Angul	Banarpal	Kukudang	Kukudang	29-11-2018	29-11-2018
57	Angul	Banarpal	Bonda	Bonda	27-11-2018	27-11-2018
58	Angul	Banarpal	Turanga	Turanga	18-12-2018	18-12-2018
59	Angul	Banarpal	Badakerjang	Badakerjang	22-12-2018	22-12-2018
60	Angul	Banarpal	Santrapur-B	Santrapur-B	29-12-2018	29-12-2018
61	Angul	Banarpal	Phulpada	Phulpada	29-12-2018	29-12-2018
62	Angul	Banarpal	Banarpal	Banarpal	10-12-2018	11-12-2018
63	Angul	Talcher	Bajuruda	Bajuruda	22-10-2018	22-10-2018
64	Angul	Talcher	Gobara	Gobara	13-12-2018	13-12-2018
65	Angul	Talcher	Gurujang	Gurujang	25-10-2018	25-10-2018
66	Angul	Talcher	Hensamul	Hensamul	21-08-2018	21-08-2018
67	Angul	Talcher	Ghantapada	Ghantapada	24-12-2018	26-12-2018

68	Angul	Kaniha	Biru	Biru	21-11-2015	21-11-2015
69	Angul	Kaniha	Santribida	Santribida	23-11-2015	24-11-2015
70	Angul	Kaniha	Burukuna	Burukuna	16-11-2015	17-11-2015
71	Angul	Kaniha	Kulei	Kulei	19-11-2015	20-11-2015
72	Angul	Angul	Baluakata	Baluakata	27-02-2015	28-02-2015
73	Angul	Angul	Gadataras	Gadataras	15-10-2015	31-10-2015
74	Angul	Angul	Khinda	Khinda	20-03-2015	21-03-2015
75	Angul	Angul	Badakanthakul	Badakanthakul	31-10-2015	31-10-2015
76	Angul	Angul	Rantalei	Rantalei	19-01-2015	19-01-2015
77	Angul	Angul	Antulia	Antulia	20-01-2015	23-01-2015
78	Angul	Angul	Basala	Basala	19-01-2015	19-01-2015
79	Angul	Angul	Badakera	Badakera	26-01-2015	26-01-2015
80	Angul	Angul	Manikjodi	Manikjodi	21-01-2015	27-01-2015
81	Angul	Angul	Kumursihga	Kumursihga	19-01-2015	20-01-2015
82	Angul	Angul	Bedasasan	Bedasasan	20-01-2015	20-01-2015
83	Angul	Angul	Talagarh	Talagarh	29-10-2015	29-10-2015
84	Angul	Angul	Matiasahi	Matiasahi	19-01-2015	25-01-2015
85	Angul	Angul	Balanga	Balanga	20-01-2015	20-01-2015
86	Angul	Chhendipada	Kosala	Kosala	28-01-2015	28-01-2015
87	Angul	Chhendipada	Katada	Katada	23-11-2015	23-11-2015
88	Angul	Chhendipada	Jereng Dehurisahi	Jereng Dehurisahi	20-01-2015	20-01-2015
89	Angul	Banarpal	Santrapur	Santrapur	28-02-2015	25-03-2015
90	Angul	Kaniha	Dalak	Dalak	18-12-2018	18-12-2018

Aim &Objective : -

1. Management and sustainable utilization of biological resources within its jurisdiction.
2. Stopping of irregular harvesting of bio resources within its jurisdiction.
3. Furnishing of information/opinion to National Biodiversity Authority, Chennai and A.P. State Biodiversity Board, Hyderabad on various subject as and when asked.
4. Levy charges as advised by National Biodiversity Authority/A.P. State Biodiversity Board by way of collection fees for accessing/ collecting bio- resources for commercial purpose within its jurisdiction.
5. To maintain data about the local hakims/vaidas and practitioners using the biological resources.
6. Maintain register giving information about the details of access granted to biological resources and traditional knowledge, detail of collection fee imposed and documentation of benefits derived and mode of their sharing.
7. The Biodiversity Management Committee will also be involved in documentation of biodiversity and associated traditional knowledge.
8. Management and use of Biodiversity Fund as per guidelines of National Biodiversity Authority and A.P. State Biodiversity Board from time to time.
9. Identification and maintenance of Biodiversity Heritage Sites, if applicable.
10. Any other works related to Biodiversity as decided from time to time.

The committee extents 7 Seven Members as under.

1. Chairman from education committee
2. One Member from Agriculture
3. One Member from Pisciculture
4. One Member from Social Worker
5. One Member from Herbal cultivater/collector
6. One Member from NTFP collector
7. Concerned Forester – Member Secretary

3.3.1 Tropical forests are the most biodiversity rich centers on Earth. These forests are rich in medicinal and economically important plants. Over exploitation has resulted in a rapid loss of tropical forests which is considered as one of the most serious environmental and economic problems all over the world (Hare et al. 1997) Sacred groves/ " Debasthali/ "Saktipitha" are remnant forest patches of climax vegetation conserved by the local people intertwined with their socio-cultural and religious practices. These groves not only harbours rich biodiversity but also promotes sustainable livelihood for the indigenous communities and act as a repository of gene pools.

During 2011-12 the biodiversity study has been done by Dr. Pratyush P.Mohapatra on Mandargiri Kalima Reserve Forest. On survey 569species of plants were identified and 20species of Mamals, 35species of Birds, 27species of reptiles, 11species frogs and 32species butterflies were documented. Mandargiri is one such place in Angul district of Odisha which harbours floristically important tropical deciduous forests of Eastern Ghats and is conserved and protected by the local people through their traditional practices. Many of the plants have immense medicinal properties.

3.3.2 Regeneration Survey

It is generally observed that regeneration of seedlings in the 1st year i.e. recruits are abundant in every forest block except a few like Nialu-Lodhajhari-Sapakata R.F., Phuljhari R.F.. Kanloi R.F. etc. but the seedlings are dying back in that stage only and are not being able to establish due to biotic interference like repeated annual ground fire, grazing, browsing and illicit removal of pole size crop for agricultural and household use. In fact valuable species like Gambhar, Sisso, Kasi, Piasal, Kurum are unable to establish and being replaced by less valuable, xerophytic unbrowsable species like Sidha, Karada, Dhaura, Barabakulia etc. It might be the reason Karada (Cleistanthus collinus) is the most abundantly available tree in almost all forest blocks in comparison to any other species. This is one alarming stage when care should be taken to help the principal species to establish.

The regeneration was classified into three groups i.e. seedlings, saplings and poles. The study was carried out over an area of 1 Sqm. at the center of each sample plot and the regeneration of all the tree species were taken in to account excluding the grasses, thorns and climbers. The result of enumeration was analyzed and some value was put to each regeneration group. Accordingly the regeneration status of each forest block was classified to be good, fair, poor, no regeneration & new regeneration.

Estimation of growing stock.

From the enumeration/field data, species wise distribution of trees in each girth class will be generated for compartment/village/any other management unit. This data would be used for population structure and to identify the old group forests. The growing stock of trees must be so managed that it regularly provides the greatest possible quantity of the desired products (Sustainable Yields) including intangible benefits. Ratio method of estimation will be used for estimating the growing stock of important tree species using local volume tables developed by FRI/FSI or under previous working plans. Fresh local volume tables may be prepared, if required. Adding the growing stock of all compartments, the growing stock of the block will be estimated, which will be again integrated up to Range level and further at Divisional level. Stratification developed by FSI based on forest type, density, land use using GIS can be used for increasing the precision of the estimates. Any gap in research results with respect to estimation of growing stock must be brought out with utmost clarity.

3.3.4 Impact of climate change

The climatic condition of Angul Division is much varied. It has mainly four seasons. Summer starts from the month of March and continues up to mid June, followed by rainy season, which continues up to the month of September. Winter begins from December and remains effective up to February. The period from October to November may be treated as post monsoon season, when sporadic rains occur.

Bulk of precipitation occurs in the rainy season by the influence of south-western monsoon. In general, rains break in the third week of June and continue up to middle or end of September. Occasionally, pre monsoon showers are also experienced in the 1st or 2nd week of June. Post monsoon showers are also experienced in the month of October and November. During April and May, thunderstorms occur in the division. On an average, there are 70 rainy days in a year. Average annual rainfall in the division over last 15 years (1990 – 2004) is 1309 mm. The average during the years from 1979 to 1988 was 1136 mm. and 1294.16 mm. in the 1st half of the 20th century as recorded in the Dhenkanal Gazette 1981. Close examination of rainfall data of last fifteen years reveals that rainfall in 9 years remained below the annual average (i.e. 1309 mm). Rainfall was above annual average in six years, of which below 1400 mm in one year, within 1500 – 1600 mm in four years and more than 2200 mm in one year. Although average rainfall is 1309 mm, but deviation from the annual average in different years is high. Distribution of rainfall is also quite erratic, causing wide spread drought year after year.

Summer is experienced with rise in temperature in the month of March. Summer months are very hot and maximum day temperature varies from 40°C to 46°C and sometimes in the month of May, it goes beyond 46°C. Temperature drops appreciably on the onset of monsoon. In the month of October to mid November, the day temperature remains same while the night temperature falls and night becomes cooler. Thereafter, the day and night temperature falls. December is the coolest month experienced when temperature during night varies between 10°C to 13°C. Sometimes during December and January, severe cold is felt due to western wind blow in North India and temperature falls even up to 7°C. Some extreme temperatures recorded at Angul are furnished below is in **table no.3.5.**

Table No. 3.5

Date	Max. Temperature	Min. Temperature
03.01.1923	-	6.70°C
14.05.1947	46.10°C	-
06.06.1958	46.10°C	-
30.05.1998	46.90°C	-
16.01.2003	-	6.00°C
29.12.2014	-	9.00°C
20.05.2015	48.6^0 C	

3.3.5 REDD+

REDD means reducing emissions from deforestation and forest degradation in developing countries which is a carbon finance mechanism for forest initiated in 2005. RED is still under negotiation now as REDD+. The role of conservation sustainable management of forest and enhancement of forest carbon stock in developing countries is in progress with bio-diversity conservation, eco-system service and recognizing rights of local communities. It is actually and incentive based mechanism for promoting and rewarding forest eco-system conservation and is being negotiated so as to become a much simpler and effective tool to achieve the intended purpose better carbon stock through better and effective forest conservation measure.

All though REDD+ is not yet a reality there is an urgent need to take advance action for REDD+ readiness to prepare ground for harnessing its benefits as and when it comes in force some work on REDD+ concept is in progress in Angul Forest Division especially in Jereng Budhipahad VSS taken up by the Energy Resources Institute (TERI). It is a study on the available moist deciduous mixed forest of this area.

The major components of REDD+ as mentioned below are essentially an elaboration of elements of 21 Century sustainable forest management with very variable documentation and reference period as has been done with the interventions under OFSDP, which was under operation from 2007-08 to 2014-15.

1. Addressing drivers of degradation: -
   This implies to the analysis of DOD in the local context and how they are being addressed.
2. Rights of local people: -
   This implies what they are and how and to what extents they are being met with ?
3. Environmental and social safe guards: -
   This implies to the eco-system services, bio-diversity and quality of planting stock/ plantation.
4. Access and benefit sharing mechanism: -
   This implies how effectively the system is functioning.
5. Monitoring, reporting and verification: -
   This implies the base line data of parameters to be measured, measurement methods, community capacities to measure, reporting formats, and frequency, verification process manuals etc.
6. Conditions in Buffer zone. 10% area all around. Once REDD+ frame work and institutional mechanism come into force, projects will be entitled to get financial incentives based on ”incremental carbon sequestration” . How ever a close analysis will reveal that implementation of the key elements of REDD+ in managing the forests will go a long way in achievement of sustainable forest management and its concomitant benefits. This means the improved eco-system services of the locality may actually be higher than the financial incentives under REDD+ as and when they become available. It is therefore necessarily understood that the component of REDD+ have become an integral part of forest management practices and we take advance action through small REDD+ pilot projects under various forestry programmes including CAMPA and other schemes including MGNREGS after the conclusion of interventions under OFSDP. How ever for reducing emissions from deforestation and forest degradation the following steps have been taken.
7. Smokeless chulha shall be supplied to each family of forest fringe villages to minimize the consumption of fuel wood to check dependency on forest.
8. Farm Forestry & Agro Forestry shall be continued to fulfill the bonafied needs of the inhabitants to check the pressure on forest.
9. Stall feeding shall be encouraged.
10. Rights of the indigenous should be taken care for better protection of the forest.
11. Access & benefit sharing mechanism shall be adopted.
12. Study the design approach an implementation of community development activities & inter-sector coordinator should be done.

Status of implementation of the state guidelines/ strategic plan, if any should be given; Other in-situ and ex-situ conservation efforts undertaken for sensitive/RET/ IUCN Red List species and their habitats.

3.4 Status of species prone to over exploitation

Details of current harvesting practices of forest produce and preparation as well as implementation of measures for conservation of biodiversity; as far as possible status of the species prone to overexploitation and destructive harvesting should be given; The use of components of biological diversity in such manner and at such rate that does not lead to the long term decline of the biological diversity thereby maintaining its potential to meet the needs and aspirations of present and future generations, fair and equitable sharing of the benefits arising out of use of biological resources, knowledge and for matters connected therewith as provided in "Biological Diversity Act 2002" should be ensured.

3.5 Conservation of genetic Resources

3.5.1 Preservation plots – 12.63 ha. of forest area from Antulia Tabada Reserve Forest compartment no. 5 has been preserve as sample plots for the purpose of research and seeds collection. It is control by the Silviculturist, Odisha BBSR for the management and research programmes. These preservation plots have not mentioned since long. The +trees are damaged due to over age and pollarding.

3.5.2 Research Garden – There are two research garden under the control of Silviculturist, Odisha Bhubaneswar. One is at Kosala Reserve Forests over an area of 76 ha. named as Kosala Research Garden. The another is at Chhendipada Reserve Forests over an area of 28 ha.

3.6 Fauna and their Habitats

3.6.1 Introduction

Angul Forest Division was rich in a variety of Wild Life. The varied terrain, dense, compact contiguous forests of different types had contributed to the richness of Wild Life and still the environment continues to be conducive for the Wild Life though there is continuous pressure on the Wild Life habitats by human interference. This Division was rich in flora and fauna due to its deep compact forest cover, prolific growth of fodder species and balanced proportion of predator and prey animals. The carnivorous and herbivorous animals were living in quite harmony. But in recent times rapid growth of population and better road links facilitated the communication to deep forest responsible for the slow and steady degradation of flora and fauna. Annual forest fire, biotic pressure of different kinds upon the forest and wildlife, the firearms and liberal issue of Gun license for crop protection resulted depletion of wild life in many forest blocks. Many tribal groups also had the tradition of hunting in some remote pocket during festival period. The fauna of Angul Division included Tigers, Leopards, Elephants, Bears, Spotted Deer, Wild Boar, Sambar and even wild Buffaloes, were a common sight in the forests of Bantala, Jarapada&Angul Ranges. The habitat in Jarapada, Angul&Bantala Ranges is natural & suitable for the wildlife.

There are carnivorous animals such as Tiger, Leopard, Jungle Cat, Civet, Small Indian Mongoose, Wolf, Jackal, Striped, Hyena, Wild dog in Bolong, Nuakheta, Labangi, Talasira block of Bantala Range of the Division. The population is quite rare in adjoining forest blocks like Burti, Krushnachakra, Antulia-Tabada, Katada, Pathargarh etc. of Angul&Jarapada Ranges. There is practically no wildlife in Chhendipada, Talcher & Kaniha Ranges in very less except Jackals, Wild boar & heavy population of Bear. There are herbivorous animals, such as common languor sloth bear, Sambar, Barking deer, the Gaur

(Gayal), wild buffaloes, Fruit bats, Rodents like Malabar Giant squirrels, Five stripped palm squirrel, common hare, porcupines in Bantala, Jarapada, Angul Ranges. The population is very rare in Talcher, Chhendipada & Kaniha Ranges. The bear population in Chhendipada Range is increasing alarmingly & creating serious man-animal conflict. Elephants generally migrates from the forests of Satkosia wildlife Division to Nuakheta, Bolong, Krushnachakra, Burti, Antulia-Tabada blocks of Raigada, Angul&Jarapada Ranges & from Keonjhar, Deogarh Divisions to Bulajhar, Phuuljhari, Nialu-Lodhajhari-Sapkata blocks of Talcher, Kaniha Ranges.

3.6.2 Habitats and Micro habitats

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

3.6.2.1 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 sustence, 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.

3.6.2.2 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.

3.6.2.3 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.

3.6.2.4 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.

3.6.2.5 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 the 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.

3.7 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. Fire is also another adverse factor for the same.

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 and mining 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 trained and 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: 3.8**

Table: 3.8 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 42, 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, Sahulla 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: 3.8**

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.

3.8 Protection and management of fauna

The result of the implementation of activities in this working circle during the current plan period is very much effective and achievement is appreciable. Because of appropriate treatments in different working circle natural regeneration has improved both in rehabilitation working circle as well as in improvement working circle. The soil moisture reign in the forest areas has increased which is evident from better health status of the growing stock in the forest area under the outgoing working plan. There is appreciable increase in regeneration of bamboo forest there by augmenting the needs of the rural artesian providing livelihood support to the poorest of the poor. This has paved the way to sustainable forest management which will provide more NTFP product their by help the rural poor of the forest fringe villages in improving their livelihood status from more earning.

The wildlife population of the area has increased which is evident from the latest elephant census where 74 nos. of elephants have been observed during the census period from 26.05.2015 to 28.05.2015. So also other animal population also seen to have increased which is evident from the latest sign survey under taken in the various forest area of this division.

As such, there is overall growth in the density status of the forests which is evident from the satellite imagery where there is increas 35 sqkms of forest area in Angul Forest Division. Where Angul Forest Division is the prime contributor of this success.

i. For wild life management & protection, elephant squads have been deployed at vulnerable elephant movement area. The list of protection squad under various schemes deployed at vulnerable points is given below in **Table no. 3.8.1.**

Table no. 3.8.1.

Sl.No	Name of the Range	Station of protection squad	Name of the Scheme	No of person engaged
1	Chhendipada	Chhendipada	State Plan Divisional Level Elephant Squad	05
2	Chhendipada	Chhendipada	CAMPA Wild Life protection squad	05
3	Chhendipada	Kosala	CAMPA Wild Life protection squad	05
4	Chhendipada	Chhendipada	CAMPA Wild Life side specific Elephant squad	03

5	Bantala	Labangi	CAMPA Wild Life protection squad	05
6	Jarapada	Antulia	State Plan IPCEA	15
7	Jarapada	Dahimal	State Plan IPCEA	05
8	Angul	Karatapatta	State Plan IPCEA	05
9	Angul	Pokunda	State Plan IPCEA	05
10	Kaniha	Kaniha	CAMPA Wild Life Anti depredation squad	10
11	Talcher	Kandhabereni	State Plan Divisional Level Elephant Squad	05
		Pabitranagar	CAMPA Wild Life Anti depredation squad	10

ii. Solar fencing has been provided in depredation area to reduce man- animal conflict. The details of solar fencing is in Table no. 3.8.2**.**

Year	Name of Scheme	Range	Location	Area		Amount Spent
				Specification	Rkm	
2005-06	Compensatory Afforestation Habitat Improvement of surrounding Area of Bhubaneswari OCP	Talcher	Bulajhar RF (Baruan NH-23 to Dholgandia Village)	5 Strand	12.00	600000
		Talcher	Bulajhar RF (Tumugula to Baruan NH-23)	5 Strand	8.00	400000
	Total				**20.00**	**1000000**
2007-08	8782-Forest Deposit, Rengali Irrigation Project	Talcher	Seepur RF (Ludhunimunda to Gangadharpur village)	5 Strand	9.68	504000
		Chhendipada	Jarapada RF (Korada to Nandichora Village)	5 Strand	10.20	531000
	Total				**19.88**	**1035000**

2008-09	2406- Forest & Wildlife (Central Plan) Elephant Management Project	Bantala	Nuakhera RF & Balanga RF (Nuakheta Ghodadina to Kantamegha via Saruali & Bhubanpur village)	5 Strand	14.50	750000
2009-10	2406- Forest & Wildlife (State Plan) Elephant Management Project	Chhendipada	Jaltap village around Kankurupal RF	5 Strand	4.65	500000
	2406- Forest & Wildlife (Central Plan) Elephant Management Project	Chhendipada	Brahmanbil RF towards Santrabandha village	5 Strand	8.45	916000
		Bantala	Balanga RF (Kantamegha & Talgarh village)	5 Strand	10.00	1084000
	Total				**23.10**	**2500000**
2013-14	CAMPA APO-2011-12 Wildlife Management Site Specific Conservation Plan	Angul	Bhogpal RF(Kusumpat to Bhogpal RF via Hinsaloi, Pabala, Karadsingha village	3 Strand	3.33	500000
	OFSDP	Angul	Chandanpur RF to Kulasingha RF (Chandanapur to Ranimunda)	3 Strand	10.00	1500000
		Bantala	Balanga RF 2 & 3 (Hidsingh village)	3 Strand	7.50	1125000
		Talcher	Kandhaberini to Rabipur RF	3 Strand	10.00	1500000
	Total				**30.83**	**4625000**
2014-15	CAMPA APO-2012-13 Wildlife Management Site Specific Conservation Plan	Chhendipada	Jeypur RF(Sandhpal Village)	3 Strand	3.33	500000

2016-17	2406- Forest & Wildlife (State Plan) -796-2314-Elephant Management Project	Jarapada	Antulia- Tabada RF	3 Strand	10	500000
2017-18	CAMPA APO-2015-16 Wildlife Protection & Management - Solar Power Fencing	Jarpada	Antulia- Tabada RF & Pathargarh PRF	3 Strand	7	1050000
		Talcher	Mankadachua, RF	3 Strand	6.34	950000
	CAMPA APO-2016-17-Wildlife Protection & Management -- Solar Power Fencing	Jarpada	Pathargarh PRF & Para PRF	3 Strand	12.00	1800000
	CAMPA APO-2016-17 Wildlife Management Site Specific Conservation Plan	Talcher	Bulajhar RF	3 Strand	6.67	1000000
2018-19	CAMPA APO-2017-18 Wildlife Management Site Specific Conservation Plan	Talcher	Bulajhar RF	3 Strand	3.5	1175720
		Chhendipada	Nunmati	3 Strand	2.229	748000
2019-20	CAMPA APO-2019-20 Wildlife Management Site Specific Conservation Plan-Estt of Intregated steel plant by JISTPL	Angul	Krushnacakra PRF to Chandanpur PRF	3 Strand	2.800	1000000
2020-21	CAMPA APO-2020-21 Wildlife Management Site Specific Conservation Plan-Bharatpur OCP	Angul	Gopalpur village 2. 71	3 Strand	2.71	1000000
Grand Total					**164.90**	**19633420**

iii. Water bodies have been created in the forest blocks to improve water regime for the wild life which is in **Table no. 3.8.3.**

Name of the Division	Year wise (2010-11 to 2020-21)	Name of the Scheme (Furnish Scheme wise)	Location	No. of water Bodies Created	No. of Water Bodies renovated	Amount utilized
1	2	3	4	5	6	7
Angul	2009-10	State-Plan-Wildlife	Rasanda	1		300000
		State-Plan-Wildlife	Lembutaila	1		300000
		State-Plan-Wildlife	Ranipark	1		701516
		Total		**3**		**1301516**
	2010-11	State-Plan-Wildlife	Badakathia	1		4.0000
			Jaltap	1		4.0000
			Lembutaila		1	0.8750
		Central-Plan-Wildlife	Nialu-Lodhajhri	1		3.0000
		CAMPA-APO-2009-10 (Wild lIfe)	Purunapani		1	1.0000
			Dangerbeda		1	1.0000
		Industrial Area Plantation-Dev of Ranipark	Ranipark, Talcher	1		7.3497
		Total		**4**	**3**	**21.2247**
	2011-12	Central Plan-Wildlife	Kuio	1		3.0000
		State-Plan- Wild life	Buruti	1		4.0000
			Seepur		1	0.2500
		CAMPA-APO-2011-12 (Wild lIfe)	Buruti	1		6.0000
		Total		**3**	**1**	**13.2500**
	2012-13	State-Plan- Wild life	Kanteikolia	1		2.0000
			Kanheijena	1		2.0000
			Bulajhar	1		2.0000
			Mantukhol (Kanheijena)		1	0.2500
			Bulajhar		1	0.2500
			Dangerbeda		1	0.2500
			Kanteikulia		3	0.7500

		CAMPA-APO-2011-12	Jaltap	1		1.5000
			Paranga	1		1.5000
			Kulasingha	1		1.5000
			Patakhaman	1		1.5000
		CAMPA-APO-2011-12 (Wild lIfe)	Chhendipada	1		5.0000
		Total		**8**	**6**	**18.5000**
	2013-14	State-Plan-Wildlife	Sibrampur	1		2.5000
			Seepur		1	0.5000
			Kanheijena		1	0.5000
			Tulasighai		1	0.5000
		Central Plan	Rabipur	1		2.5000
		CAMPA APO 2012-13	Bolanga (Labangi Village)	1		2.5000
			Nuakheta	2		5.0000
			Chandanpur	1		2.5000
			Krushnachakra	1		2.5000
			Rabipur	1		2.5000
			Kandhal	1		2.5000
Angul			Seepur	1		2.5000
			Santrabandha	1		2.5000
			Gadagotha	1		2.5000
		OFSDP	Kulasingha	1		2.5000
			Burti	2		5.0000
			Krushnachakra	2		5.0000
			Kurudu	1		2.5000
			Langalkhol	1		2.5000
			Mankadchua	1		2.5000
			Rabipur	1		2.5000
			Balanga	1		2.5000
		Total		**22**	**3**	**56.5000**
	2014-15	CAMPA-APO-2012-13 (Wild LIfe)	Katada	2		2.5000
			Antulia-Tabada	2		2.5000
			Jarapada	2		5.0000
		CAMPA-APO-2012-13 (Wild Life- Site Specific Conservation Plan)	Chhendipada	1		5.0000
		CAMPA APO	Nuakheta RF-4	1		2.5000

Angul		2013-14	Nuakheta RF-6	1		2.5000
			Bolanga RF-13	1		2.5000
			Bolanga RF-4	1		2.5000
			Antulia-7	1		2.5000
			Katada	1		2.5000
			Para	1		2.5000
			Kankurupal RF	2		5.0000
			Chhendipada RF	2		5.0000
			Mandergiri-I	1		2.5000
			Mandergiri-II	1		2.5000
			Bhogpal RF	1		2.5000
			Madhupur RF	1		2.5000
			Kanheijena RF	1		2.5000
			Sibrampur PRF	1		2.5000
			Kanteikulia RF	1		2.5000
			Mankadchua RF	1		2.5000
			Seepur RF	1		2.5000
			Bulajhar RF	1		2.5000
			Phuljhari RF-I	1		2.5000
			Khajuria RF	1		2.5000
			Santribeda RF	1		2.5000
			Sardhapur RF	1		2.5000
			Budhia RF	1		2.5000
			Lodhajhri RF	1		2.5000
			Badakathia RF	1		2.5000
		CAMPA-APO-2013-14 (Wild LIfe)	Marudhip RF	1		2.5000
			Krushnachakra PRF	1		2.5000
			Burti PRF	1		2.5000
			Rabipur RF	1		2.5000
		CAMPA-APO-2013-14 (Wild Life- Site Specific Conservation Plan)	Jarapada RF	1		5.0000
		Total		**40**	**0**	**100.000**
	2015-16	CAMPA APO 2013-14 (CRM)	Chhendipada RF-II	1		2.50000

			Bulajhar RF	1		2.50000
		CAMPA APO 2013-14 (Wildlife Protection & Management Habitat Improvement)	Burti PRF-I	1		2.50000
		CAMPA APO 2013-14 (Wildlife Protection & Management Implementation of site specific WL conservation plan)	Durgapur RF	1		5.00000
		State Plan-Wildlife	Mankadchua RF	1		2.50000
	2016-17	CAMPA APO-2015-16 Site Spesific Conservation Plan-Bharatpur OCP Creation and Maintenance of Water Body	Kadhal RF	1		4.000
	2016-17	CAMPA APO-2015-16 Site Spesific Conservation Plan-Esst. Of 2x600 MW Power Plant by M/s JITPL Creation and Maintenance of Water Body	Dhankoili RF	1		4.000
	2017-18	22-2406-Forest & WL(State Plan) State Sector-02-Environmental Forestry & WL-110-WL-	Badakathia RF	1		4.000

		Preservation-3173-Management of Elephant & Corridor-20002-Other charges water Body Renovation				
		CAMPA APO-2016-17-Site Specific Conservation Plan- Bharatpur OCP	Kanheijena RF	1		4.245
	2018-19	22-2406-Forest & WL(State Plan) State Sector-02-Environmental Forestry & WL-789-WL-Preservation-3173-Management of Elephant & Corridor-20002-Other charges water Body Renovation	Marudhipa PRF	1		4.500
	2018-19	CAMPA APO-207-18-Infrastructure Development-Creation of Water Body	Pathargarh	1		3.000
	2018-19		Santrabandha RF	1		3.000
	2018-19	CAMPA APO-2017-18-Wildlife Management Habitat Improvement Creation of Water Body	Krushnachakra PRF	1		4.000
	2018-19	CAMPA APO-	Kanheijena RF	1		5.000

	2018-19	2017-18-Site Specific Conservation Plan- Bharatpur OCP- Creation of Water Body	Seepur RF	1		5.000
	2018-19	CAMPA APO-2017-18-Site Specific Conservation Plan- Bharatpur OCP- Development of Elephant Corridor	Mankadchua RF	1		5.000
	2018-19	CAMPA APO-2017-18-Site Specific Conservation Plan- Estt. Of 2x600 MWPower Plant by M/S JITPL- Creation of New Pond	Tangiri RF	1		3.000
	2018-19	CAMPA APO-2017-18-Site Specific Conservation Plan- Estt. of MPTA Integrated Steel Plant at Badkerjeng by Jindal Steel Power Ltd.- Creation of Game Tank	Durgapur RF (Pond No-I)	1		2.500
	2018-19		Durgapur RF (Pond No-II)	1		2.500
	2018-19		Durgapur RF (Pond No-III)	1		2.500
	2018-19		Durgapur RF (Pond No-IV)	1		2.500
	2018-19	CAMPA APO-2017-18-Site Specific Conservation Plan- Utkal Coal B-2 Mines- Creation of Water	Chakhundpal DPF	1		2.500
	2018-19		Sunerijhera PRF	1		2.500

		Holes				
	2019-20	CAMPA APO-2019-20-Wildlife Management Habitat Improvement-Creation of Water Body	Nukaheta-2	1		5.600
	2019-20		Bolanga-8	1		5.600
	2019-20		Bulajhar RF (Pond No-I)	1		2.500
	2019-20		Bulajhar RF (Pond No-II)	1		2.500
	2019-20	CAMPA APO-2019-20-Site Specific Conservation Plan- Estt. Of 2x600 MWPower Plant by M/S JITPL- Creation of New Pond	Tangiri RF	1		3.000
	2019-20	CAMPA APO-2019-20-Site Specific Conservation Plan- Estt. of MPTA Integrated Steel Plant at Badkerjeng by Jindal Steel Power Ltd.- Creation of Game Tank	Durgapur RF	1		5.000
	2019-20	CAMPA APO-2019-20-Site Specific Conservation Plan- Estt. of MPTA Integrated Steel Plant at Badkerjeng by Jindal Steel Power Ltd.- Creation of Game Tank	Nisha RF	1		5.000
	2020-21	02-Environmental	Katada RF 1	1		5.960

		Forestry & Wildlife-110-Wildlife Preservation-3173 Management of Elephant & Corridor				
	2020-21	CAMPA-APO-2020-21- W/L/22-2406-04-103-3364-91348- Net Present Value of Forest Land-Wildlife	Nuakheta RF-8	1		5.960
	2020-21		Katada RF-1	1		5.960
	2020-21		Similipathar RF-1	1		5.960
	2020-21		Chhendipada RF	1		5.960
	2020-21		Kankurpal RF	1		5.960
	2020-21		Bulajhara RF	1		5.960
				114	**13**	**359.139**

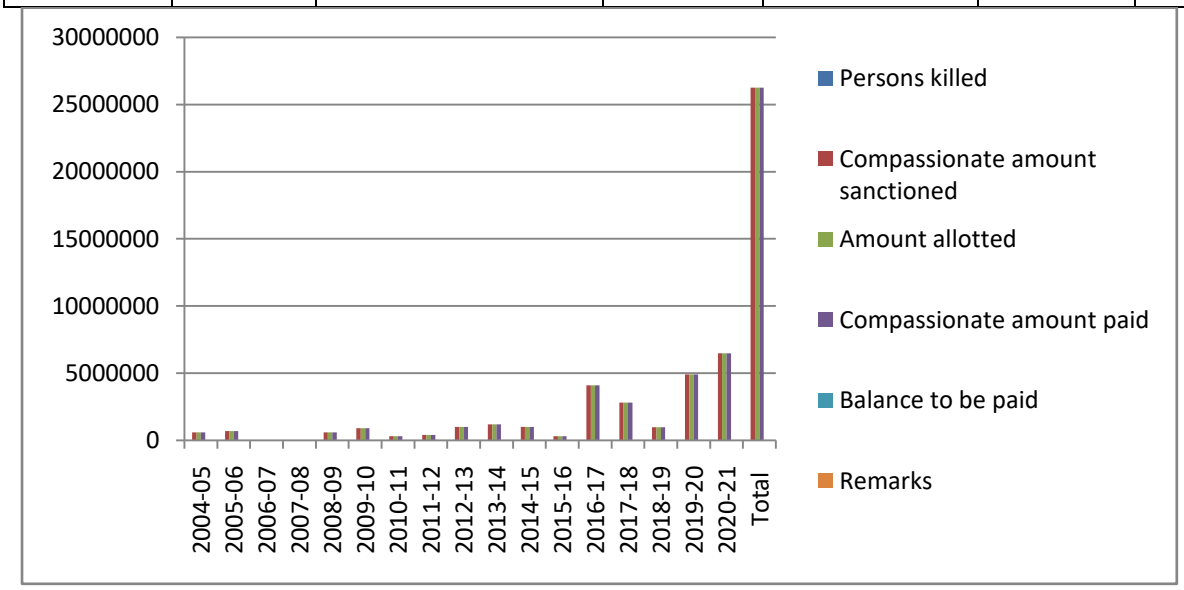
iv. Improvement of elephant corridor through plantation to provide food & tree cover. The list of such activities is in Table no. 3.8.4.

Name of the Range	Name of the RF	Area in Ha	Year	Under the scheme
Talcher	Mankadachua RF	50	2006-07	Wild life Management
Talcher	Bulajhara RF	50	2006-07	Wild life Management
Talcher	Kanehijena RF	5	2014-15	Wild life Management
Talcher	Kanteikulia RF	5	2014-15	Wild life Management

v. Compassionate grant have been paid for human kill, human injury, cattle kill, house damage and crop damage to reduce man- animal conflict is in Table no. 3.8.5.

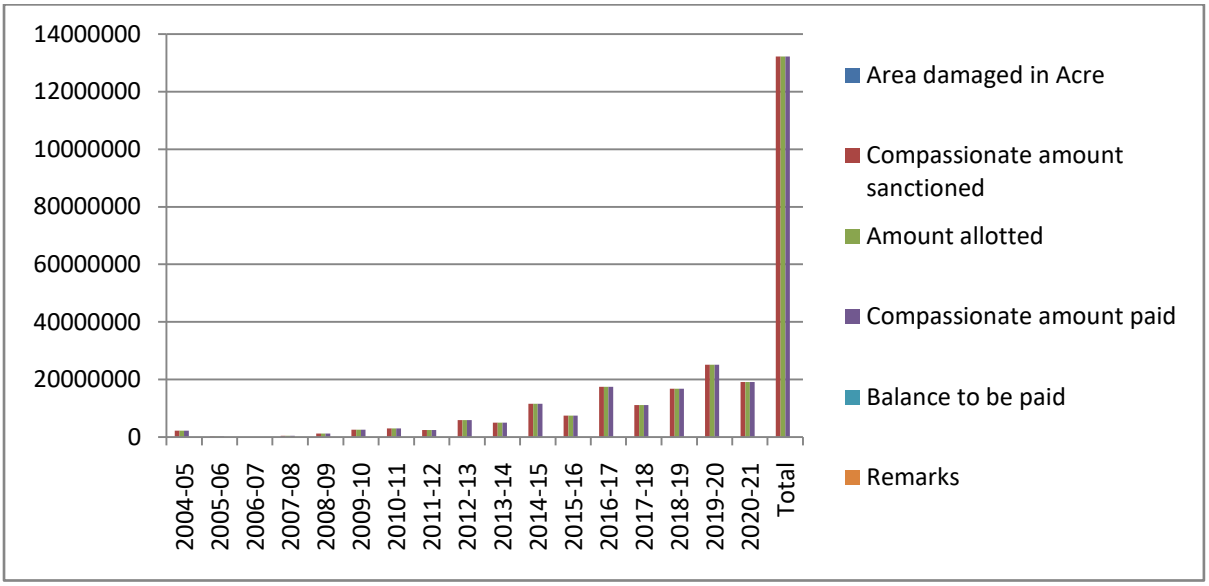
1. Human Kill (Table no. 3.8.5)

Year	Persons killed	Compassionate amount sanctioned	Amount allotted	Compassionate amount paid	Balance to be paid	Remarks
2004-05	6	600000	600000	600000	0	
2005-06	7	700000	700000	700000	0	
2006-07	0	0	0	0	0	
2007-08	0	0	0	0	0	
2008-09	6	600000	600000	600000	0	
2009-10	11	900000	900000	900000		
2010-11	6	300000	300000	300000	0	
2011-12	02	400000	400000	400000	0	
2012-13	05	1000000	1000000	1000000	0	
2013-14	06	1200000	1200000	1200000	0	
2014-15	05	1000000	1000000	1000000	0	
2015-16	1	300000	300000	300000	0	
2016-17	15	4100000	4100000	4100000	0	
2017-18	9	2800000	2800000	2800000	0	
2018-19	4	980000	980000	980000	0	
2019-20	18	4900000	4900000	4900000	0	
2020-21	21	6480000	6480000	6480000	0	
Total	**122**	**26260000**	**26260000**	**26260000**	**0**	



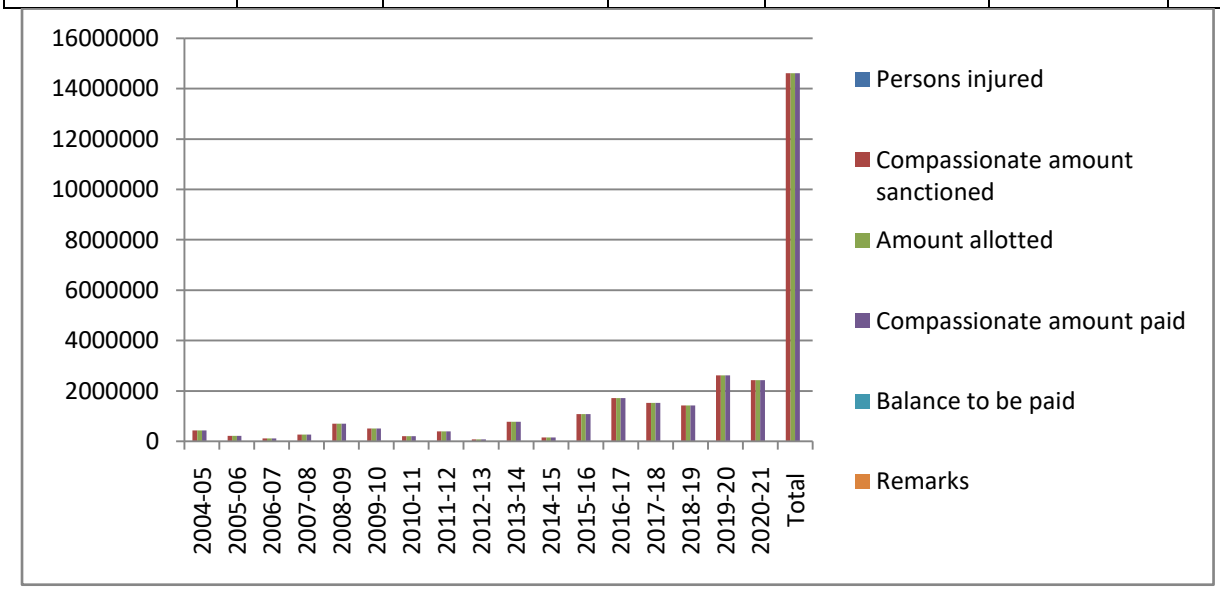
2. Crop Damaged

Year	Area damaged in Acre	Compassionate amount sanctioned	Amount allotted	Compassionate amount paid	Balance to be paid	Remarks
2004-05	2254.66	2254660	2254660	2254660	0	
2005-06	219.16	219160	219160	219160	0	
2006-07	19.24	19240	19240	19240	0	
2007-08	437.21	437210	437210	437210	0	
2008-09	1269.63	1269630	1269630	1269630	0	
2009-10	2564.88	2564880	2564880	2564880	0	
2010-11	3076.05	3076050	3076050	3076050	0	
2011-12	1043.807	2513368	2513368	2513368	0	
2012-13	379.57	5924950	5924950	5924950	0	
2013-14	504.46	5055340	5055340	5055340	0	
2014-15	1126.22	11561000	11561000	11561000	0	
2015-16	775.022	7522400	7522400	7522400	0	
2016-17	1689.93	17506960	17506960	17506960	0	
2017-18	1055.44	11096840	11096840	11096840	0	
2018-19	1576.69	16860324	16860324	16860324	0	
2019-20	2295.32	25198208	25198208	25198208	0	
2020-21	1745.41	19157238	19157238	19157238	0	
Total	**22032.699**	**132237458**	**132237458**	**132237458**	**0**	



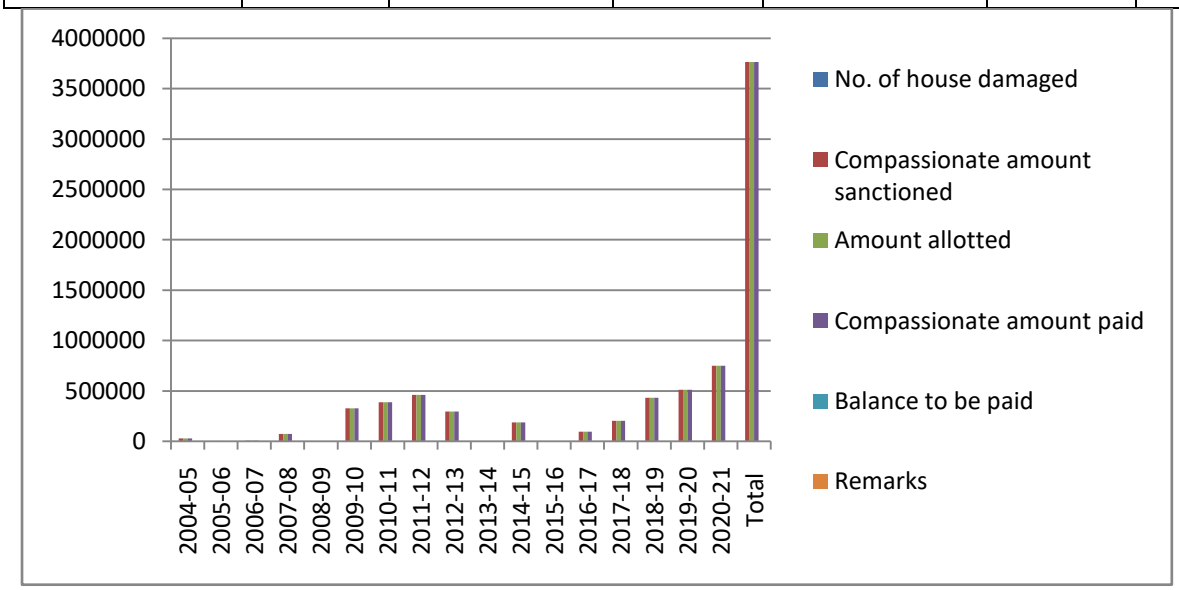
3. Human Injury

Year	Persons injured	Compassionate amount sanctioned	Amount allotted	Compassionate amount paid	Balance to be paid	Remarks
2004-05	11	437290	437290	437290	0	
2005-06	14	216650	216650	216650	0	
2006-07	4	109990	109990	109990	0	
2007-08	8	266647	266647	266647	0	
2008-09	22	701930	701930	701930	0	
2009-10	17	503950	503950	503950	0	
2010-11	9	201980	201980	201980	0	
2011-12	13	395000	395000	395000	0	
2012-13	02	80000	80000	80000	0	
2013-14	14	770000	770000	770000	0	
2014-15	02	150000	150000	150000	0	
2015-16	11	1075000	1075000	1075000	0	
2016-17	19	1710000	1710000	1710000	0	
2017-18	20	1525000	1525000	1525000	0	
2018-19	18	1420000	1420000	1420000	0	
2019-20	30	2620000	2620000	2620000	0	
2020-21	30	2430000	2430000	2430000	0	
Total	**244**	**14613437**	**14613437**	**14613437**	**0**	



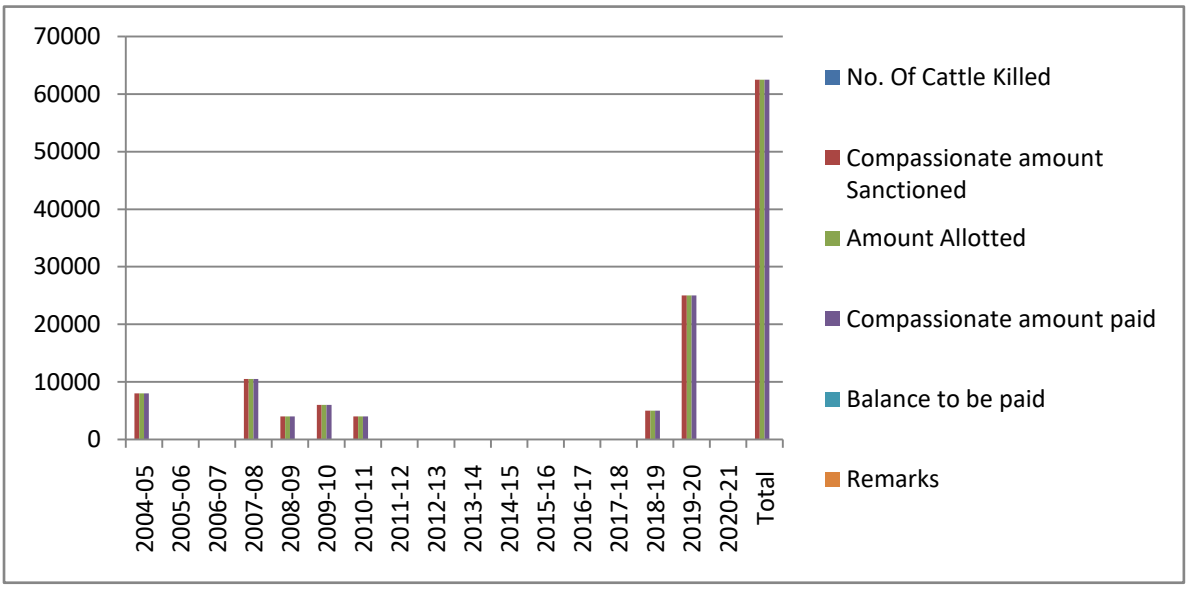
4. House damaged

Year	No. of house damaged	Compassionate amount sanctioned	Amount allotted	Compassionate amount paid	Balance to be paid	Remarks
2004-05	5	28000	28000	28000	0	
2005-06	2	4000	4000	4000	0	
2006-07	2	7000	7000	7000	0	
2007-08	21	73500	73500	73500	0	
2008-09	12	0	0	0	0	
2009-10	115	327500	327500	327500	0	
2010-11	125	387500	387500	387500	0	
2011-12	90	460000	460000	460000	0	
2012-13	28	296000	296000	296000	0	
2013-14	0	0	0	0	0	
2014-15	42	188000	188000	188000	0	
2015-16	0	0	0	0	0	
2016-17	31	94000	94000	94000	0	
2017-18	42	204000	204000	204000	0	
2018-19	84	432000	432000	432000	0	
2019-20	108	512000	512000	512000	0	
2020-21	87	750000	750000	750000	0	
Total	**794**	**3763500**	**3763500**	**3763500**	**0**	



5. Cattle kill

Year	No. Of Cattle Killed	Compassionate amount Sanctioned	Amount Allotted	Compassionate amount paid	Balance to be paid	Remarks
2004-05	4	8000	8000	8000	0	
2005-06	0	0	0	0	0	
2006-07	0	0	0	0	0	
2007-08	4	10500	10500	10500	0	
2008-09	2	4000	4000	4000	0	
2009-10	4	6000	6000	6000	0	
2010-11	2	4000	4000	4000	0	
2011-12	0	0	0	0	0	
2012-13	0	0	0	0	0	
2013-14	0	0	0	0	0	
2014-15	0	0	0	0	0	
2015-16	0	0	0	0	0	
2016-17	0	0	0	0	0	
2017-18	0	0	0	0	0	
2018-19	1	5000	5000	5000	0	
2019-20	5	25000	25000	25000	0	
2020-21	0	0	0	0	0	
Total	**22**	**62500**	**62500**	**62500**	**0**	



1 Awareness has been created among the people to reduce man- animal conflict

2 Regular monitoring & coordination meeting with Energy department for rectification of leaned pole & sagging of conductor. Joint raids have been conducted with energy deptt. Staff to reduce illegal hooking. This has resulted in minimizing electrocution death of wildlife specifically wild elephants.

3 To save the wildlife, intensive prevention and control of fire programmes are taken up through creation of fire lines, engagement of Fire fighting squad, Para Forest Staffs. In recent years Elephant Squad, elephant trackers, Anti-depredation squads are engaged to protect the elephants and other wild animals. To protect the animals from railway accidents, a number of signboards reflecting the movement of elephant has been displayed near the railway tracks of elephant movement area of Talcher and Jarapada Range. The list of squads engaged during the plan period is given in **Table 3.12.**

4 To restock the degraded and open forest area plantation activities have been taken up through block plantation and RDF under different schemes which would develop wildlife habitats

5 Elephant census has been conducted by direct count method in all the forests of Angul Division during 2015.

6 Half yearly sign survey for Tiger and its co-predators as well as herbivores was conducted during May 2015 covering areas of Bantala, Jarapada and Angul Ranges falling within the Satkosia Tiger Landscape. This survey indicated presence of good number of Sloth bears, apart from Chattels, Giant squirrel etc

3.8.2 Method of Execution

The method of treatment is depending on habitat of wildlife and status of fauna in a particular area. There are several instruction and guidelines issued by the Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden, Odisha in various issues on wildlife to tackle the elephant depredation and rescue of animals etc.

The plantation has been carried out in Rehabilitation Working Circle area and also plantation overlapping Working Circle area to improve the forest cover and availability of food to herbivores. The planting of fruit bearing plants and fodder species are taken in various forest blocks. Necessary steps have been taken to improve the availability of foods in forests.

1. **Habitat improvement**
   The existing elephant habitat needs improvement in food, water and tree cover. To overcome the situation stapes have been taken with maximum plantation activities in degraded forest blocks.
2. **Improving the tree cover**
   The wild animals require sufficient tree cover and vegetative cover to protect them from various adverse conditions. The management intervention aimed at to enhancing the forest cover with suitable plantation activities with indigenous species and effective soil moisture conservation activities. The aim and objectives of rehabilitation working circle and plantation overlapping working circle to improve forest cover.

3. **Improving availability of food**

The availability of food in particular wildlife habitats is very essential with respect to quality and quantity food produced in that locality. The herbivorous depend upon the plant materials like leaves, barks, flowers, fruits of various species. Similarly, the deer, monkey, languor, Ratel & Hare feed on wild fruits of plants like Ficuss pecies, Amla, Zyziphos species, Kendu, Bahada, Bel etc. Availability of grass and fodder is very important for herbivores.

4. **Water availability**

The forest block are having more wildlife concentration is given more importance. Special care is taken to make availability of water hole. Generally nallah & streams are dry up during summers in most of the forest blocks to overcome the bottlenecks ponds & water holes has been created for availability of water. During the plan period 77 nos. of water bodies are created in different forest blocks of the division & 13nos of water bodies have been renovated.

3.5.5 Results

1. Man and animal conflict has been reduced.
2. Driving of wild animals particularly Wild elephants from the vicinity of human habitation and crop fields have been done successfully.
3. There is increase in consciousness of frontline forest staff in wildlife management.
4. Population of wild life like Barking deer, spotted deer, Sloth bear, Hyena, Wild boar, elephant, Fox and leopard is increasing.

CHAPTER - 4

4 Maintenance and Enhancement of Forest Health and Vitality

4.1 Status of regeneration

Rengenration survey was conducted during the field inventories on 344 nos. of sample point in the different forest block provided by National Remote Sensing Agency (NRSA) Hydrabad through Odisha Remote Sensing Application Centre (ORSAC), Bhubaneswar. Young plants of tree species upto 10CM (seedlings, spalings and pole) are taken into consideration for assessment of regeneration status of a particular species. Data colleted from the square plots of 3X3M for sapling (2 CM to 10 CM colar dia-meter) and from the square plot of 1 X 1 Mt for seedlings to assess the regeneration status of species in the manangement units. The result of the enumeration has been finalized and assessed as Good, Fair, Poor, No and New regeneration according to regeneration status as follows.

a. **Good regeneration**, if seedlings are more in numbers than the saplings and likewisesaplings are more than that of adults.

b. **Fair regeneration**, if seedlings are more in numbers than the saplings but the saplings areequal 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**. In table 4.1**

Statement of Regeneration Stauts of Angul Division

Sl No	Name of the Forest Block RF,DPF,PRF	Regeneration Status				
		Good	Fair	Poor	No	New
1	2	5	6	7	8	9
1	Jaipur RF	Chara, Sal	Kendu	Amla, Asan, Harida, Mahula, Pattamasu	Anchhu, Bhalia, Chikini, Dhaura, Jamu	
2	Kosala RF	Chara, Sal	Mahula	Amla, Asan, Harida, Mahula, Pattamasu, Anchhu	Anchhu	
3	Chakundapal DPF	Chara, Sal	Mahula, Jamu, Kendu	Asan, Khaira, Rohini	Anchhu	

4	Similisahi RF	Chara, Sal	Mahula, Jamu, Kendu	Amla, Mahula, Pattamasu	Anchhu, Dhaura, Jamu	
5	Bramhanbil RF	Asana, Chara, Sal	Mahula, Pattamasu, Kendu	Dhaura, Harida, Jamu	Anchhu, Chikini	
6	Jaltap RF	Chara, Sal	Dhaura, Jamu, Kendu, Mahula	Asan, Pattamasu, Rohini, Bija, Khaira, Gohira	Anchhu, Chikini, Bhalia	
7	Bahiyanali RF	Chara, Sal	Asan, Dhuara, Jamu, Kendu, Mahula	Amla, Rohini, Pattamasu	Anchhu, Chikini	
8	Khalpal RF	Chara, Sal	Asan, Anchhu, Jamu, Kendu, Mahula	Amla, Rohini, Pattamasu, Chikini		
9	Sunarijharan PRF	Chara, Sal	Asan, Chikini, Kendu, Mahula	Amla, Anchu Pattamasu, Harida	Bhalia, Dhaura, Jamu	
10	Kankurpal RF	Chara	Amala, Asana , Chikini, Mahula, Sal, Barabakulia, Khaira	Anchu, Bela, Harida, Kendhu, Patamasu, Rohini, Karada	Bhalia, Dhaura, Jamu, Kasi Sunari, Sidha, Gohira	
11	Chhendipada RF	Chara, Khaira	Amala, Asana , Chikini, Mahula, Sal, Barabakulia, Khaira	Anchu, Bela, Harida, Kendhu, Patamasu, Rohini, Karada		
12	Devinagar PRF	Chara, Khaira	Amala, Asana , Chikini, Mahula, Sal, Barabakulia, Khaira	Anchu, Bela, Harida, Kendhu, Patamasu, Rohini, Karada	Bhalia, Dhaura, Jamu, Kasi Sunari, Sidha, Gohira	
13	Kanloi PRF	Chara, Jamu	Asana, Anchu, Mahula, Sal	Rohini, Patamasu		
14	Marudhipa PRF	Chara, Khaira	Asana , Chikini, Mahula, Sal, Barabakulia, Khaira	Amala, Anchu, Bela, Harida, Kendhu, Patamasu, Rohini, Karada	Bhalia, Dhaura, Jamu,	

15	Nunmati PRF	Chara, Khaira	Asana , Chikini, Mahula, Sal, Barabakulia, Khaira	Bhalia, Dharua, Jamu, Karada, Kasi		
16	Dangapal PRF	Acana, Chara, Khaira	Achhu, Asana, Chikini, Mahula, Rohini, Sal, Barabakulia, Sidha	Amla, Amba, Dhaura, Harida, Jamu, Kendhu, Patamasu, Karada, Kasi, Kumbi, Mai, Bela		
17	Durgapur RF	Asana, Chara, Khaira	amla, Chikini, Harida, Jamu, Mahula, Sal, Rohini, Barabakulia, Sunari, Sidha	Achu, Bhalia, Dhaura, Kendhu, Patamasu, Karada, Kasi, Kumbhi, Mai, Bela		
18	Putagadia RF	Asan, Chara, Mahula, Sal	Achu, Bija	Patamasu		
19	Kanloi RF - Compt - 1	Chara, Khaira	Achu, Asana, Chikini, Mahula, Rohini, Sal, Barabakulia, Sidha	Amla, Bhalia, Mai, Dhaura, Harida, Jamu, Kendu, Patamasu, Karada, Kasi, Sunari, Amla, Bela		
	Kanloi RF - Compt - 2	Chara	Amla, Asssana, Chikini, Mahula, Sal, Barabakulia	Achu, Asana, Dhaura, Harida, Patamasu, Karada, Kasi, Sunari		
	Kanloi RF - Compt - 3	Chara	Amla, Asana, Mahula, Rohini, Sal, Barabakulia	Achhu, Dhaura, Harida, Kendhu, Patamasu, Karada		
	Kanloi RF - Compt - 4	Chara, Khaira	Achu, Chikini, Dhaura, Jamu, Kendhu, Sal, Sidha	Amla, Asana, Bhalia, Harida, Mahula, Mai, Patamasu, Karada, Kasi,	Rohini	

				Kusuma, Bela		
	Kanloi RF - Compt - 5	Chara, Khaira	Achu, Chikini, Dhaura, Jamu, Kendhu, Sal, Sidha	Amla, Asana, Bhalia, Harida, Mahula, Mai, Patamasu, Karada, Kasi, Kusuma, Bela		
	Kanloi RF - Compt - 6	Chara, Sal	Achu, Chikini, Harida, Dhaura, Harida Kendhu, Sal, Sidha	Amla, Asana, Bhalia, Mahula, Mai, Patamasu, Karada, Kasi, Kusuma, Bela	Bhalia, Jamu, Sunari	
	Kanloi RF - Compt - 7	Chara, Sal	Amla, Chikini, Mahula	Achhu, Asana, Bhalia, Dhaura, Kendu, Patamasu	Harida, Jamu	
	Kanloi RF - Compt - 8	Chara, Sal	Amala, Chikini, Achhu, Mahula, Barabakulia	Amla, Dhaura, Jamu, Kendhu, Ptatmasu, Kusuma, Sunari		
1	Para PRF			Kendu, Khakada, Mai, Sal, Sirisha	Khaira, Kurma, Mitikuria, Sidha, Sisoo, Sunari, Tentara	
2	Antulia Tabada Comptt No-03	Asana, Dhaura, Tentala	Kendu, Mai	Bhalia, Halda, Sunari	Bahada, Bendha, Barabakulia, Chara, Jamu, Karada, Sidha	
3	Antulia Tabada Comptt No-09&10	Asana, Dhaura, Kasi	Kendhu, Kusuma, L. mai, Sidha, Bahada, Kumbhi	Ankula, Kumbi, Pabakurei, Rai, Bhalia	Achhu, Angorua, Bandhan, barabakulia, Chara, Halda, Jamu, Karada, Khakada, Kusuma	

4	Antulia Tabada Comptt No-04	Asana, Kasi, Kuruma, Sidha	Karada, Karabakulia	Chauli, Karada, Kuruma, Tentela, Sal	Chara, Halda, Jamu, Kusuma	
5	Dandsingha Bhagatpur PRF	Asana, Bala, Dhaura, Mai,	Bhalia, Kendhu, Sunari, Tentuli	Barabakulia, Halada	Achu, Arjuna, Bandhan, Chara, Kusuma, Mahula, Pabakurei	
6	Antulia Tabada RF Comptt-05	Karada, Sidha	Barabakulia, Kataka, Tentala	Ankula, Bela, Bahada, Halda, Jamu, Kusuma, Mura, Sunari, Teak	Bhalia, Damagurada, Mahula, Sal, Pabakurei, Patuli	
7	Antulia Tabada PRF	Asana, dhaura, Kendu	Halda, Katak, Khakada	Bahada, Bela, Chara, Kuruma, Tentala	Bhalia, Damagurada, Mahula, Sal, Veru	
8	Pathargarh PRF Compt - 1	Barabakulia, Karada, Kendhu, Mai	Sidha	Bela, Bhalia, Bija, Halada, Khakada, Mitikurei, Sunari, Tentala	Ambada, Achhu, Ankula, Bahada, Bandan, Veru, Damagundu, Kasama	
9	Pathargarh PRF Compt - 2	Kendhu	Barabakulia, Kataka, Halada, Mai, sidha	Bela, Pabakurei, Simili, Sunari, Tentala	Ankula, Bhalia, Veru, Mitikuria	
10	Pathargarh PRF Compt - 3	Asana, Barabakulia, Dhaura, Karada, Kendu		Arjuna, Bahada, Bela, Veru, Chara, Kataka Kuruma, Limba, Mai, Mitikurei	Ankula, Pabakurei, Bahenta, Bija, Halda, Kusuma, Mahula, Sal	
11	Pathargarh PRF Compt - 4	Dhaura, Karada, Kendu	Asana, Barabakulia, Halda, Karanja, Kasi, Sidha	Halada, Khakada, Pabakurein	Sunari	
12	Rodasingha PRF	Dhaura, Kendu, Sidha	Ankula, Karada	Halada, Khakada, Pabakurein	Sunari	

13	Antulia Tbada RF Comptt-No1&2	Asana, Dhaura, Karada, Kendu	Halda, Kumbi	Bija, Kara	Jamu, Khakada	
15	Antulia Tabada RF Comptt-6&8	Asana, Dhaura, Kendu	Halda, Kuruma, Mitikurei, Tentala	Barabakulia, Bela, Bhalia, Veru, Chara, Jamu, Karada, Kataka, Mahula, Mai, Piasal, Sidha, Sunari	Anchu, Angerua, Ankula, Bahada, Baincha, Chara, Kakhada, Kusuma, Nalibali, Bija	
16	Para	Asana	Kendhu, Dhaura, Karada, Dhaurenja, Patamasu, Jamu, sidha	Tentala, Khakada,Halda, Sal, Kasi, Sisso, Girniga, Mai	Chara, Sunari, Kusuma, Ankula, Karanja, Behenta, Barabakulia, Sahada, Amla	
17	Katada RF		Dhauranja, Halda	Karada, Angerua, Bahada, Asana	Mitikunia, Sidha, Bela, Kendu	
18	Katada RF	Dhaura, Asana	Karada, Kendhu, Bela, Halda, Mai	Sunari, Sisoo, Chara, Halda		
19	Kandhakurudu RF	Karada, Dhaura, Kendu		Sunari, Barabakuli, Neem	Halada, Tentala, Chikini, Kansa, Damaguguli	
20	Para PRF	Kendu, Dhaura	Asana, Barabakulia, Halda, Karanja, Kasi, Sidha	Sal, Halda, Mitkulia, Mai, Khakada, Chara, Anchu, Karada, Sirisha	Sunari, Halda, Bela, Bahada, Tentala, Chikini, Kaira, Sisoo, Mahua	
21	Katada RF		Kendhu, dhaura, Halda, Sisoo	Karada, Chara, Kataka, Bela, Anchu, Tentala, Kusuma	Asana, Jamu, Katak	
22	Katada RF		Kendu, Sisoo, Kusuma	Sidha, Dhaura, Karada, Halda, Acchhu, Sunari, Mai	Asana, Jamu, Katak	

23	Katada RF	Kendu	Asana, Bela, Tentula, Giringa	Dhaura, Sal, Sisoo, Barabakulia, Kusuma, Amla, Angama, Chauli, Karada, Barabakulia, Sunari	Bahada, Patamasu, Mai, Chara, Halda, Mahula	
24	Para PRF	Kendu	Karada, Sunari, Chauli, Halda, Bela, Bheru	Barabakulia, Khakada, Rohini, Tentuli, Asana, Chara, Sishoo, Mahula, Anchu	Neem, Kataka, bhuin Kuruma, Jamu, Kusuma	
25	Katada RF	Karada, Mai	Chara, Bela, Dhaura, Kasi, Jamu, Asana	Sal, Kendu, Patamasu, Bandana, Mahula	Kusum, Sisoo, Rohini, Amala, Halda	
26	Katada RF	Chara, Sal	Asana, Kendu, Dhaura, Amala, Halda, Dhauranja, Sunari, Jamu	Angarua, Mai, Karada, Patamasu, Kasi, Kendu, Tentala, Giringa	Arajuna, Kusuma, Barabakulia, bandhan, Katak	
27	Katada RF	Dhaura, Kendhu	Sal, Barabakulia, Karada, Mai, Tentula, Kansa, Halda	Asana, Chara, Kasi, Kurum, Sunari, Mahula, Beala, Amala, Katak, Dhauranjan, Patamasu	Giringa, Kusum, Sirisa, Mahula	
28	Katada RF	Dhaura, Kendu	Mai, Kataka, Jamu, Asana	Bela, Barabakulia, Sidha, Giringa, bahada, Kusuma, Sunari, Chauli, Kurum, Kasi, Gambhar, Neem	Tentala, Halda, Kuchila	
29	Katada RF		Sal, Chara, Halda, Sunari, Dhaura, Bela	Kerada, Kusuma, Angarua, Kendhu, Kasi	Kansa, Sidha, Patamasu, Giringa, Dhaura, Anchu, Mai,	

					Harida	
30	Katada RF		Karada, Bela, Kendu	Dhaura, Kasi, Dhaura, Sal, Kusum	Kansa, Dhauranja	
31	Katada RF	Dhaura	Asana, Kendu, Kansa, Barabakulia	Angarua, Karada, Sal, Chara, Amla, Bija, Halda	Kasi, Mai, Khaira, Rohini, Jamu, Giringa, Bela, Patamasu, Kusuma	
32	Arisulia RF		Karada, Jayasidhi, Barabakulia	Bheru, Mura, Halda, Khakada	Pabakurein, Neem	
33	Durgapur PRF		Karada, Jayasanda, Barabakulia, Khakada	Bhana, Mura, Halda, Khakada	Pabakurein, Neem	
34	Durgapur ARF	Barabakulia, Giridhini, Mura		Anchu, Dhaura, Sirisha, Khakada	Sisoo, Damaguruda	Bija, Tentala
35	Sudgolasar PRF		Cahra	Sal, Kendhu, Damaghurudu	Harida, Mahula, Asana	Jamu, Amla
36	Similipathar RF	Kendu	Sal, Amla	Asana, Dhaura, Jamu, Patamasu, Mai, Bija	Mahula, Sidha, Kusum, Bahada, Kumbhi, Anchhu	Halda, Angarua, Barabakulia
37	Similipathar RF	Dhaura, Asana	Kendu, Patuli	Karada, Behru, Sidha, Pabakurein, Halda, Dhaura, Damaghurudu, Mai, Angarua, Barabakulai	Chara, Kasi, Teak, Kansa, Sunari	
38	Similipathar RF			Sal, Mai, Asana, Harida, Mahula, Dhaura, Rohini, Jamu	Chara, Bhalia, Karada	

39	Devinagar PRF	Sal, Kendu, Asana, Anchu, Bija, Karada	Halda, Patamasu, Chara, Angarua, Chauli, Karada, Mahula, Rohini, Damaghurudu	Kansa, Sidha, Kasi, Jamu, Kusuma, Mahula, Sirisha, Dhaura, Bela, Mai	Barabakulia	
40	Pitachari PRF		Chara	Bheru, Dhaura, Halda, Sal, Kansa	Anchu, Karada, Mitikuria, Patamasu	Kendhu, Kataka
41	Similipathar RF	Sal, Dhaura, Katada, Angarua, Kendu, Kasi	Mahula	Halda, Mai, Bija, Asana, Chara, Bahada	Anchu, Sidha	Tentala
42	Similipathar RF	Patamasu, Bija	Sal, Chara, Anchu, Asana	Dhaura, Mai	Mahula, Bhalia, Kumbhi, Kendu	Halda
43	Similipathar RF		Sal, Chara, Asana, Halda, Kusuma	Rohini, Mai, Patamasu	Bhalia, Mahula, Karada	
44	Similipathar RF	Dhaura, Pabakurein, Kendu, Halda	Angarua, Kasi, Sidha	Karada, Sunari, Bela, Simili, Kusuma	Mai, Barabakulia, Kuranga, Ankula, Kurein	
45	Similipathar RF	Kendu, Dhaura	Patuli	Pabakurein, Asana, Halda, Bela, Kataka, Karada, Tentala, Angarua	Khakada, Mai, Chara, Sunari	
46	Similipathar RF	Dhaura, Pabakurein	Halda, Kendhu	Karada, Ankula, Tentala, Asana, Kansa, Sunari, Angarua, Bheru, Mai	Kuruma, Kasi, Sidha, Tentala	

1	Dalak Poipal Danda R.F	Sal, Mahula, Kendu	Bahada, Kusuma	Chara, Rohini	Bhalia, Kasi, Behenta, Dhaura, Kumbhi, Harida, Mai	Bela, Chauli, Jamu, Sisoo
2	Gohiradanda R.F		Sal, Mahula, Kendu		Chara, Mai, Rohini	
3	Jaghani R.F	Sal	Kendu		Neem, Halda, Achu	
4	Pitalragadi R.F			Rohini, Neem	Anchu, Mahula, Kendu	Dhaura
5	Bhana R.F	Sal	Chara	Mahula, Kendu		
6	Santrabandha R.F	Sal		Kendu, Chara, Kurein		Anchu, Bahada, Bheru, Neem
7	Matharagadi R.F	Sal		Bhalia, Mahula	Asana	Kendu
8	Saradhapur R.F	Sal		Bhalia, Mahula		Kendu
9	Chandrapada R.F	Chara, Dhaura, Kendu, Anchu	Mahula, Mai	Amla, Asana, Kasi	Anchu, Rohini	sidha, Sirisha, Khakada, Patuli
10	Pattakhaman R.F	Sal, Dhaura	Bija, Chara	Asana, Bhalia, Mahula	Anchu, Halda, Karada, Mai, Sidha	Amala, Kendu, Kusuma, Kasi
11	Kukurkhai R.F	Chara, Sal, Kendu		Anchu	Asana, Mai, Mahula, Rohini	
12	Durgapur Danda R.F	Sal, Cahra, Damagurudu, Dhaura, Kendu		Rohini	Asana, Jamu, Mai	Kasi, Mai
13	Kiajhar R.F	Dhaura, Kasi, Katak	Amba, Asana		Gandhiari, halda, Karada, Kusuma, Patuli, Bija, Sal, Sunari	Katada, Mai
14	Gumpha Hill			Asana, Kendu	Bhalia, Sal	

15	Dhanakoili R.F	Sal, Chara, Kendu, Kusum, Kataka, Dhaura	Kasi, Anchu	Mahula, Bhalia, Asana, Bahada, Mai	Kasi, Kuruma, Bela, Harida, Halda	Amala, Anchhu, Neem Barabakulia, Sisoo
16	Phulajhari R.F	Asana, Dhaura, Bela, Kendu	Chara, Kusuma	Sal, Anchu, Karada, Rohini	Kasi, Bhalia, Mai, Kuruma	Katak
17	Pedi R.F	Sal, Chara	Asana, Mahula, Kendu	Mitikurein, Dhaura		Jamu, Kasi
18	Saleimada R.F	Sal		Asana, Mahula, Kasi, Halada, Dhaura, Chara, Sidha, Bela, Barabakulia, Karada	Sisoo	Kendu, Patuli, Neem
19	Godigotha B RF	Sal, Mahula, Achhu	Asana, Chara	Sidha, Dhaura, Amala		Kendu, Bija
20	Biripal R.F	Sal, Asana, Chara, Dhaura	Mahula, Bela	Sisoo, Bandhan, Kusuma	Kasi, Kendu	
21	Budhia R.F		Chara	Asana	Mahula	Sal, Kasi, Kendu, Dhaura, Karada, Neem
22	Sachi R.F		Kendu, Karada		Sunari	Kasi, Sidha, Anchhu
23	Khajuria R.F		Sal, Chara, sunari	Mahula	Kendu	Karada, Dhaura, Neem
24	Tangiri R.F	Sal, Asana		Chara, Dhaura, Kendu, Mahula	Rohini, Sunari, Kasi, Mai, Anchu, Khaira	
25	Rameswar Hill			Sal, Mahula, Karada		Kasi, Kendu, Sidha
26	Bandhuli R.F			Sal, Chara, Dhaura, Sidha, Anchu,		Kendu, Kasi
27	Arakhadahi R.F	Sal, Kendhu, Mahula	Asana, Bija, Chara, Achhu	Dhaura, Hairda, Rohini, Mai, Jamu, Bhalia, Sisoo		

28	Badakathia R.F	Jamu, Rohini, Anchu, Mahula	Sal, Chara, Kendu, Patamasu, Mai	Asana, Kusuma, Sidha, bhalia	Halda, Rai	Kasi, Neem, Dhaura, Bahada
29	Nialu-Lodhajhari-Sapakata R.F	Sal, Harida	Asana, Amla	Kendu, Dhaura, Damaghurudu, Bija, chara, Mahula, Kusuma	sidha, Jamu,	Mai
30	Sadarkhol R.F	Sal	Asana, Dhaura	Amala, Kendu, Bahada, Mahula, bamboo, Mai, Kasi, sidha	Kumbhi, Chara	Kusuma, Bija, Katak
1	Chandanpur PRF	Sal	Chara, Asana, Sidha, Barabakulia, Jamu, Sunari	Kendu, dhaura, Bhalia, Bija, Khakada	Halda, Mahula, Dhalsinga, Karada	Kochila, Neem, Teletela, Behenta, Bela, Harida, Kasi
2	Sorispal RF		Karada, Bela	Halda, Neem	Kasi, Barabakulia, Khakada	Sunari, Sahada
3	Hinsar Sorispal PRF	Barabakulia, Kendu, Neem, Sunari, Mahula	Sidha	Karada, Veru, Khakada, Bela, Ankula, Halda	Karanja, Sahada, Katak, Chara	Kuruma, Phasi
	Hinsar Sorispal PRF	Barabakulia, Kendu, Sunari, Mahula, Chara	Sidha	Karada, Veru, Khakada, Bela, Ankula, Halda	Karanja, Sahada, Katak	Neem, Kuruma, Phasi
	Hinsar Sorispal PRF	Kendu, Mahula	Sidha, Halda, Chara, Barabakulia	Karada, Khakada, Bela, Ankula, Kuruma, Sunari	Veru, Karanja, Sahada, Katak	Neem, Phasi
4	Kulasinga PRF	Chara	Mai, Sisoo, Kendu, Sal, Mahula	Dhaura, Halda, Karada, Asana, Jamu	Sunari, Gohira, Sidha, Dhalsinga, Kasi, Kochila, Ankula, Bela	Ankula, Sahada, Dhamagurudu, behenta, Khakada, Neem , Veru, Tentla, Barabakulia, Harida, Kusuma, Bela, Khaira

	Kulasinga PRF	Dhaura, Chara	Mai, Kendu, Asana, Sal, Mahula	Halda, Karada, Sisoo, Jamu	Sunari, Gohira, Sidha, Kasi, Bela	Ankula, Sahada, Dhamagurudu, Behenta, Khakada, Neem , Veru, Tentala, Barabakulia, Harida, Kusuma, Kansa
5	Badadandasahi RF	Chara, Kendu, Asana, Katak, Veru, Mahula, Karada, Khakada, Barabakulia, Rohini, Bela	Neem		Dhaura, Behenta, Bahada, Sal	
6	Kalapata PRF	Kendu, Dhaura, Veru		Karada, Asana, Khakada, Halda, Sahada, Bahada, Sal, Chara, Katak, Ankula	Chauli, Kusuma, Sidha, Sisoo, Mai, Dhamgurudu, Gohira, Bhalia	Barabakulia, Bela, Tentela, Neem, Sunari, Jamu, Amla, Behenta, Harida
	Kalapata PRF	Dhaura, Asana	Halda	Karada, Kendu, Sahada, Bahada, Sal, Chara, Katak, Mahula	Chauli, Barabakulia, Kusuma, Veru, Sidha, Sisoo, Mai, Gohira, Bhalia	Tentala, Neem, sunari, Jamu
	Kalapata PRF	Kendu, Dhaura, Asana		Khakada, Halda, Veru, Sahada, Bahada, Sal, Chara, Katak, Ankula, Mahula	Chauli, Sidha, Sisoo, Mai, Dhamgurudu, Gohira, Bhalia	Barabakulia, Halda, Tentela, Neem, Sunari, Jamu, Amla, Behenta, Harida
7	Guranga RF	Sal, Asana, Chara, Kendu				
8	Burti PRF	Kendu, Sal, Jamu, Behenta, Dhaura, Khaira	Asana, Chara, Dalsinga, Tentela, Kusuma	Mahula, Chara, Karada, Halda, Barabakulia, Ankula, Kansa, Bela, Sahada,	Kasi, Sunari, Harida, Kochila, Mai, Gohira, Sidha, Khakada,	Sisoo, Veru, Neem

				Bahada	Katak	
8	Burti PRF	Kendu, Sal, Jamu, Behenta, Dhaura, Khaira	Tentela, Kusuma	Mahula, Chara, Karada, Halda, Harida, Kochila, Mai, Gohira, Sidha, Khakada, Katak	Neem, Sisoo	
8	Burti PRF	Kendu, Sal, Jamu, Behenta, Dhaura, Khaira	Tentela, Kusuma	Mahula, Chara, Karada, Halda, Barabakulia, Ankula, Kansa, Bela, Sahada, Bahada	Asana, Kasi, sunari, Harida, Kuchila, Mai, Gohira, Sidha, Khakada, Katak	Neem, chara, Sisoo
8	Burti PRF	Kendu, Sal, Jamu, Behenta, Dhaura, Khaira	Tentela, Kusuma	Chara, Karada, Halda, Barabakulia, Ankula, Kansa, Bela, Sahada, Bahada	Asana, Kasi, sunari, Harida, Kuchila, Mai, Gohira, Sidha, Khakada, Katak	Neem, Veru, Sisoo
	Burti PRF	Kendu, Sal, Jamu, Dhaur, Khaira	Tentela, Kusuma	Chara, Karada, Halda, Barabakulia, Ankula, Kansa, Bela, Sahada, Bahada, Mahula	Asana, Kasi, sunari, Harida, Kuchila, Mai, Gohira, Sidha, Bahada, Katak	Neem, Veru, Sisoo
	Burti PRF	Kendu, Sal, Jamu, Dhaur, Behenta, Khaira	Tentela, Kusuma	Chara, Karada, Halda, Barabakulia, Ankula, Kansa, Bela, Sahada, Bahada,	Asana, Kasi, sunari, Harida, Kuchila, Mai, Gohira, Sidha, Khakada, Katak	Neem, Veru, Sisoo
	Burti PRF	Kendu, Sal, Jamu, Dhaur, Behenta, Khaira	Tentela, Kusuma	Chara, Karada, Halda, Barabakulia, Ankula, Kansa, Bela, Sahada, Bahada,	Asana, Kasi, sunari, Harida, Kuchila, Mai, Gohira, Sidha, Khakada, Katak	Neem, Veru, Sisoo

	Burti PRF	Kendu, Sal, Jamu, Dhaur, Behenta, Khaira	Tentela, Kusuma	Chara, Karada, Halda, Barabakulia, Ankula, Kansa, Bela, Sahada, Bahada,	Asana, Kasi, sunari, Harida, Kuchila, Mai, Gohira, Sidha, Khakada, Katak	Neem, Veru, Sisoo
9	Golabandha RF	Bela	Chara	Kendu, Karada	Dhaura, Bhalia, Bahada, Kasi, Mahula, Sunari, Mai	Kumbhi, Neem
	Paranga RF	Sal, Neem, Anchu, Katak	Bhalia	Chara	Halda, Mahula, Mai, Harida	Bija
	Malibrahmani RF	Chara		Sal	Kochila, Mahula, Harida, Patamasu, Sidha	Neem, Kendu
	Kerjang PRF	Kendu, Karada	Bela, Barabakulia, Halda		Chara, Kuruma, Asana, Bahada, Sidha, Dhaura, Mai, Katak, Veru	Kaintha
	Kaliakata RF	Sal, Chara, Katak, Amala, Anchu	Bija	Mai	Mahula, Jamu, Karada, Barabakulia, Dhaura, Patamasu	Neem, Kendu, Chauli
	Nisha RF	Chara, Mahula, Veru, Rohini, Anchu	Sal, Kendu, Bahada, Khakada, Patamasu, Neem		Asana, Halda,Chauli, Khaira, Jamu, Bija, Harida, Mai, Bhalia, Kumbhi, Barabakulia, Dhaura, Kasi	
	Bhogapal RF	Pabakurein, Bela	Kataka, Barabakulia, Gangasiuli, sunari	Sirisa, Behenta, Anchu, Khakada	Kusuma, Dhaura, Halda, Karada	

	Kurudu PRF	Karada, Kendu, Bahada, Halda, Sidha, Khakada, Bela, Kusuma, Veru, Katak, Behenta, Sunari, Barabakulia, Dhamana	Mahula, Ankula, Sirisa, Kusuma	Chara, Dhaura, Asana	Kasi, Kansa, Harida	Amla, Anchu, Sisoo
	Kurudu PRF	Karada, Kendu, Bahada, Halda, Sidha, Khakada, Bela, Kusuma, Veru, Katak, Behenta, Sunari, Barabakulia, Gangasiuli, Dhamana	Mahula, Ankula, Sirisa, Kusuma	Chara, Dhaura, Asana		
	Madhapur RF	Katak. Behenta, Khakada, Suanri, Karada, Girninga	Kendu	Chara, Sirisa, Halda	Kusuma, Harida, Mahula, Barabakulia, Dhaura	Nalbali, Gangasiuli
	Nandapur Barhampur RF	Sunari, Karada, Kendu, Bela	Veru		Khakada, Halda	
	Mandaragiri RF	Katak, Karada, Kendu, Sal	Sidha		Chara, Asana, Sunari, Bahada, Mahula	Neem, Halda, Bela
	Nanda RF			Asana	Chara, Katak	Kendu, Karada
	Saharagoda RF	Kendu	Asana	Sal	Anchu, Sunari, Karada, Chara, Amla, Dhaura, Katak	
	Kuio RF	Sal, Chara, Mahula, Kendu, Anchu, Neem	Rohini		Asana, Bahada, Mai, Veru, Bhalia, Dhaura	Harida, Khaira
	Kuio Sakasinga RF			Katak	Kendu, Bahada, Bela, Sunari, Sal, Asana	Neem

	Kumanda Talataila RF		Kendu		Bija, Kuruma	
	Krushnachakra PRF	Sunari, Kendu, Halda, Karada, Kansa, Dhamana, Sisoo, Sirisa, Katak, Kuruma, Rai, Anchu, Barabakulia, Veru, Bela, Salui, Sidha, Behenta, Patuli, Giringa, Neem	Anagarua, Kusuma, Mai, Phasi, Asana, Jamu, Sahada, Gohira	Chara, Dhaura, Ankula, Tentela	Damaghurudu	
	Krushnachakra PRF	Sunari, Kendu, Halda, Karada, Kansa, Dhamana, Sisoo, Sirisa, Katak, Kuruma, Rai, Anchu, Barabakulia, Veru, Bela, Salui, Sidha, Behenta, Patuli, Giringa, Neem	Anagarua, Kusuma, Mai, Phasi, Asana, Jamu, Sahada, Gohira	Chara, Dhaura, Ankula, Tentela	Damaghurudu	
	Krushnachakra PRF	Sunari, Kendu, Halda, Karada, Kansa, Dhamana, Sisoo, Sirisa, Katak, Kuruma, Rai, Anchu, Barabakulia, Veru, Bela, Salui, Sidha, Behenta, Patuli, Giringa, Neem	Anagarua, Kusuma, Mai, Phasi, Asana, Jamu, Sahada, Gohira	Chara, Dhaura, Ankula, Tentela	Damaghurudu	

	Krushnachakra PRF	Sunari, Kendu, Halda, Karada, Kansa, Dhamana, Sisoo, Sirisa, Katak, Kuruma, Rai, Anchu, Barabakulia, Veru, Bela, Salui, Sidha, Behenta, Patuli,	Anagarua, Kusuma, Mai, Phasi, Asana, Jamu, Sahada, Gohira	Chara, Dhaura, Ankula, Tentela	Damaghurudu	
	Krushnachakra PRF	Sunari, Kendu, Halda,Khakada, Karada, Kansa, Dhamana, Sisoo, Sirisa, Katak, Kuruma, Rai, Anchu, Barabakulia, Veru, Bela, Salui, Sidha, Behenta, Patuli, Giringa, Neem, Gangasiuli	Anagarua, Kusuma, Mai, Phasi, Asana, Jamu, Sahada, Ambithi, Gohira, Ankula, Chauli	Chara, Dhaura	Harida, Ankula, Tentela, Kuchila	
	Pokunda PRF	Halda, Dhaura	Chara	Asana, Khakada, Karada, Sal, Veru	Sidha, Karada	
	Burti PRF, C-6	Dhaura, Sidha, Karada, Asana, Karanja	Mai, Batara, Veru, Pabakurein, Bija, Chara, Tentela, Kuruma, Jamu, Katak	Bela, Phanphana, Kansa, Behenta, Anchu, Mahula, Sunari, Kasi, Sal	Khakada	
1	Balanga RF Comptt. No. 1	Kendu, Asana, Dhaura, Kusuma, Mai, Barabakulia	Sisoo, Karada, Sidha, Damaghurudu, Behenta	Halda, Harida, Pabakurein, Anchu, Sunari, Bela	Patuli, Veru, Khakada, Tentela	Sirisha
2	Balanga RF Comptt. 2	Katak, Kendu, Asana	Barabakulia, Mai, Bahada	Pabakurein, Sunari, Behenta, Halda, Sidha, Chara, Sisoo	Amla, Harida, Dhamagurudu, Bandhan, Bija	Paladhua

3	Balanga RF Comptt. No. 3	Karada, Kendu, Asana, Dhaura, Mai, Halda	Sidha, Bija, Kuruma, Bahada, Karanja, Dhamana	Kuruma, Karanja, Pabakurein, Kusum	Sunari, Khakada, Kauchia	Neem
4	Balanga RF Comptt. 4	Katak, Kendu, Dhaura, Asana, Sunari, Batara, Barabakulia	Mai, Sirisha, Chara, Pabakurein, Karada	Bela, Kusuma, Bija, Halda, Amla, Tentela	Dhamana, Kansa	
21	Baragounia RF	Kendu, Karada, Sirisa,	Mai, Giringa, Angarua, Sunari, Halda, Piasal	Bela		Neem
22	Balanga PRF			Halda, Pabakurein, Dhamana	Barabakulia, Veru	Sunari
23	Kangulei PRF	Kendu, Karada,Khakada	Bela, Asana, Chauli	Bahada	Barabakulia	Neem
24	Talisara DPF	Dhaura		Bela	Pabakurein, Ankula	Phasi
25	Labangi DPF	Behenta, Chara, Sidha	Sunari, Chara, Kendu, Bahada, Sidha	Asana, Sisoo, Katak, Khakada	Patuli, Sal, Sisoo	
1	Kandhal RF	Sal, Mahula, Kendu, Chara	Asana, Mai	Kusuma, Karada	Kasi, Dhaura	Neem
2	Sibarampur PRF	Asana, Kendu, Sal	Chara, Mahula	Anchu, Rohini	Harida, Khakada	Piasal
3	Kanheijena RF	Mahula, Sal	Asana, Chra, Kendu, Kumbhi, Mai	Anchu, Bahada, Bela, Dhaura, Girninga, Katak, Kochila, Bija, Sidha	Khakada	Giringa, Neem, Rohini, Simili
4	Kanteikulia RF	Asana, Anchu,, Kendu, Sal	Chara	Bhalia, Mai, Bija	Dhaura, Harida, Jamu, Patamasu	Bara, Khakada, Neem, Sunari
5	Petachira - Pathuria RF	Kendu, Mahula, Sal		Khakada	Asana, Bahada, Bhalia, Chara, Dhaura, Karada, Neem, Sidha	Arjuna, Anchu
6	Balaramprasad RF			Neem	Khakada	Kendu, Gohira

7	Ganthigadia A & B DPF			Phasi, Kendu	Neem, Ghambari	
8	Silling RF	Kendu, Sal		Asana, Akasia, Veru, Dhaura, Karada	Chara, Mitkunia, Tentela	
9	Seepur	Kendu, Sal	Mahula	Karada	Anchu, Bela, Chara, Gohira, Mai	
10	Mankadachua RF	Sal	Chara	Asana, Bahada, Dhaura, Kendu, Mahula, Rohini	Jamu	Piasal, Patamasu
11	Langalkhol RF	Sal	Asana, Chara, Mahula,Kendu			
12	Bulajhar RF	Sal	Chara, Kendu	Asana, Kusuma, Mahula, Bija, Rohini	Bahada, Jamu, Patamasu, Rai	
13	Baishnab Rugudi RF			Sal	Khakada	Neem, Patamasu
14	Kandhaberini PRF	Sal	Chara, Kendu, Mahula	Khakada	Asana, Anchu, Patamasu	Jamu, Neem
15	Dera PRF	Sal		Chara, Kendu	Mahula	
16	Nuabhuin RF	Kendu, Sal	Chara	Asana, Anchu, Mahula	Chauli, Patamasu, Ronihi	Neem
17	Gopalprasad RF			Kendu, Kochila		Bela, Bahada, Gohira, Ankula
18	Hirpur RF	Sal		Chara, Kendu, Mahula		Jamu, Neem
19	Kauchiakhol RF	Sal, Chara	Kendu, Mahula	Asana, Bhalia, Halda, Patamasu		Jamu, Kasi, Kusuma, Neem
20	Rabipur RF	Chara, Kendu, Sal	Jamu, Khaira, Mahula, Rohini		Asana, Anchu, Akasia, Veru, Dhaura, Kasi, Kumbhi, Mai	Gohira, Halada
21	Gengutia RF			Ankula, Barabakulia, Babul, Chakunda, Kendu, Khaira		Jamu

22	Makundanali RF			Kurein, Sal	Asana, Kumbhi, Katak	Jamu
23	Rakas RF	Sal	Asana, Chara	Kumbhi , Mahula, Hariada, Kasi	Patamasu	

4.1.2 It is generally observed that regeneration of seedlings in the 1st year i.e. recruits are abundant in every forest block except a few like Kanloi RF, Chhendipada RF, Kankurpal RF, Kosala RF, Chankundapal DPF, Marudhip PRF of Chhendipada Range, Para PRF, Patharagarh PRF, Rodsinga PRF, Arsulia RF, Jarapada ARF, Jarapada PRF, Sudagoleswar PRF of Jarapada Range. Jagani RF, Matharagudi RF, Badakathia RF, Bhana RF, Pitalaragudi RF, Gumphahill RF, Rameswar Hill RF, Godigotha RF, Kiajhar RF, Patakhaman RF, Bandhuli RF, Budhia RF, Khajuria RF of Kaniha Range. Kauchiakhol RF, Hirapur RF, Dra PRF, Gengutia RF, Baisnabaragudi RF, Seepur RF, Mankadachua RF, Silling RF, Ganthigadia DPF, Balaramprasad RF, Gopal Prasad RF of Talcher Range. Kueo RF, Kueo-Sakasinga RF, Paranga RF, Nisha RF, Kerejeng PRF, Kaliakata RF, Sorisapal RF, Badadandasahi RF, Chandanpur PRF of Angul Range. Baragaunia RF, Kanguloi PRF of Bantala Range but the seedlings are dying back in that stage only and are not being able to establish due to biotic interference like repeated annual ground fire, grazing, browsing and illicit removal of pole size crop for agricultural and household use. In fact valuable species like Gambhar, Sisso, Kasi, Piasal, Kurum are unable to establish and being replaced by less valuable, xerophytic unbrowsable species like Sidha, Karada, Dhaura, Barabakulia etc. It might be the reason Karada (Cleistanthus collinus) is the most abundantly available tree in almost all forest blocks in comparison to any other species. This is one alarming stage when care should be taken to help the principal species to establish.

4.2 Area affected by forest fire

4.2.1 Forest fire

In the tropical deciduous Forest of Odisha, fire is a recurrent phenomenon due to higher level of water stress during summer. Traditional land use practices and changes in weather pattern have resulted in higher fire incidences in the tropical India Forest fires in Odisha is mostly anthropogenic in nature.

4.2.2 Post fire occurrence in Forest area of Angul Division.

The forest type of this division vary from Dry – Deciduous Forest to moist mixed deciduous forest. Leaf shedding is an important phenomenon in forest areas which starts from Mid February to End of April. The forest floor is filled with thick dry leaf litter during the period and becomes inflammable. Ground fire is most commonly observed in most of forest block. Every year the forest floor is burnt 2 to 3 times after leafs shedding during Feb to May. It is the greatest threat to the forest of this division. Mainly forest fire is induced by man and restricted to the ground surface best on the record and information collected & on the field observation the intensity of fire occurrence in forest block as categories as High, Moderate and Fair. The details are given in Table. 4.2.1.

Table 4.2.1

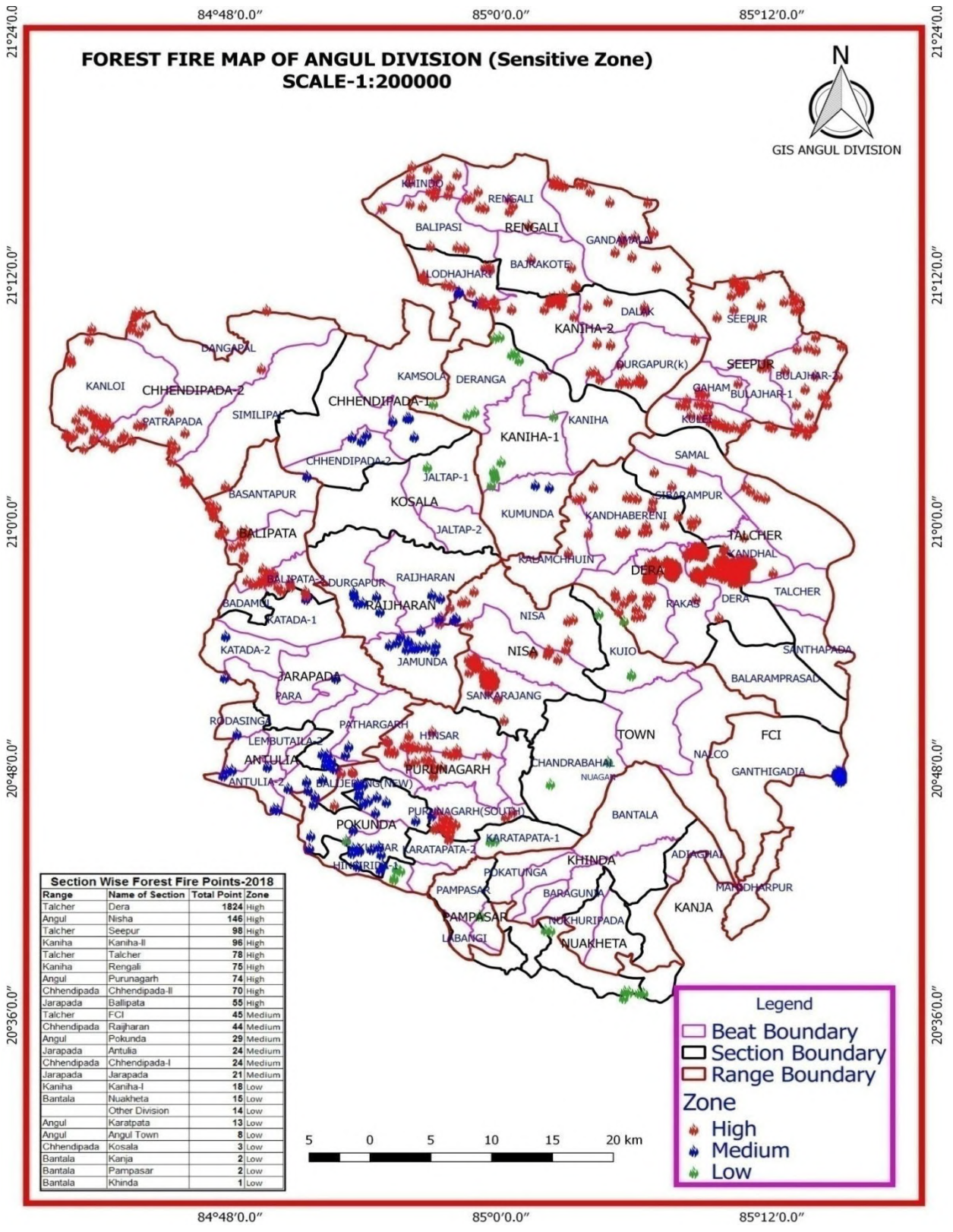
Frequency of Forest Fire in different forest block.

SL No.	Range	Forest Block	Degree of Fire			
			High	Moderate	Fair	No fire
1	Angul	Badadandasahi RF			√	
2	Angul	Bhogpal RF			√	
3	Angul	Derjang-Golabandha(P) RF			√	
4	Angul	Jarapada (P) RF		√		
5	Angul	Guranga RF			√	
6	Angul	Kaliakata RF				√
7	Angul	Kuio RF		√		
8	Angul	Kuio-Sakasinga RF			√	
9	Angul	Kumanda-Talataila RF				√
10	Angul	Madhapur RF				√
11	Angul	Malibrahmani RF				√
12	Angul	Mandargiri-Kalima RF			√	
13	Angul	Nanda RF				√
14	Angul	Nandapur-Berhampur RF				√
15	Angul	Nisa RF			√	
16	Angul	Paranga RF			√	
17	Angul	Saharagoda RF				√
18	Angul	Sorispal RF			√	
19	Angul	Burti PRF	√			
20	Angul	Chandanpur PRF		√		
21	Angul	Derjang-Golabandha PRF				√
22	Angul	Hinsar-Sorispal PRF	√			
23	Angul	Kalapat PRF		√		
24	Angul	Kerjang PRF				√
25	Angul	Krushnachakra PRF		√		
26	Angul	Kulasingha PRF			√	
27	Angul	Kurudu PRF			√	
28	Angul	Pokunda PRF			√	
29	Bantala	Bolonga(P) RF		√		
30	Bantala	Baragaunia RF				√
31	Bantala	Nuakheta RF			√	
32	Bantala	Balanga PRF				√
33	Bantala	Kanguloi PRF				√
34	Bantala	Labangi DPF				√

35	Bantala	Talsira DPF				√
36	Chhendipada	Bahianali RF				√
37	Chhendipada	Brahmanbil RF				√
38	Chhendipada	Chhendipada RF			√	
39	Chhendipada	Jarapada(P) RF	√			
40	Chhendipada	Jaltap RF				√
41	Chhendipada	Jeypore RF				√
42	Chhendipada	Kankurpal RF			√	
43	Chhendipada	Kanloi RF	√			
44	Chhendipada	Khalpal RF				√
45	Chhendipada	Kosala RF				√
46	Chhendipada	Putagadia RF				√
47	Chhendipada	Similisahi RF				√
48	Chhendipada	Dangapal PRF			√	
49	Chhendipada	Devinagar(p) PRF			√	
50	Chhendipada	Kanloi PRF				√
51	Chhendipada	Marudhip PRF			√	
52	Chhendipada	Nunamati PRF				√
53	Chhendipada	Sunarijharan PRF			√	
54	Chhendipada	ChakhundaPal DPF				√
55	Jarapada	Antulia-Tabada RF	√			
56	Jarapada	Arishila-Sulia RF				√
57	Jarapada	Jarapada(A) RF				√
58	Jarapada	Kandhakurudu RF				√
59	Jarapada	Katada RF		√		
60	Jarapada	Similipathar RF	√			
61	Jarapada	Pathargarh PRF			√	
62	Jarapada	Dandasingha-Bhagatpur PRF			√	
63	Jarapada	Devinagar(p) PRF		√		
64	Jarapada	Jarapada PRF				√
65	Jarapada	Para PRF			√	
66	Jarapada	Pitachari PRF				√
67	Jarapada	Rodasingha PRF			√	
68	Jarapada	Sudagolasar PRF				√
69	Jarapada	Tabada PRF				√
70	Kaniha	Arakhadihi R.F.'B'			√	
71	Kaniha	Badakathia R.F.'B'		√		
72	Kaniha	Bandhuli R.F.'B'				√
73	Kaniha	Bhana RF				√
74	Kaniha	Biripal RF	√			
75	Kaniha	Budhia RF				√
76	Kaniha	Chandrapada RF			√	

77	Kaniha	Dhankoili RF		√		
78	Kaniha	Jarapadadanda RF			√	
79	Kaniha	Godigotha R.F.'B'			√	
80	Kaniha	Gohiradanda RF				√
81	Kaniha	Gumpha RF				√
82	Kaniha	Jaghani RF				√
83	Kaniha	Kaijhar RF			√	
84	Kaniha	Khajuria R.F.'B'				√
85	Kaniha	Kukurakhai RF				√
86	Kaniha	Mathragadi RF				√
87	Kaniha	Nialu-Lodhajhari-Sapkata RF	√			
88	Kaniha	Patkhamna R.F.'B'			√	
89	Kaniha	Pedi R.F.'B'			√	
90	Kaniha	Pitalhill RF				√
91	Kaniha	Poipaldanda (Dalaka) RF			√	
92	Kaniha	Rameswarhill RF				√
93	Kaniha	Sadarkhol RF	√			
94	Kaniha	Saleimada RF			√	
95	Kaniha	Santrabandha R.F.'B'			√	
96	Kaniha	Sardhapur RF			√	
97	Kaniha	Satchi RF				√
98	Kaniha	Silakhani (Phuljhari) RF		√		
99	Kaniha	Tangari RF			√	
100	Talcher	Gopal Prasad RF			√	
101	Talcher	Kanheijena RF			√	
102	Talcher	Bulajhar RF	√			
103	Talcher	Seeling RF				√
104	Talcher	Mankadachua RF			√	
105	Talcher	Kandhala RF				√
106	Talcher	Gengutia RF			√	
107	Talcher	Baistamba Ragadi RF			√	
108	Talcher	Makundanali RF			√	
109	Talcher	Nuabhuin RF			√	
110	Talcher	Pathuripetachira RF				√
111	Talcher	Kauchiakhole RF	√			
112	Talcher	Langalakhole RF				√
113	Talcher	Hirapur RF			√	
114	Talcher	Kanteikulia RF			√	
115	Talcher	Rakash RF		√		
116	Talcher	Rabipur RF			√	
117	Talcher	Balaramprasad RF				√
118	Talcher	Seepur RF			√	

119	Talcher	Kandhabereni PRF			√	
120	Talcher	Dera PRF		√		
121	Talcher	Shibarampur PRF			√	
122	Talcher	Ganthigardia DPF (A)			√	
123	Talcher	Ganthigardia DPF (B)			√	



4.2.3 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.

4.2.4 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 pollinationand 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.

Occurrence of fire from 2008 to 2016 is Appendix - VI

4.2.5 Tackling Forest Fire

Presiding to fire occurrence one or two month before an Action Plan shall be prepared after analyzing and discussing with the forester from Range Officer to Forest Guard and representatives of VSS regarding forest fire and its prevention. A fire map shall be prepare by taking the fire incidence occurred at least last 5 year to study the frequency of the fire to decide fire combat method. During the divisional level meeting the Range Officer, Forester & Forest Guard of this division identify fire prone area of forest block shall be discussed before fire occurrence interdivisional boundary line shall be identified and cleared at width of 10 mtr the interdivision boundary are in the table. 4.2.2

Name of the Range	Forest Block	Length of boundary in Kms	Linked inter division boundary
Bantala	Balanga RF	12.8	Satkosia Wildlife
Bantala	Nuakheta RF	6.16	Athagarh & Dhenkanal
Chhendipada	Kanloi RF	13.6	Rairakhol & Athamallik
Chhendipada	Dangapal PRF	7.6	Rairakhol
Chhendipada	Nunmati PRF	5.0	Rairakhol
Chhendipada	Marudhipa RF	3.0	Rairakhol
Jarapada	Similipathar RF	5.9	Rairakhol & Athamallik
Jarapada	Katada RF	14.4	Athamallik
Jarapada	Antulia Tabeda RF	6.5	Athamallik
Jarapada	Sudagoleswar PRF	2.5	Athamallik
Kaniha	Nialu-Lodhajhari Sapakata RF	5.8	Deogarh
Kaniha	Biripal RF	10	Deogarh
Kaniha	Sadarkhol RF	1.4	Deogarh
Kaniha	Saleimada RF	2.0	Deogarh
Kaniha	Pedi RF	1.8	Deogarh
Talcher	Bulajhar RF	7.0	Dhenkanal
Talcher	Seepur RF	4.2	Deogarh
		109.66	

4.2.5.1 Prevention measure: - 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. For the purpose fore fighting squads are being deployed from January to June every year with provision of vehicle for mobility. 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.

4.2.5.2 Forest Fire Management

Forest blocks vulnerable to fire based on satellite imageries have been identified. Special plans to prevent fires in these blocks have to prepared and implemented. The community around these blocks made aware and with their assistance the occurrence of fire in these blocks is reduced. In these villages, the village level committees and VSS are formed and each committee given incentive for three months (March, April and May) for preventing the incidence of fire and also motivated to protect the forests from fire. The following fire protection measures are taken during the plan period:-

i. All Range Officers maintained annual fire maps on 1:50,000 scales of their respective ranges showing incidence of fire, in order to enable them to take advance fire protection measures in fire prone areas.

ii. Annual fire line clearance of 1 to 2-chain width in fire sensitive areas, coupled with controlled burning is done under the personal supervision of forester. Moreover, old fire lines, forest roads, boundary lines, village ring is kept clean by taking up control burning in 1-chain strip on both sides of it.

iii. The Orissa Forest (Fire Protection) Rules, 1979 and the fire protection measures provided in the O.F.D. code is followed in these forests. The forest fringe villages where there is high fire vulnerability is identified.

iv. Public awareness campaign is launched in winters to educate people especially in the fire prone areas not to resort to burning of ground flora to collect NTFP including kenduleaf. Besides, VSSs are actively involved in fire protection including extinguishing of fire in their allotted area. Incentives are paid to both public (including VSSs) and staff to protect the forests from fire.

v. Fire fighting teams consisting of Section Forester, beat guard and fire watchers are formed in areas vulnerable to fire. Incidence of annual fire entered in the compartment history.

vi. Imparted training to forest staff, VSS members and workers on modern forest fire management. Better communication facilities like wireless sets, vehicles etc. will be of great help to combat the menace.

4.3 Area damaged by natural calamities

4.3.1 Climate

Adverse climate like drought, flood and storm causes calamities and affects badly both plantations and natural forests. Drought which is very common to division causes mortality of plantations, regenerations and kills even large trees. Floods are not very common and damage to crop is not much in the division. However storm causes sometime appreciable damage by uprooting trees.

4.3.1.1 Strom

Strom are occasionally observed during April, may which damages of trees by uprooting. Severe cyclonic strom like phailin was occurred during Oct, 2013. The frequency of cyclone (Phailin) was 170 Kms per hour during Nov, 2014 another severe cyclonic strom was observe with frequency of 130 Kms per hour. The extent of cyclonic damage during 2013 to 2014 is furnished is table. 4.3.1

Year	Timber Delivery to OFDC Ltd.			Rolyalty paid by OFDC Ltd. (in Rs.)
	Timber	Pole	F.W	
2013-14 Phailin Salvage Timber	193.1139 cum	7 nos	56 Stacks	1467600
2014-15	35.8834 cum	324 nos	36.12 Stacks	137387
2014-15 Phailin salvage Timber	37.4646 cum	33 nos	12 Stacks	286048

4.3.1.2 Flood

Floods are not very common and damage to crop is not much in the division. Brahmani river passes in the division area entering at Rengali of Kaniha Range which is border of Deogarh and Angul division. Flood are not observed during last plan period. It is due to establishment of multi purpose dam at Rengali and a barrage at Samal of Talcher Range.

4.3.1.3 Drought

Drought is in Angul Division is quite common due to inadequate and badly distributed rains. Drought is the main natural calamities which causes failure of plantation, regeneration and establishment of regenerated crop. Drought affect the growth of forest species too. Less survival percentage is noticed in respect of plantation raised in drought area.

4.3.1.4 Frost

Natural calamities of frost are not observed in the division, so no damage of forest found.

4.3.2 Erosion

Erosion of soil is a measure feature in Angul Forest Division. It is due to excessive forest fire and on controlled grazing, which accelerated the soil erosion day to day due to inadequate vegetative cover. The numerous streams flowing unobstructed down the hill slope and on undulating ground of plains have not only remove the top soil but also cut off ground badly year after year forming gullies. The presence of tables, exposed rocks and nodular lime stone can be seen in eroded patches. Extensive part of Chhendipada Range and Talcher are in grip of soil erosion. The present condition is quit alarming over many forest block of the division and the need of soil and moisture conservation. Conservation of soil and moisture and its improvement shall be primarily considered in future management following PCCF, Odisha's guideline.

4.4 Area protected from grazing

There are 418 nos. of forest fringe villages in the jurisdiction of Angul Forest Division. Near about 56400 nos. of families are residing in the fringe villages. The villagers kept domestic animal like cattle, buffaloes, goat and sheep. The population of domestic animal is near about 342340 nos. The details of domestic animal like cattle, buffaloes, goat and sheep is furnished in **Table 4.4.1**

Category	Total numbers
Cattle (indigenous)	187240
Cattle (breed)	2820
Buffaloes	5640
Goat	129720
Sheep	16920
Total	**342340**

4.4.1Grazing by Domestic Animals

Severe damage is caused to the forest crop by grazing of domestic animals. With the increase of human population, population of cattle has also tremendously increased. These large herds of cattle and buffalows are kept by villagers not only for ploughing agricultural field or pulling carts or getting milk but also to get more dung for use in field. This uncontrolled grazing and browsing causes severe damage to plantations, natural regeneration and thus leads to the replacement of mesophytic flora by relatively more xerophytic, dry and thorny ones that can withstand grazing and hacking and is giving rise to erosion of soil. Heavily grazed forests have very little palatable fodder and in the process of grazing branches of trees, poles and bamboos are lopped regularly, seedlings trampled and soil compacted with the result that re-establishment of vegetation becomes more and more difficult. All the blocks of the division are prone to heavy grazing and browsing The poor ground regeneration in sapling and pole stage are the outcome of the excessive grazing. Excessive and uncontrolled grazing in these forests at present rate will not only curtail and even destroy the fodder resources with all its consequences to rural economy but will also lead to accelerated soil erosion which will first endanger the cultivated field itself. The greater stress to control and regulate grazing has to be laid but remedy lies in making grazing more expensive, giving more stress on growing fodder, replacing large unproductive herds by a few productive cattle and introducing stall feeding and making it popular.

For better fodder availability, following measures should be adopted:-

i. Along with the Animal Husbandry department and the VSS, attempt should be made to motivate the people to gradually reduce the number of unproductive cattle. They should be encouraged to procure better quality of cattle and stall-feeding through available Govt and bank schemes.
ii. Plantations of fast growing fodder species and development of silvipasture plots in the selected high-density cattle areas may be taken up under various schemes of the govt.

Acacia nilotica (Babul), Albizzia lebbek (Siris), Gliricidia maculata (Gliricidia), Sesbania aegyptiaca (Agasti), Leucaena leucocephala (Subabul), Albizzia procera (Tentra), Grewia oppositifolia are some suitable fodder tree species. Similarly, Dichanthium annulatum, Cenchrus ciliaris (Anjan), Andropogon ascinodis, Themeda arundinacea, Setaria pumila, Eleusine indica are some suitable fodder grasses for the Division. These could be planted through the Forest Development Agency and other special programmes in suitable areas.

To regulate grazing of cattle on forest land the following steps should be taken by the DFO through his field staff:-

i. Forest protection unit wise area should be strictly closed for grazing at least for a period of two years to allow regeneration to be established.
ii. Grazing will be allowed strictly basing on the carrying capacity of the forest area. Goats and Sheep should not be allowed inside the forest areas.
iii. Lopping of trees for fodder is to be discouraged.

iv. Grazing should not be allowed regenerating areas and where cleaning have been carried out.

All plantations shall remain closed for grazing for a period of 5 years including the year of planting.

4.5 Lopping practices

Looping practices for collection fodder is observed in the forest fringe villagers. Villagers are kept goad as domestic animal in preview of income generation. They used the forest area for open grazing and in practice. The villagers also collect leaves of fodder species by cutting branches. Another practices carried by the villagers is that the NTFP like Amla, Bahada, Harida, Bela, Kendu, Kusum etc. by less labour more yield through lopping the branches or even fail the hole tree for few fruits. These practices should be stopped, so the forest fringe villagers and VSS members shall be trained to collect the NTFP in non destructive way, latest techniques of collection NTFP shall be impacted to them.

4.6 Area infested by invasiveweed species in forests

Eupatorium is the main weed suppressing plantations in Bantala Range when Teak is raised after clear felling. Lantana dominates in few forest blocks of Angul and Jarapada Range. These weeds have posed problem for eradication.

4.7 Incidences of pest anddiseases

4.7.1 Diseases caused by Fungus have been found to affect adversely the forest crop. Some of them are follows.

1. *Fomes caryophylii*.

It is heart rot of sal. In early stage of its attack heartwood is stained slightly dark to brown. Ring rot is caused and decayed.The wood become spongy. After causing appreciable decay, fungus emerges through the sound sap wood into the bark in form of pink knots. Bark in the region of eye is gradually shed off, Branch stubs and knots caused on stem. Epicornic branches emerge but it does not always indicate of heart rot. Sporophere rarely develop. Damage caused due to it appears less and in only dead and fallen trees.

2. *Fomes faustuous.*

It is heart rot of sal inbutt region. In early stages the heartwood shows darker brown stains in patches which develop latter into small pockets. Under active decay these pockets get filled with white decayed fibres which disintegrate in later stages when these packets appear empty and brown. There is practically no external symptom of the disease except the appearance of light brown reflexed sporophore near the base of attacked trees. Damage caused due to it appears less and only on dead trees.

3. *Hymenochaete rubiginosa*.

Causes pocket rot in heart wood. Due to it tissues in affected pockets become white and fibrous surrounded by brown wood. Sporophores appear in tiers one above other in close cluster from the stem of affected trees. Attack by this fungus appear more than above two.

4. *Polyporus shoreae*

It is root fungus of sal and affects in damper portion sal and kills good and large size sal tree.

5. *Hypoxylon annulatum*

Root fungus attack in drought prone areas.

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 chinensisdamages new bamboo culms by tunneling the nodes.

4.2.3 Loranthus:

Its attack on sal and teak trees are seen in Bantala, Jarapada, Chhendipada Ranges. Loranthus attack is quite common in Antulia block. Its attack in Bantala Range appear less. Attacks of loranthus appear increasing in the forest and old teak trees.

4.8 Forest degradation and its drivers

Exploding human population is the main cause of depletion of forest resources through illicit felling and removal; uncontrolled grazing; encroachment; girdling and lopping; setting of forest fires; felling of trees for collection of honey, leaves, fruits and barks.

4.8.1 Illicit felling.

Most of the forest blocks are surrounded by thickly populated villages in which poverty and unemployment has widened its base. Hence in one hand poverty and unemployment has resulted in destruction of forests through indiscriminate felling of trees and its removal either for domestic use or for selling and earning livelihood; while on the other hand it has become a source of earning easy and quick money by resorting to illicit felling; removal and trade of forest produce. This second tendency has further developed by growth of intermediate vested interests capturing a socio political status. The illicit felling of selected teak and sal trees from the forests of Bantala Range where no illicit felling was heard till 1980 are the out comes of this tendency. This is also due to devastation of forests of Jarapada, Chhendipada, Angul, Talcher & Kaniha Ranges due to increasing human pressure and industrialization which increased the demand to such an extent that supply at higher prices could hardly make any break-through. The increasing level of demand with decrease in supply and deterioration of nearby forest has paved the way of smuggling from interior forest blocks and thus by depleting the forest, human agency has adversely affected the ecology and environment in which it has to survive and still the pace of depletion is not under arrest. Strengthening the administrative machinery of the division is a must but not the remedy. Remedy lies perhaps in educating the people and forming a public opinion that such abuses are threat to their very survival and is against the public interest. Education is also required to reduce the use of forest produce and to meet the requirement on sustainable basis by raising the forest produce in their own field, community land and vacant places to become self-reliant.

The Divisional 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, which has a great impact in reducing atleast the movement of timber through vehicles. The details of forest offence cases regisgtered are given in Table - **4.8.1.**

Table No. 4.8.1 offence cases booked in Angul Division during last plan period

Year	No. of Cases			Timber in cum	Materials			
	OR Cases	UD Cases	Total		Firewood in MT	Poles in nos.	Bamboo in nos.	Kendu leaves in Qtl
2007-08	821	266	1087	84.7877	172.9	1985	108	67.92
2008-09	745	237	982	97.4379	8.105	2068	265	7.16
2009-10	654	253	907	101.8992	8.475	3030	173	174.71
2010-11	627	240	867	79.2315	9.02	1935	168	186.32
2011-12	348	221	569	146.149	0.4561	1493	202	237.13
2012-13	1121	208	1329	85.647	32.24	4244	0	350.45
2013-14	473	128	601	48.8745	8.371	1840	0	361.29
2014-15	419	135	554	54.7917	7.215	2430	0	93.1
2015-16	450	104	554	43.3278	17.238	2411	0	145.0
2016-17	331	134	465	25.4024	16.35	1665	0	456.15

2017-18	415	138	553	56.6537	4.148	3122	89	1916.8
2018-19	396	88	444	50.0181	1.0085	3169	3169	77.37
2019-20	269	117	386	53.0671	15.88	1765	1765	47.32
2020-21	119	103	222	130.9212	98.588	936	0	59.1
Total								

However the illicitly felling is reduce due to initiation of JFM resolution of the State Government. The forest fringe villagers are coming forward in protection of forest constituting Vana Surkshya Samittee. This results a successful strategy.

4.8.2 Forest Fire

Forest fire is one of driver causing forest degradation in the division forest fire is mostly anthropogenic in nature. Traditional land use practices and changes in weather pattern have resulted higher fire incidence it causes measure threats to forest regeneration and establishment of forest crops. Occurrence of repeated fire incidence is caused degradation of forest.

4.8.3 Grazing by domestic animals

Excessive and uncontrolled grazing and browsing causes sever damaged to natural regeneration and thus leads to replacement of masophytic flora by relatively macro xerophytic thorny ones that can with stand grazing and hacking and is giving rises to degradation. Heavily grazed forests have very little palatable fodder and in the process of grazing/browsing branches of trees, poles and bamboo are looped regularly. Seedlings trampled and soil compacted with the results reestablishment of vegetation becomes more and more defaults. Grazing increases the rate of degradation of forest which is the main driver causing depletion of forest.

4.8.4 Encroachment

Due to the indistinguishable boundary line from neighbouring areas in many forest blocks of Talcher, Kaniha, Angul, Chhendipada and Jarapada Ranges, the encroachment inside R.F. is not very much ruled out. Resurvey of these blocks and demarcation with permanent boundary pillars according to provisions of rule 168 and 169 of O.F.D. Code are absolutely necessary. A list of encroachment cases booked in Division is given in **Appendix –XI**. However, there are many encroachments for which cases have not yet been booked. Want on destruction of forest growth and over night encroachments in many of the plain forest blocks of Talcher Range, Kaniha Range, Chhendipada Range and Jarapada Range are also common. Encroachments in all the cases are not always by landless Tribals but the people having land elsewhere nearby. Further, these encroachments are not always for agricultural purpose but for illegal mining generally of coal, hutments of labourers and grabbing of land for future use. The land grabbing tendency has increased over the years due to establishment of various development projects like Rengali Dam Project, Fertilizer Plant, NTPC, Samal Barrage, Coalmines, National Aluminium Company. In these circumstances Forest Department has to remain extra vigilant and prompt to safeguard the forestland. Further, steps shall have to be taken to evict these encroachments as far as possible or to confine encroachments in a limited demarcated area. Legal lacuna if any in the matter of eviction should be plugged to enforce eviction.

Inside and peripheral encroachments are seen in Kerjang, Bodkerjang, Mandargiri, Kuio forest blocks of Angul Range; Similipathar, Jarapada (A), Para, Katada blocks of Jarapada Range, Chhendipada, Kosala, Khalpal, Brahmanibil blocks of Chhendipada Range; Gengutia, Rakas, Pathuria-Petchira, Gopalprasad, Nuabhuin, Hirapur, Kauchiakhoi, Kandhal, Rabipur, Dera blocks of Talcher Range; Pedi, Badkathia, Phuljhari, Saradhapur, Tangiri blocks of Kaniha Range. Prompt appropriate action should be taken for eviction of encroachment of forestland. Illegal extraction of stones for construction of Rengali Dam Project had been taken up in the recent past in Biripal, Salliameda and Rameswar blocks. Location of three nos of water tanks which had been constructed by Rengali Dam Project; two in Salliameda and one in Biripal R.F. periphery should be checked and clear boundary line of RF be laid out distinguishing the R.F. from Rengali colony.

4.9 Pollution control andprotection of environment

Measure form of pollution includes air pollution, water pollution, soil pollution. Pollution of soil, water and air in the division is the serious problem due to establishment of industries and mining's. rapid growth of population and their unconscious cause pollution in soil, water and air.

4.9.1 Air pollution: -

Air Pollution is one of the serious problems in the world especially in urban areas of developing countries due rapid growth of population, increase in number of vehicle and industrialization. Motor vehicle have been regarded as the primary cause of air pollution in the urban areas and account for 60 to 70% of the pollution found in the urban environment. SO2, NO2, SPM and RSPM are major air pollutants in India. The studies on air pollution in large cities of India showed that ambient air pollution concentrations are at such levels where serious health effects are possible. Continuous rise of population along with the lack of suitable measures for air pollution control means that there is a great potential that conditions may worsen in future in Indian cities. These all pollutants may pose harmful effect on human health such as cardiovascular and respiratory disease, Neurological impairments, increased risk of preterm birth and even mortality and morbidity. Various studies conducted in India at various locations suggests that pollution levels varies significantly in different areas with respect to its location, time, period of sampling and climatic conditions.

4.9.1.1Conclusion

There is great need to control the air pollution as it is impacting the environment and human health seriously. The concentration of air pollutants like have to be controlled to save the environment. To control air pollution, proper rules and regulations should be implemented by the government, awareness among the people, control the growth of population, number of vehicles, industries and energy consumption. We need to take pollution issue seriously because ignorance is certainly not the proper way to go. The stakes are really high and world needs to wake up and start acting right now because environmental issues are constantly growing in number and size.

4.9.2 Water Pollution

Water pollution is a serious problem in the division due to heavy industrialization and mining activities. The waste water of the industries and mines containing oil, lubricants, heavy metals and chemicals which directly mixed with natural water resources like streams, nalas and rivers. Also this affect the underground water source. Use of chemical fertilizer, pesticides in Agricultural fields is a factor for water contamination and have a indirect adverse impact on water resources.

4.9.3 Soil Pollution

Soil pollution in this division is due to mainly dumping of garbage's from local municipally and NAC area dumped openly without proper treatment. Massive use of pholythenes and their uncontrolled disposals is a measure factors for soil pollution. Also use of chemical fertilizer and pesticides in the area of poor drainage contaminate the water and soil.

The degradation of forest land due to pollution in the aspect of soil, water and air is not conspicuous in this division.

CHAPTER - 5

5 Conservation and maintenance of soil and water resources

5.1.1 Water & Soil 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 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.

5.1.2 Soil erosion vuluerability assessment.

Soil erosion is quite common and aggravated in all forest block in the divison. As it is observed that denution of forest has taken at greater pace in rehabilistation and plantation working circle, which constitute 60% of forest area of the division.

5.1.3 Area treated under soiland water conservationmeasures

To enhance soil productivity through soil and moisture conservation measures and to regulate surface water run off to enhance percolation and water availability down the stream. SMC works such as gully plugging,percolation pit,checkdam,contourbund,checkdam with loose boulder, staggered trench works have been carried out over **28553.7406 ha**. The details of area treated under soil and moisture conservation measure under the table. 5.1.1

Year	Name of the Range	Area treated under SMC in ha.
1	2	5
2007-08	Chhendipada	892.769
2007-08	Jarapada	598
2007-08	Kaniha	903.5
2007-08	Angul	1103.5
2007-08	Bantala	166
2007-08	Talcher	833
Total		**4496.769**

2008-09	Chhendipada	1228.4826
2008-09	Jarapada	1147
2008-09	Kaniha	1138
2008-09	Angul	1434.975
2008-09	Bantala	400
2008-09	Talcher	815
Total		**6163.458**
2009-10	Chhendipada	928
2009-10	Jarapada	656
2009-10	Kaniha	1213.4
2009-10	Angul	893.779
2009-10	Bantala	477.02
Total		**4168.199**
2010-11	Chhendipada	738
2010-11	Jarapada	207.486
2010-11	Kaniha	645
2010-11	Angul	360
2010-11	Bantala	183
Total		**2133.486**
2010-11	Talcher	1137.55
2011-12	Chhendipada	940.245
2011-12	Jarapada	20
2011-12	Kaniha	780
2011-12	Angul	830.956
2011-12	Talcher	846.86
Total		**4555.611**
2012-13	Chhendipada	114
2012-13	Jarapada	210
2012-13	Kaniha	204
2012-13	Angul	100
2012-13	Talcher	220
Total		**848**
2013-14	Chhendipada	570
2013-14	Jarapada	150
2013-14	Kaniha	282
2013-14	Bantala	400
2013-14	Angul	270
2013-14	Talcher	100
Total		**1772**
2014-15	Chhendipada	50
2014-15	Kaniha	100
2014-15	Angul	107
Total		**257**

2015-16	Chhendipada	250
2015-16	Jarapada	300
2015-16	Kaniha	226.848
2015-16	Bantala	50
2015-16	Angul	545
2015-16	Talcher	340.5
Total		**1712.348**
2016-17	Chhendipada	680
2016-17	Jarapada	774.09
2016-17	Kaniha	220
2016-17	Bantala	200
2016-17	Angul	245.78
2016-17	Talcher	327
Total		**2446.87**
2017-18	Chhendipada	688.2
	Jarapada	200
	Kaniha	903
	Bantala	405
	Angul	200
	Talcher	365
Total		**2761.2**
2018-19	Chhendipada	1171.61
	Jarapada	865
	Kaniha	42
	Bantala	100
	Angul	884
	Talcher	260
Total		**3322.61**
2019-20	Chhendipada	1959.96
	Jarapada	250
	Kaniha	115
	Bantala	50
	Angul	970
	Talcher	600
Total		**3944.96**
2020-21	Chhendipada	1435
	Jarapada	1075
	Kaniha	950
	Bantala	975
	Angul	0
	Talcher	0
Total		**4435**

Soil and Water resources conservation measures are taken under the different plantation scheme carried out during the last outgoing plan period from 2006-07 to 2016-17 besides that special soil and water conservation measure has been adopted to mitigrate the problem by OMBADC in the mining affected areas to rejuvenate the soil moisture and vegetation. The details area under treatment in different forest block is furnish in the table. The treatment methods includes chocking of nalas i.e. drainage line treatment through LBCD and subsurface dyke, and graded bond. The surface treatment taken over by percolation pit, staggered trench.

Name of the Division	Name of the site	CD Block	Area	Staggered trench in nos.	Percolation pit	Graded bund in MT	Sub surface Dyke	Loose blouder check dam	Water body	whs
Angul	Chhndipada RF	Chhendipada	1852.968	2405		4764.5		165	2	1
	Kankurpal RF	Chhendipada	929.905	653	1284	0		96	1	
	Nisha RF	Angul	625.6	1050		0		62	1	
	Kuio	Angul	534.329	0		0		27	1	
	Kuio-Sakasinga RF	Angul	88.722	1730		1623.5		21	0	
	Kandhal	Talcher	189.7	223		664.03		40	0	
	Pathuria-Petchira	Talcher	289.763	85		3		5	0	
	Rabipur RF	Talcher	1182.925	0		0		54	1	
	Kauchiakhol RF	Talcher	549.995	0		740		85	1	
	Chandrapada RF	Kaniha	303.143	700		2544		79	1	
	Patakhamana	Kaniha	438.412	0		3099	1	44	1	
	Gumpha Hill RF	Kaniha	37.359	0		60		5	0	
	Pitala Hill RF	Kaniha	27.903	100		412		0	0	
	Gohiradanda RF	Kaniha	29.775	100		0		2	0	
	Saradhapur RF	Kaniha	113.778	300		0		5	0	
	Matharagadi	Kaniha	45.855	100		1849		3	0	
			7240.132	7446	1284	15759.03	1	693	9	1

Soil and water resources particularly in mountain watersheds have undergone considerable degradation. Deforestation has not only resulted in a decline in forest resource stocks, but has also affected the environment negatively in various ways. This includes soil degradation, damage to relatively fragile ecosystems, impoverishment of fish and wildlife populations, negative impacts on the quantity and quality of water resources, and deterioration of the micro-climate and other environmental services of forests. Forest depletion and consequent soil erosion in the mountainous regions has resulted in the siltation of water reservoirs and in the reduction of their storage capacity and hydroelectric generation potential.

Soil and water conservation assumes great importance in ecological fragile forest areas. Apart from the economic and indigenous plantations, there is a need to promote a massive programme of tree planting on a voluntary basis for environmental amelioration and use of watershed management technology for land rehabilitation and soil conservation. Rehabilitation of degraded lands for soil and water conservation would necessitate the following actions:

- Control of deforestation;
- Protective afforestation and soil conservation;
- Improvement of marginal lands through tree planting;
- Rejuvenation of soil through supplements and nitrogen-fixing trees;
- Protection of fields from wind through properly-designed wind breaks, shelter belts and row planting; and
- Promotion of farm forestry and agro-forestry.

5.2 Duration of water flow in the selected seasonal streams

5.2.1Important perennial river/ nalas

Brahmani is the major river flowing in the territory of this forest division from the Rengali Dam project to Samal Barrage constructed on the river and then forming northern boundary upto Talcher and beyond a little in the east after which it flows in Dhenkanal Forest Division.The Rengali Dam Project has been constructed on river Brahmani by joining the Saleimada hill (Saleimada R.F.) and Biripal hill (Biripal R.F.) of the division, which is to a little east to Samal Barrage. The main tributaries of the river are Samakoi from north-east side and Tikira River, Singharajhora, Lingara& Nadira nala from the southern side. These five tributaries are mostly perinal and its fidding small nalas drain most of the water of Kaniha, Talcher, Angul, Chhendipada and Jarapada Range. Aunli River originates from north-west corner of the division i.e.Jarapada Range and flows in the territory of the division upto the border of Deograh Forest Division and after that in Deogarh Forest Division where it meets with Tikira River coming from Rairakhol area and ultimately meets Brahmani. Aunli along with its tributary nalas, Nuhurani drain most of the water of Jarapada and Chhendipada Range. Detail of important river and nalas flowing in the Division are presented at Table No. 5.2.1.

Table No 5.2.1. Important Rivers / Tributaries in Angul Forest Division

Sl. No.	River/Tributary	Origin	Pass Through	Duration of Water Flow
1	Brahmani	Chhotnagpur region of Jharkhand	Enter through Rengali Dam Project, Samal barrage and then forming northern boundary up to Talcher and beyond a little in the east.	Perennial
2	Samakoi	Kalapat R.F. of Pallahara	Chhendipada and Kanhia Range	Perennial
3	Tikira (200 km)	Rairakhol Forest Division	Jarapada, Chhendipada and Kanhia Range	Perennial
4	Singharajhara (115 km)	Sarisua hill	Kuskila, Barpada & Kosala GP of Chhendipada Block and Kumuda GP of Talcher Block	Perennial
5	Lingara (176 km)	Hills located at the boundary of Athmallik & Angul Division.	Jarapada, Angul and Talcher Range	Perennial.
6	Aunli (40 km)	Rail R.F of Rairakhol Division and Sursuri Parbat of Athmallik Forest Division	Jarapada, Chendipada and Kanhia Range	Perennial
7	Nandira (56 km)	Mutukuria and Naindra join together to form Nandira	Angul and Talcher Range	Perennial

5.2.2 Flowing of Water: - Some ofnalas are leads to above said Jora such as Aunli, Tikira, Lingira, Nandira, Singhada, Samakoi which are tributaries of Brahamani river. Its origin duration of water flow are described in the **table 5.2. 2**

Range	Name of the Nala/Jora	Originates from	Leads to	Duration of water flow
Angul	Baladahada Nala	Paranga RF	Nandira Jora	Upto January
Angul	Matlia Nala	Mandargirikalima RF	Lingira	Upto January
Angul	Mutkuria Nala	Patharagarh & Burti RF	Lingira	Upto March
Angul	Bhalukhai Nala	Landa & Mandargiri Kalima RF	Lingira	Upto March
Angul	Kudrabahal Nala	Durgapur RF	Nandira	Upto January
Bantala	Takua Jora	Burti PRF	Bauli	Perennial
Bantala	Bauli Jora	Krushnachakra PRF	Lingira	Upto April
Chhendipada	Kankhol Nala	Kanloi RF	Aunli	Upto April
	Mandalia Nala	Athamalik Division	Aunli	Upto April

		area		
	Nuhurani Nala	Marudhipa PRF	Aunli	Upto April
	Kumbhira Nala	Devinagar PRF	Tikira	Upto April
	Gauduni Nala	Chhendipada RF	Olhani	Upto April
	Kudapasi Nala	Chhendipada RF	Gauduni	Upto March
	Olhani Nala	Chhendipada RF	Tikira	Upto April
	Atandi Nala	Brahamanbil Area	Olhani	Upto December
	Thuntimahula Nala	Kankurpal RF	Olhani	Upto January
	Gundijhari Nala	Durgapur RF	Singirha Jora	Upto January
	Kandha Nala	Kankurpal RF	Singirha Jora	Upto December
	Bainsinali Nala	Devinagar PRF	Singirha Jora	Upto January
	Kusal Nala	Devinagar PRF	Singirha Jora	Upto January
	Baunsadhara Nala	Devinagar PRF	Aunli	Upto February
	Sapoi Nala	Panapasi gobindpur area	Aunli	Upto February
	Durhuba Nala	Revenue Forest of Gholagadia	Tikira	Upto February
	Sianjurhi Nala	Deogarh Forest Division	Tikira	Upto March
	Bagdal Nala	Nunmati & Marudhip RF	Nuhurani	Upto March
	Bada Jora	Deogarh Forest Division area	Nuhurani	Upto March
Kaniha	Marada Jora	Badakathia RF	Singirha	Upto January
	Chilanti Nala	Pedi RF	Brahamani river	Upto March
	Balaram Jora	Godigotha RF	Brahamani	Upto March
	Chauridhara Nala	Deogarh Divison area	Brahamani	Upto February
	Bhalutunguri Nala	Deogarh Division area	Singirha	Upto January
	Jambua Nala	Jambua RF of Deogarh Division	Brahamani	Perennial
	Bankhuli Jora	Brahmanabil RF	Singirha	Upto March
	Dadari Nala	Dalak Poipal Danda RF	Brahmani	Upto December
	Purunapani Nala	Similisahi & Khalpal RF	Marada Jora	Upto January
Talcher	Bangaru Nala	Gopalprasad RF & Kalamchuin Area	Brahmani	Upto April
	Kasia Jora	Bulajhar RF	Samakoi	Upto February
	Siaria Jora	Anantapur RF of Dhenkanal Division	Samakoi	Upto February

	Andhari Jora	Deogarh Forest Division area	Brahamani	Upto February
	Balijoti Nala	Seepur RF	Brahamani	Upto March
	Bulajhar Nala	Bulajhar RF	Samakoi	Upto March
	Bankadhara Jora	South expect of Bulajhar RF	Brahamani	Upto January

The contributory factors responsible for poor flowing of water during summer can be categorized as follows:

i) Low porosity of under-lying rocks and less water holding capacity.

ii) Rapid run-off of rainwater from hill slopes during rainy season due to denudation of forest cover, which also contributes to lesser porosity.

iii) In-adequate numbers of soil and moisture conservation structures and their poor maintenance.

iv) Excess use of under ground water.

5.3 Wetlands in forest areas

Wetlands are one of the crucial nature resources. Wetlands are areas of land that are either temporarily or permanently covered by water, which exhibit enormous diversity according to geographical location water regime and its characteristics. Some of the wetlands are exited in the forest area. It had might be created by the Ex-king during their rulling period for supply of drinking water and improvement of wildlife habitat. The list of old water bodies is listed in the table.5.3.1

Range	Name of the Forest Block	No. of Water bodies
Angul	Krushnachakra PRF	2
Bantala	Balanga RF	1
Chhendipada	Durgapur RF (Compt – 9)	1
Chhendipada	Kosala RF	1
Jarapada	Similipathara RF (Compt – 2)	1
Kaniha	Arakhadahi RF	1
Kaniha	Nialu-Lodhajhari-Sapakata RF (Compt – 3)	1
Kaniha	Dalak-Poipal-Danda RF	1
Kaniha	Phuljhari RF (Compt- 2)	1
Talcher	Kandhala RF	1
Talcher	Kandhaberini PRF	1
Talcher	Gopalprasad RF	1
Talcher	Malibandha RF	2
Total		**15**

5.3.2 Creation of Wetland (water bodies): - Many of nallahs and streams are flowing in the forest area of the division which provide water to wildlife. But most of them are seasonal in nature and became dry up during summer season. Scarcity of water is felt from January to June. To mitigate this problems a number of water bodies were created during the out going plan period. The list of water bodies with their location is given in table. 5.3.2

List of water bodies, saltlicks etc

Name of the Division	Year wise (2010-11 to 2020-21)	Name of the Scheme (Furnish Scheme wise)	Location	No. of water Bodies Created	No. of Water Bodies renovated	Amount utilized
1	2	3	4	5	6	7
Angul	2009-10	State-Plan- Wildlife	Rasanda	1		300000
		State-Plan- Wildlife	Lembutaila	1		300000
		State-Plan- Wildlife	Ranipark	1		701516
		Total		**3**		**1301516**
	2010-11	State-Plan- Wildlife	Badakathia	1		4.0000
			Jaltap	1		4.0000
			Lembutaila		1	0.8750
		Central-Plan-Wildlife	Nialu-Lodhajhri	1		3.0000
		CAMPA-APO-2009-10 (Wild lIfe)	Purunapani		1	1.0000
			Dangerbeda		1	1.0000
		Industrial Area Plantation-Dev of Ranipark	Ranipark, Talcher	1		7.3497
		Total		**4**	**3**	**21.2247**
	2011-12	Central Plan-Wildlife	Kuio	1		3.0000
		State-Plan- Wild life	Buruti	1		4.0000
			Seepur		1	0.2500
		CAMPA-APO-2011-12 (Wild lIfe)	Buruti	1		6.0000
		Total		**3**	**1**	**13.2500**
	2012-13	State-Plan- Wild life	Kanteikolia	1		2.0000
			Kanheijena	1		2.0000
			Bulajhar	1		2.0000
			Mantukhol (Kanheijena)		1	0.2500

			Bulajhar		1	0.2500
			Dangerbeda		1	0.2500
			Kanteikulia		3	0.7500
Angul		CAMPA-APO-2011-12	Jaltap	1		1.5000
			Paranga	1		1.5000
			Kulasingha	1		1.5000
			Patkhaman	1		1.5000
		CAMPA-APO-2011-12 (Wild life)	Chhendipada	1		5.0000
		Total		**8**	**6**	**18.5000**
	2013-14	State-Plan- Wildlife	Sibrampur	1		2.5000
			Seepur		1	0.5000
			Kanheijena		1	0.5000
			Tulasighai		1	0.5000
		Central Plan	Rabipur	1		2.5000
		CAMPA APO 2012-13	Bolanga (Labangi Village)	1		2.5000
			Nuakheta	2		5.0000
			Chandanpur	1		2.5000
			Krushnachakra	1		2.5000
			Rabipur	1		2.5000
			Kandhal	1		2.5000
			Seepur	1		2.5000
			Santrabandha	1		2.5000
			Gadagotha	1		2.5000
		OFSDP	Kulasingha	1		2.5000
			Burti	2		5.0000
			Krushnachakra	2		5.0000
			Kurudu	1		2.5000
			Langalkhol	1		2.5000
			Mankadchua	1		2.5000
			Rabipur	1		2.5000
			Balanga	1		2.5000
		Total		**22**	**3**	**56.5000**
	2014-15	CAMPA-APO-2012-13 (Wild Life)	Katada	2		2.5000
			Antulia-Tabada	2		2.5000
			Durgapur	2		5.0000
		CAMPA-APO-2012-13 (Wild Life- Site Specific Conservation Plan)	Chhendipada	1		5.0000

			Nuakheta RF-4	1		2.5000
Angul		CAMPA APO 2013-14	Nuakheta RF-6	1		2.5000
			Bolanga RF-13	1		2.5000
			Bolanga RF-4	1		2.5000
			Antulia-7	1		2.5000
			Katada	1		2.5000
			Para	1		2.5000
			Kankurupal RF	2		5.0000
			Chhendipada RF	2		5.0000
			Mandergiri-I	1		2.5000
			Mandergiri-II	1		2.5000
			Bhogpal RF	1		2.5000
			Madhupur RF	1		2.5000
			Kanheijena RF	1		2.5000
			Sibrampur PRF	1		2.5000
			Kanteikulia RF	1		2.5000
			Mankadchua RF	1		2.5000
			Seepur RF	1		2.5000
			Bulajhar RF	1		2.5000
			Phuljhari RF-I	1		2.5000
			Khajuria RF	1		2.5000
			Santribeda RF	1		2.5000
			Sardhapur RF	1		2.5000
			Budhia RF	1		2.5000
			Lodhajhri RF	1		2.5000
			Badakathia RF	1		2.5000
		CAMPA-APO-2013-14 (Wild Life)	Marudhip RF	1		2.5000
			Krushnachakra PRF	1		2.5000
			Burti PRF	1		2.5000
			Rabipur RF	1		2.5000
		CAMPA-APO-2013-14 (Wild Life- Site Specific Conservation Plan)	Durgapur RF	1		5.0000
		Total		**40**	**0**	**100.000**
Angul	2015-16	CAMPA-APO-2013-14 (CRM-Creation of Water Bodies)	Chhendipada RF	1		2.5000
		CAMPA-APO-2013-14 (CRM-Creation of	Bulajhar RF	1		2.5000

		Water Bodies)				
		CAMPA-APO-2013-14 (Wildlife Protection & Management)	Burti PRF	1		2.5000
		CAMPA-APO-2013-14 (Wildlife-Site Specific Conservation Plan)	Durgapur RF	1		5.0000
		State Plan (02-Env. Forestry creation of water bodies0	Mankadachua RF	1		2.5000
		Total		**5**	**0**	**15.0000**
Angul	2016-17	CAMPA APO 2015-16 (Wildlife Protection & Management)	Kandhal RF	1		4.0000
		CAMPA APO 2015-16 (Wildlife Protection & Management)	Dhankoili RF	1		4.0000
		Total		**2**	**0**	**8.0000**
	2017-18	22-2406-Forest & WL(State Plan) State Sector-02-Environmental Forestry & WL-110-WL-Preservation-3173-Management of Elephant & Corridor-20002-Other charges water Body Renovation	Badakathia RF	1		4.000
		CAMPA APO-2016-17-Site Specific Conservation Plan-Bharatpur OCP	Kanheijena RF	1		4.245
	2018-19	22-2406-Forest & WL(State Plan) State Sector-02-Environmental Forestry & WL-789-WL-Preservation-	Marudhipa PRF	1		4.500

		3173-Management of Elephant & Corridor-20002-Other charges water Body Renovation				
	2018-19	CAMPA APO-207-18- Infrastructure Development-Creation of Water Body	Pathargarh	1		3.000
	2018-19		Santrabandha RF	1		3.000
	2018-19	CAMPA APO-2017-18-Wildlife Management Habitat Improvement Creation of Water Body	Krushnachakra PRF	1		4.000
	2018-19	CAMPA APO-2017-18-Site Specific Conservation Plan-Bharatpur OCP-Creation of Water Body	Kanheijena RF	1		5.000
	2018-19		Seepur RF	1		5.000
	2018-19	CAMPA APO-2017-18-Site Specific Conservation Plan-Bharatpur OCP-Development of Elephant Corridor	Mankadchua RF	1		5.000
	2018-19	CAMPA APO-2017-18-Site Specific Conservation Plan-Estt. Of 2x600 MWPower Plant by M/S JITPL- Creation of New Pond	Tangiri RF	1		3.000
	2018-19	CAMPA APO-2017-18-Site Specific	Durgapur RF	1		2.500

		Conservation Plan-Estt. of MPTA Integrated Steel Plant at Badkerjeng by Jindal Steel Power Ltd.- Creation of Game Tank	(Pond No-I)			
	2018-19		Durgapur RF (Pond No-II)	1		2.500
	2018-19		Durgapur RF (Pond No-III)	1		2.500
	2018-19		Durgapur RF (Pond No-IV)	1		2.500
	2018-19	CAMPA APO-2017-18-Site Specific Conservation Plan-Utkal Coal B-2 Mines- Creation of Water Holes	Chakhundpal DPF	1		2.500
	2018-19		Sunerijhera PRF	1		2.500
	2019-20	CAMPA APO-2019-20-Wildlife Management Habitat Improvement-Creation of Water Body	Nukaheta-2	1		5.600
	2019-20		Bolanga-8	1		5.600
	2019-20		Bulajhar RF (Pond No-I)	1		2.500
	2019-20		Bulajhar RF (Pond No-II)	1		2.500
	2019-20	CAMPA APO-2019-20-Site Specific Conservation Plan-Estt. Of 2x600 MWPower Plant by M/S JITPL- Creation	Tangiri RF	1		3.000

		of New Pond				
	2019-20	CAMPA APO-2019-20-Site Specific Conservation Plan-Estt. of MPTA Integrated Steel Plant at Badkerjeng by Jindal Steel Power Ltd.- Creation of Game Tank	Durgapur RF	1		5.000
	2019-20	CAMPA APO-2019-20-Site Specific Conservation Plan-Estt. of MPTA Integrated Steel Plant at Badkerjeng by Jindal Steel Power Ltd.- Creation of Game Tank	Nisha RF	1		5.000
	2020-21	02-Environmental Forestry & Wildlife-110-Wildlife Preservation-3173 Management of Elephant & Corridor	Katada RF 1	1		5.960
	2020-21	CAMPA-APO-2020-21- W/L/22-2406-04-103-3364-91348- Net Present Value of Forest Land-Wildlife	Nuakheta RF-8	1		5.960
	2020-21		Katada RF-1	1		5.960
	2020-21		Similipathar RF-1	1		5.960
	2020-21		Chhendipada RF	1		5.960
	2020-21		Kankurpal RF	1		5.960
	2020-21		Bulajhara RF	1		5.960
				121	**13**	**382.139**

5.4 Water level in the wells inthe vicinity (up to 5km) offorest area

Periodic monitoring of water level has been done by the Director of Ground Water Development, Odisha from time to time in some of ear marked dog well, tube well, bore well. The depth of ground water for last twelve year i.e. from 2007 to 2018 during summer, rainy & winter season has been recorded by the above department at different location of Angul Forest Division (in Angul, Banarapal, Chhendipada, Kaniha & Talcher Block) shown in table 5.4.1. This data will be helpful for allotting the area for plantation and for the purpose like watershed management.

Table no. 5.4.1**GROUND WATER RESOURCES ANGUL DIVISION**

Sl. No.	District	Block	Dynamic GW Resources (HM)	GW Draft (HM)				Stage of GW Development (%)
				Irrigation Use	Domestic Use	Industrial Use	Total Uses	
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1	Angul	*Angul*	6220	1618	454	23	2095	33.68
2	Angul	Athamallik	5990	1069	256		1325	22.12
3	Angul	*Banarpal*	7728	2132	487	62	2681	34.69
4	Angul	*Chhendipada*	6377	2290	366	492	3148	49.36
5	Angul	Kaniha	6033	2510	283	56	2849	47.22
6	Angul	Kishorenagar	4348	975	226	131	1332	30.63
7	Angul	Pallahara	6468	1400	280		1680	25.97
8	Angul	Talcher	2913	939	563	21	1523	52.28
		District Total	*46077*	*12933*	*2915*	*785*	*16633*	*36.10*

5.5 Status of aquifers

Aquifers may occur at various depths. Those closer to the surface are not only more likely to be used for water supply and irrigation, but are also more likely to be topped up by the local rainfall.

5.5.1 In the recent years emphasis has been given for irrigation. A few irrigation projects have come up in the territory of the Division, details of which are given below:

5.5.2 Rengali Multipurpose Project (Major Irrigation Project**):** Rengali multi purpose project has been constructed for the purpose of power generation, flood control and irrigation facilities. The main component of the project is a masonry gravity dam of 1040 Mt. length, with a maximum height of 75M across river Brahmani near village Rengali in Angul District. The live storage capacity of the reservoir at Full Reservior Level (FRL) is 3412 million cubic meters and its water-spread area at Maximum Water Level (MWL) is 414.08 sq. km. There is a dam foot powerhouse with installation capacity of 250 MW, 5 units of 50 M.W. each. The discharge from each unit varies from 140 cusecs to 170 cusecs. Through reservoir, recurring flood havoc in Dhenkanal, Jajpur & Kendrapara Districts has been redressed significantly. The over all cost of the dam and powerhouse was Rs.200 crores approximately.

5.5.3**Samal Barrage**:In stage-II construction of Rengali multipurpose Project, a barrage has been constructed at Samal. The water released from the Rengali powerhouse is picked up in the Barrage at about 35 km. down stream of the dam to provide Industrial water use and extend irrigation facilities on either bank of the river in an area of 3,36,400 ha. lying in Angul, Dhenkanal, Cuttack, Jajpur & Keonjhar districts.The length of the barrage is 533.40 m having two head regulators on either side having discharge capacities of 270.00 cusecs & 140.37 cusecs respectively. The cost of construction of the barrage proper was Rs. 60.00 crores. The canal net works are under construction.

5.5.4 Derjang Irrigation Project (Medium Irrigation Project): The Derjang Irrigation Project is a reservoir scheme constructed across river Ningara & Matalia near village Majhika in Angul Block. The catchment area is 399 sq.km at reservoir. The main canal is 13.19 km. having 33 nos. of minors & sub-minors. This project is having Culturable Cultivable Area (CCA) of 7392 ha. in Kharif including recent extension ayacut of 8 nos. of minors executed under National Bank of Agricultural & Rural Development (NABARD) assistance {Rural Infrastructure Development Fund (RIDF – I)}.

Previously the canals were unlined earthen canals. So after constant use it could not supply water to its full capacity. Hence in the year 1995-96, the project was included under Water Resources Consolidation Project (WRCP) to achieve its full capacity at an estimated cost of Rs. 352.70 lakhs & the work was completed in the year 2002-03.

Farmers are being involved in operation & maintenance of the canal system, through Water Users Associations (WUA), known as Pani Panchayats. The entire command area has been divided into 17 chakas. One WUA has been formed in each chaka. 13 chakas have been handed over to 13 no. of WUAs. The remaining area will be handed over to 4 WUAs soon. The WUAs have been federated into an Apex Committee.

The prevailing cropping pattern as decided in consultation with the local farmers, Department of Agriculture has been engaged to determine the crop water requirement of the project for different months during khariff water supply & accordingly a detailed O & M Plan of the canal system is worked-out to guide the Pani Panchayats for smooth operation & management of the canal system.

At present the Pani Panchayats are provided a grant-in-aid of Rs. 35/- per ha. for maintenance of the canal system which is likely to be increase to Rs.100/- per ha. Government of Orissa has issued guidelines for utilisation of O & M grant & its distribution.

5.5.5 Aunli Irrigation Project: The Aunli Irrigation Project is a diversion weir scheme constructed across river Aunli near village Kanaloi in Chhendipada Block of Angul District. The catchment area is 150 sq.km at weir site. The major component of this system consists of diversion weir of 56 mtr. length with automatic falling shutters of 0.9 mtr. height. The main canal is 4.656 km. having 8 Nos. of Minors & Sub-Minors. This project was completed in 1987-88 at a cost of Rs.299.87 lakhs. This project is having C.C.A. of 1746 ha. in Kharif & 300 ha. in Rabi.

Previously the canals were unlined earthen canals passing over sandy zone. So after constant use & due to lack of proper maintenance, it could not supply water to its full capacity. Hence in the year 1995-96, the project was included under Water Resources Consolidation Project (WRCP) to achieve its full capacity at an estimated cost of Rs. 310.38 lakhs. Farmers organisation and turnover programme was introduced in Aunli Irrigation Project Area during March 1998 as a Pilot Scheme. The purpose of the scheme is for optimum use and equitable distribution of Irrigation water through participation of farmers in operation and maintenance of canals as well as water management. For this purpose four nos. WUAs have been formed in the command area. The canal system under SIFT component of Orissa Water Resources Consolidation Project was handed over to the farmers for its operation & maintenance as per FOT guidelines. An APEX Committee has been formed to facilitate the activities of Pani Panchayat. One Pani Panchayat has been formed with only women farmers as members. The success story of these Pani Panchayats has received good attention. Farmers from all parts of the state visit this project to get a feel of the success of the Pani Panchayats.

The prevailing cropping pattern as decided in consultation with the local farmers, Department of Agriculture has been engaged to determine the crop water requirement of the project for different months during agricultural season & accordingly a detailed O & M Plan of the canal system is worked-out to guide the Pani Panchayats for smooth operation & management of the canal system.

Periodic monitoring of river flow pattern with reference to annual rainfall/duration of flow may be provided to show the status of improvements, if any.

5.5.6 Conclusion & Recommendation

Increase in Population, Industrialization & Rapid Urbanization createsstress onWater Resources

• Ground water being ubiquitous and easily accessible is often the mostpreferred source of water for domestic, irrigation and industrial use

• If this trend of ground water abstraction remains uncontrolled, a plethoraof problems is likely to crop up – Decline in Water level, Quality relatedissues,mitigating extreme climatic events and natural hazards

• Planning for judicious use is necessary to optimize our water usage

• Water use efficiency, conjunctive use of surface and ground water, aquifermapping and management, water conservation, rain water harvesting andartificial recharge to ground water are some of the cost effective and easymethods for the same

• Ultimate aim is not only for sustainable development but sustainablemanagement of all natural resources

CHAPTER - 6

6 Maintenance and enhancement of forest resource productivity

6.1 Growing stock of wood

The growing stock of a forest depends upon different factors like the geological factor, biotic factor, climatic factor, position of ground water table, mineral content of soil and biomass on a particular patch. If all above factors are febarable to a particular patch of forest the rate of the growing stock shall be enhanced. In adverse factors the forest can be detoriateded. Angul Forest Division does not have any such experimentation wing to assess the growing rate – growing stock of forest crop. However on the basis of survey by the Forest Survey of India taking to base year 2015 forest cover as type of forest cover of this division is changed in comparison to last 2 years i.e. on 2017 as reported by the FSI is given in table. 6.1.1

Type of Forest Cover	FC Data – 2015 Data Area in ha.	FC Data – 2017 Data Area in ha.	Forest Cover Change between 2015 and 2017
Very Dense Forest	5123.61	5127.57	3.96
Moderate Dense Forest	37220.16	37220.92	-81.24
Open Forest	42503.67	44410.56	1906.90
Scrub Forest	4134.73	3199.10	-935.62

6.1.1 Specific composition and the structure

According to locality and environmental factors the vegetation characteristics and composition differ considerably in most the forest blocks. High proportion of Sal with a good number ofpure patches of sal occur in Similipathara RF, Bulajhar RF, Similisahi, Kosala RF, Kuio RF, Kauchiakhol RF, Pathakhaman RF, Kandhal RF, Gohiradanda RF, Putagadia RF possessing mostly pole and above crop.

In Kanloi RF, Nuakheta RF, Balanga RF, Antulia Tabeda RF, Nialulodhjharai Sapakata RF, Phuljhari RF, Katada RF, Chhendipada RF, Kankurpal RF, Badakathia RF, Kiajhar RF, Dhankoili RF. The proportion of Sal is less in compression of the above mentioned forest blocks.

In the rest of forest blocks the crop is mostly miscellaneous it is due to these forest block are close to village area where bio-tech interference is common and repeated fire and grazing crushing depletion of Sal crop in the place miscellaneous crop arising as per locality factors.

6.2 Growing stock of bamboo

The Bamboo Crop mainly comprises of Salia (Dendrocalamus Strictus) species though some Daba Baunsha (Bambusha arundinacea) is occurring along with nallah and perennial streams. The area under bamboo and its quality has deteriorated during previous plan period due to unregulated removals by the local people from many felling series coupled with fire, and grazing.

6.2.1 Quality Class of Bamboo

Unlike the quality class of the Sal, the bamboo have been classified into three quality classes as per the culm height as shown in **Table No.6.1.2**.

Table No.6.1.2 Quality Class of Bamboo

Quality Class	**Height of Bamboo culm in Metres.**
Quality Class – I	Culm height 9 Mtrs. and above.
Quality Class – II	Culm height between 6 Mt. To 9 Mt.
Quality Class – III	Culm height less than 6 Mts.

6.2.2 Enumeration of Bamboo Clumps has been taken up in sample point inventory. Based on these data the number of bamboo clumps per ha. is determined with average number of culms per clump. Effort has been made to estimate the growing stock of the bamboo. For this it is necessary to first calculate the total number of clumps in a unit area (i.e. per Ha.), this when multiplied by the total bamboo producing area of the Division gives the total nos. of clump in entire Division. Similarly when total nos. of culms multiplied by the average number of culms per clump gives the total numbers of culms in the Division.

Total bamboo bearing area of Angul Division in Ha.	6513.561
Average no. of clumps per Ha.	78
Average no. of culms per clump	22
Total no. of clumps in Bamboo area of Division	508058
Total no. of culms in bamboo area of Division	11177276
Average height of culm in mtrs.	7.5
Total Sale Unit of Bamboo in Division.	41816 SU

6.3 Increment in volume ofidentified timber species

Mean annual increment (MAI) of tree species is maintained orincreased with respect to base year.

6.4 Efforts towardsenhancement of forestproductivity throughquality plantationactivities

Details to be given based on survey and assessment of areas under theplantation. About 10% of the total forest area may be brought underproduction forestry by raising quality plantation, however no forestland or any portion thereof can be cleared of trees which have grownnaturally in that land or portion, for the purpose of using it for afforestation.

6.5 Carbon Stock

The details carbon stock mentioned in chapters 12.

6.6 Carbon sequestration andmitigation

The details carbon stock mentioned in chapters 12.

6.6.1Rapid climate change has started since 20 years.

Rapid climate change and global warming are major issues for future forests and a key theme in science and policy development at national and international levels

The major culprit is thought to be fossil fuel burning, which is releasing increasing amounts of carbon dioxide in the atmosphere. Carbon dioxide is the major one of the greenhouse gases believed to be precipitating global warming. Carbon releases from land-use change may also contribute to increasing atmospheric carbon, e.g., through carbon releases associated with the conversion of forestland to cropland. However, land-use changes are generally believed to be a secondary source of net carbon being releasedin to the atmosphere (Bolin et al. 1996).

The evidence today indicates that forests are declining in the tropics. There are a number of ways to address the problem of increasing atmospheric carbon. One of these is through forestry and forest management. It is estimated that over the last 10,000 years, 20–40% of ecosystem biomass has been lost as a result of human interventions. The potentials of forestry are intriguing. Although sequestration through forestry does have limitations, it is generally agreed that large amounts of carbon could be sequestered utilizing existing technology. The problem of increasing atmospheric carbon dioxide can be addressed a number of ways. One of these is forestry and forest management. A major focus is the means by which forests and forest management can contribute to the sequestration of carbon. The term "carbon sequestration" is used to describe both natural and deliberate processes by which CO_2 is either removed from the atmosphere or diverted from emission sources and stored in the ocean, terrestrial environments (vegetation, soils, and sediments), and geologic formations.

CHAPTER - 7

7 Optimization of forest resource utilization

7.1 Recorded removal of timber

The improvement working circle had been formed in the last working plan over an area of 26605.199 ha. with an objective to further improve the growing stock. In fact, the forest blocks cover under the improvement working circle are mostly Sal mixed and miscellaneous forests which are un-even aged mostly pole crop. No feeling operation was prescribed expect removal of dead and up-rooted trees from the forest blocks. But it is observed from field verification at the time of silvuculture operation that very less number of trees dead and uprooted. On conservation of biodiversity and habitat improvement of wild life these dead and uprooted trees could not felled and salvaged. Only small quantities of timber was produced through the seizures. The details of the timber production are given in table.

Table No. 7.1 offence cases booked in Angul Division during last plan period

Year	No. of Cases			Timber in cum	
	OR Cases	UD Cases	Total		Poles in nos.
2007-08	821	266	1087	84.7877	1985
2008-09	745	237	982	97.4379	2068
2009-10	654	253	907	101.8992	3030
2010-11	627	240	867	79.2315	1935
2011-12	348	221	569	146.149	1493
2012-13	1121	208	1329	85.647	4244
2013-14	473	128	601	48.8745	1840
2014-15	419	135	554	54.7917	2430
2015-16	450	104	554	43.3278	2411
2016-17	331	134	465	25.4024	1665
2017-18	415	131	553	56.6537	3122
2018-19	396	88	444	50.0181	3169
2019-20	269	117	386	53.0671	1765
2020-21	119	103	222	130.9212	936
Total	**7188**	**2365**	**9520**	**1058.2088**	**32093**

7.1.1Salvaged

Severe cyclonic strom like phailin was occurred during Oct, 2013. The frequency of cyclone (Phailin) was 170 Kms per hour during Nov, 2014 another severe cyclonic strom was observe with frequency of 130 Kms per hour. The extent of cyclonic damage during 2013 to 2014 is furnished is table.

Year	Timber Delivery to OFDC Ltd.		Rolyalty paid by OFDC Ltd. (in Rs.)
	Timber	Pole	
2013-14 Phailin Salvage Timber	193.1139 cum	7 nos	1467600
2014-15	35.8834 cum	324 nos	137387
2014-15 Hudhud salvage Timber	37.4646 cum	33 nos	286048

7.2 Recorded removal of fuelwood

The source of fuel wood are forest, agriculture works, cooking coal etc of these forest is the major source of fire wood used an fuel. Information based on socio-economic survey and assessment on economic survey, the demand of fire wood is more in forest fringe villages in comparison to urban area and semi urban area. During last plan period on implementation of JFM policy. 376 nos. of Vana Surakshya Samitee have been constituted over an area of 51021.862 ha. forest area. On proactively protection by the VSS the assigned forest area, the illicitly felling has been minimized. Now consumptionof fuel wood has been reduced on installation of LPG through Ujala Yojana. In urban area and semi urban area 80% of inhabitants are using LPG and rest 20% people use coal an fuel. People need fuel wood on the time of funeral ceremony of death cases only which meet from forest depots. In forest fringe villages the usufructs obtained in silvicultural operation equitably distributed among the VSS members by the Executive Committee and fallen lops, tops and fallen twigs are also distributed among the VSS members equitably. But no records maintained by the VSS. The details of the timber production are given in table.

Year	Firewood obtained & delivered to OFDC Ltd.
2006-07	5.7
2007-08	10
2008-09	6.5
2009-10	0.61
2010-11	28
2011-12	23.01
2012-13	2.26
2013-14	303.796
2014-15	161.12
2015-16	434.07
2016-17	22.12
2017-18	0.35
2018-19	0.19
2019-20	63.085
2020-21	269.72

7.3Recorded removal ofbamboo/ rattans

7.3.1Assessment of bamboo/rattans

The bamboo crop mainly comprises of salia species though some daba is occurring along nallah and perennial streams. The area under bamboo and its quality has been deteriorated during the previous plan period. Unsystematic and indiscriminate felling, unregulated removals by the local tenants from many felling series, coupled with fire and grazing.

7.3.2Mechanism for generatingquantified data on their removal

The stock of bamboo has been taken up through enumeration during sample point enumeration in the field. The Bamboo clumps available inside the main plot have been enumerated simontionsly with the number of clump like 1st year, 2nd year, 3rd year and 4th year etc have been recorded from which the quality class of bamboo can be determinate.

7.3.2.1 Removal of Bamboo will be regulated entirely by area. However, for calculating the yield, the bamboo felling (cutting) rules communicated vide letter no: 13/FCWP/OS-Gen dt.24th Dec'1990 of the Government of India, Ministry of Environment & Forests are to be followed. As per the said rules, culms up to one year of age (Karadi) and the bamboo culms over one year but less than two years of age will not be cut under any circumstances. Such more than one year old culms and the culms which are older than two years but less than three years of age are also to be retained in the clump and their number shall not be less than the number of Karadis. In addition, the minimum culms per clump to be retained after cutting shall not be less than 15 (fifteen) culms for Clump Quality-II and 10 (ten) culms for clump quality-III.

7.3.2.2 Keeping the aforesaid conditions, the yield estimation has been done for each bamboo felling series and annual bamboo coupes. The bamboo enumeration data has been taken into account for clump and culm analysis to arrive at number of culms available for harvest per clump. Further, as revealed from above tabular statement at Table No: 6.3, enumerated clumps are either of quality II or quality III; thus average height of culms is taken as 7.5 meters and 3.0 meters respectively for the two quality clumps for the purpose of yield estimation. Since one Sale Unit (SU) is equal to 2400 RMT or one MT, the formula used for yield calculation is as follows:-

Yield of Felling Series (or Annual Coupe) = Area of Felling Series (or Annual Coupe)

X Number of Clumps/hectare

X Number of harvestable Culms/clump

X (Average culm height/2400)

7.4 Recorded removal oflocally important NTFPsincluding MAPs

7.4.1 Assessment of demand and supply

The forests of Angul division contain a large number of species which yield a variety of non-timber forest products (NTFP) e.g. fruits, seeds, tubers, barks, leaves, roots and gums. The NTFPs can fulfill the needs of several people without destroying the resource. For most of the rural households, NTFP provides essential food and nutrition; medicine, fodder, fuel, thatch and construction materials; mulch and non-farm incomes. These products are particularly important in tiding over the 'hunger periods' in the agricultural cycle and in smoothing out other seasonal fluctuations. The people living in and around the forests rely on NTFPs as a crucial component of their livelihood security. They usually collect these products for their own consumption as well as for sale to add to their earnings. For the rural population of the division particularly living on the forest fringe, collection and marketing of NTFPs can provide employment during pinch period of agricultural cycle and provide a buffer against risks and household emergencies

In the last few years, the demand for different varieties of NTFPs as a raw material for many industries like herbal cosmetics, dyes, ayurvedic drugs etc has increased many fold. It has been estimated that the world trade of these herbal material is at more than 60 billion dollars per year. This huge demand for a few varieties of NTFPs has given an impetus to greater destructive exploitation – especially of already depleting and endangered species. In many cases, methods adopted by the collectors are absolutely destructive, so much so that many species which have their roots or under ground propagative portion like rhizomes, bulbs, tubers etc. extracted by the collectors, are facing a threat of extinction. Even once abundant species like Amla (Emblica officinalis), Char (Buchnania lanzan), etc are facing threat due to over-exploitation as vigorously growing middle aged trees are hacked down to pluck unripe fruits before the fruits fall on their own. Harvesting commercial quantities of fruits and seeds can affect not only the regeneration of species, but also the genetic composition and quality of the resource, especially if only inferior fruits and seeds are left to regenerate. Further, the greed of local communities, the middlemen, and the end users makes the situation more complex. Continued unsustainable and over-exploitation in this manner will endanger the resource itself. Overexploitation is further aggravated by excessive grazing, illegal felling of trees, frequent forest fires, invasion of weeds which in many cases is leading to loss of natural regeneration of these species in the forest.

7.4.2Sustainability and potentiality.

The non-availability of these NTFPs in large enough quantities, exploitation of the primary collectors by agents and middle men and the adulteration of the NTFP product has resulted in the increased interest in NTFPs amongst all enlightened sections of the society. This has prompted numerous initiatives aimed at promoting NTFPs use, value addition and commercialization as a means of improving the well being of rural populations and at the same time, conserving the existing forests. Keeping in view of this consideration, the Government of Orissa formulated the 'Policy on procurement and trade of Non Timber Forest Produces' during March 2000 and the 'Gram Panchayat (Minor Forest Produce) Rules'2002' which are at Appendix No: XXVI & No XXVII respectively are the steps in this direction.

7.4.2.1 Under the present scenario, special efforts are required to strike a balance between the protection of the interests of the primary gatherers and side by side the protection/conservation of the natural resources. Concerns regarding the contribution of these endangered NTFPs to the incomes of the poor people and the need to use the forest resource in a sustainable manner needs to be addressed. In-situ conservation measures are vital for conservation of the eco-system and natural habitats and maintenance and recovery of viable population of species in their natural surroundings. Ex-situ conservation measures are also vital for increasing the production of NTFPs and sustainability of the resource. This working circle attempts to address the above problems. To address the issues mentioned in the foregoing paragraphs including the felt needs to ensure long term sustenance of this varied forest resource, the Non Timber Forest Produce (Overlapping) Working Circle has been prescribed overlapping the entire working plan area of the Division.

7.5 Demand and supply oftimber and importantnon-timber forest produce

7.5.1Description of recorded removal for agricultural customs, local needs

People depend on forest for variety of forest produce. Rural community requires bamboo, poles, fuel wood and timber for agricultural implements, house construction, bullock carts, fencing etc. Most of their needs are fulfilled from forest. NTFP items like seeds, leaves, flowers, roots, bark, etc. are obtainable from forest. Also, forests are important source of food especially for tribal and rural poor. Reportedly, 60 % of non-timber forest produce is consumed as food or dietary supplement by forest dwellers. About 75% of forest dependent people supplement their food by tubers, flowers, leaves and fruits all the year round. The main species used for timber in the rural areas are Sal, Bandhan, Teak, Kurum, Asan and for poles, Arjun, Kendu, Sidha, Karada, Dhaura etc. Since majority population is rural and whole of their daily requirements comes from the forests, the damage to forest resources would have caused major impact on the livelihood. The industrialization in and around Angul has great impact on the forest of Angul Forest Division. The increasing population in urban areas also put pressure on the forests. The presences of industries like NALCO, NTPC, Jindal Steels, Bhusan Steels, etc and coal mines in the 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 forests and transported to urban localities and to outside the division are Teak, Sissoo, Bija,Sal, Gambhar, etc. Use of timber for construction of houses and furniture is also a major factor for degradation of forest.

7.5.2 Market and marketable produce

All available products from the forests of the division like timber, poles, fire-wood, bamboos, kenduleaves, sal seeds, minor minerals, and minor forest produce are marketable. In the earlier days, only some selected species of timber and poles like Sal, Bija, Sissoo,, Gambhar, Asan, Kurum,Bandhan, Kangada etc were being extracted along with bamboos. At present, there is acute shortage of timber and fire wood and the gap between supply and demand is steadily increasing. The paper mills clamour for bamboos and any species of hard wood for pulp. There is a great demand for fire wood by the local population to keep their hearths burning and for small timber for use in agriculture and house building. The khesra forests, DPFs, PRFs and ‘B’ class reserved forests which used to cater needs of the local population have been depleted and in most cases degraded. As such, people have to depend on the reserved forests.

Most of the requirements of the local people for timber, firewood etc are met from the forest. Angul and Talcher are the main markets for forest products. Bamboo coupes are worked out by OFDC Ltd. And the raw materials are consumed by 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. Some of the NTFP items are collected by the OFDC Ltd & TDCC Ltd. Some of the minor forest produces are sold in local hats.

7.5.2.1Marketable Produces

Different marketable products of Angul Forest Division are as follows:

Timber:

Sal, Teak, Bandhan, Pia-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 trade monopoly 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. The details of the timber working are discussed in Chapter 4.

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. The details are discussed in the Chapter 4.

Bamboo:

Bamboo is one of the most gifted plants available to man kind. Its unique properties as a material of versatile utility have made it more popular since ancient times. Every part of bamboo is utilized in one way or the other. It provides basic necessities of life like fuel, food, shelter and clothing and is also a source of raw material for cottage industry. Bamboo, being a poor man's timber, is used in many ways like tender shoots as food, young Karadi 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 Cuttack, Bhubaneswar, Chowdwar and other urban areas.

7.5.2.4 Kendu leaf:

The Kendu leaves collected in this Division are marketed by the OFDC Ltd. And sold to outside parties. Kendu leaves are collected by Angul K.L. Division. There are seven K.Lranges in the jurisdiction of this division. The details of the Kendu leaf production are furnished in **Table No: 7.5.1**

Table – 7.5.1

DETAILS OF KENDU LEAVES PRODUCTION IN ANGUL DIVISION (KL Range wise in Qtl.)							
Year	Angul	Chhendipada	Purunagarh	Bajrakote	Talcher	Seepur	Annual Production
1	2	3	4	5	6	7	8
2005	1344.00	738.00	1272.00	1460.40	1510.80	1443.00	7768.20
2006	1455.00	598.20	940.80	1554.00	1147.80	1106.40	6802.20
2007	1428.60	654.00	1161.60	1546.80	1616.40	1382.40	7789.80
2008	1300.80	560.40	690.60	1248.60	1615.20	1225.20	6640.80
2009	1362.00	648.00	829.80	1500.00	1644.60	1323.60	7308.00
2010	1317.00	625.20	778.20	1412.40	1479.00	1305.00	6916.80
2011	1084.80	499.20	562.20	1299.00	1101.00	1448.80	5995.00
2012	1280.20	583.20	867.60	1455.00	1500.00	1245.60	6931.60
2013	1209.00	624.00	930.60	1719.00	1761.00	1389.00	7632.60
2014	1335.00	1354.20	0.00	1560.00	1476.00	1264.20	6989.40
2015	1377.00	1069.80	0.00	1542.00	1200.60	1145.40	6334.80
2016	923.40	653.40	0.00	1258.20	862.20	1011.00	4708.20
2017	1315.20	957.60	0.00	1419.00	955.20	1198.20	5845.20
2018	987.40	697.20	0.00	997.20	720.00	961.20	4363.00
2019	452.40	600.6	0.00	933.0	589.8	770.4	3346.20
2020	594.6	633.0	0.00	975.6	636.0	783.0	3622.20
Source: Divisional Forest Officer,Angul(KL) Division.							

Consumption of woodby wood based industries

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. Proper organization of these industries in the form of co-operatives will help in improving the condition of the artisans by removing intermediaries. It will also help in the efficient use of forest produce and minimizing the wastage. The important activities being done in the division are bamboo mat & basket making, tassar cultivation & tassar rearing, Mahua flower collection, Sal seed collection, Siali leaf & fiber collection, Honey collection, Rope making, collection of Harida, Bahada & Anla, etc. Basket and bamboo net making involve huge quantity of bamboos, but a change to sophisticated uses like making of agarbati splints, dining mats, wall hangings, door & window screens, waste paper baskets, fishing equipments, other decorative articles etc. will not only consume less bamboos, but also provide better earnings to the artisans involved. For such a change, proper training needs to be organized with the help of Indian Plywood Industries Research & Training Institute (IPIRTI), Bangalore and other pioneer institutes of the kind. The bamboos used by the artisans are one to two years old which are not being harvested as per bamboo cutting rules. Old bamboos duly soaked in water shall be supplied to artisans through OFDC Ltd. Though sabai grass is available in the forests, but rope making is not usually practiced in the division. Broom grass, Hill brooms and Kanta badhuni available in the division are not exploited. Proper organization and collection of minor forest produce like Gum, Honey-wax will also provide employment to rural poor. Oil extraction from mahua & kusum seeds can be used in soap making, oil extraction from Bantulasi seeds can be used for medicinal purposes, preparation of leaf plates from siali leaves, preparation of herbal medicines, bidi making are some of the scopes on which cottage industries may be organized.

Assessment and evolving mechanism to meet the demand

The gap between demand and supply is widening with time. This trend of widening gap has boosted the price of forest produce considerably. Bridging this increasing gap is essential not only to meet the requirement but also to arrest the price rise. One way of bridging the gap is to increase the supply which is extremely difficult rather impossible in the present context. Conservation of forests has become necessity on environment point of view and the main products of our forests which need to be considered are air, water and soil. Conservation of forests on ecological consideration is bound to reduce the supply further. Hence only alternative available is to augment the supply through large scale plantation in non-forest waste land, community land, private land, farm bunds and available land. This will help in conserving natural forests by reducing dependence.

7.5.4.1 Reducing the demand:

Though supply can be augmented to certain extent by adopting large scale social/farm forestry but it can never bridge the gap. What is essential is to reduce the demand itself. With replacing large herd of cattle with a few high yielding cattle, introducing stall feeding, adopting renewable/non-conventional energy sources, use of steel &aluminum in door & window frames and furniture, restricting use of timber in urban housing and aristocratic uses, providing suitable and cheaper substitutes for timber and fuel-wood, the demand of forest produce can be reduced in future. However, most important is the control of population growth which is directly responsible for rising demand. By reducing the demand and adopting farm forestry, a self reliant forest production system can be developed.

7.6 Import and export ofwood and wood products

The wood is required for construction of house building both rural and urban areas and used for ridge piece door frame wooden panel, doors, window leave etc. The species available for the purpose are Sal, Kasi, Bija, Asana, Kuruma, Halda, Kangada, Teak etc.in the forest of Angul Forest Division. But most of species are not harvestable stage except Teak at Antulia section of Jarapada Range. So wood and its production has gone down considerably in Angul Forest Division at present only seized timber, timber salvage from wind fallen trees are received by the OFDC Ltd. Thus the quantity and quality of wood and wood produce have reduce significantly expert of timber is nil and import of wood and wood produce is allowed in some of licensed timber depot to bridging the gap.

7.6.1 Bridging the gap:

The gap between demand and supply is widening with time. This trend of widening gap has boosted the price of forest produce considerably. Bridging this increasing gap is essential not only to meet the requirement but also to arrest the price rise. One way of bridging the gap is to increase the supply which is extremely difficult rather impossible in the present context. Conservation of forests has become necessity on environment point of view and the main products of our forests which need to be considered are air, water and soil. Conservation of forests on ecological consideration is bound to reduce the supply further. Hence only alternative available is to augment the supply through large scale plantation in non-forest waste land, community land, private land, farm bunds and available land. This will help in conserving natural forests by reducing dependence.

7.6.1.1 Reducing the demand:

Though supply can be augmented to certain extent by adopting large scale social/farm forestry but it can never bridge the gap. What is essential is to reduce the demand itself. Peoples shall be aware for use of steel & aluminium in door & window frames and furniture, restricting use of timber in urban housing and aristocratic uses, providing suitable and cheaper substitutes for timber and fuel-wood, the demand of forest produce can be reduced in future. However, most important is the control of population growth which is directly responsible for rising demand. By reducing the demand and adopting farm forestry, a self-reliant forest production system can be developed.

7.7 Import and export ofNTFPs

7.7.1 Data on import and export of NTFPs

A 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 3.25. Twenty eight 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, Gillo, Mahua seed, Basil, Kamalagundi, Kusum seeds, Palas, Chiranjibidana, Indrajaba, Marda seed, Chara seeds, Gaba, Jute seed, Landa baguli, Makhan seed, Mango kernel, Ananto, Nageswar seed, Polanga and Sheali seed. Subsequently the order was modified and the lease period was extended to 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.

Table No. 7.1 DETAILS OF NTFP ITEMS COLLECTED IN ANGUL DIVISION

Year	NTFP Item	Quantity in MT.	Royalty Realised (Rs.)
1983-84	Sal seeds	655.075	262000
1984-85	Sal seeds	146.500	60000
1985-86	Sal seeds	81.702	61276
1986-87	Sal seeds	328.037	179344
1987-88	Sal seeds	133.000	61845
1988-89	Sal seeds	14.102	10561
1989-90	Sal seeds	241.853	41140
1990-91	Sal seeds	21.923	7371

	Noxvomica	0.330	Not paid
1991-92	Sal seeds	46.015	59504
	Noxvomica	0.225	Not paid
	Sabai grass	11.000	Not paid
	Mahua flower	2690.468	Not paid
1992-93	Sal seeds	125.255	Not paid
	Nuxvomica	0.325	Not paid
	Myrabolan	0.011	Not paid
1993-94	Sal seeds	54.632	Not paid
	Nuxvomica	1.635	Not paid
	Myrabolan	0.023	Not paid
1994-95	Sal seeds	42.548	Not paid
1995-96	Sal seeds	45.125	38000
1996-97	Sal seeds	5.394	Not paid
1997-98	Sal seeds	5.658	10125
1998-99	Sal seeds	41.840	8368
1999-00	---	---	---
2000-01	Sal seeds	39.022	16875
2001-02 & 2002-03	No Collection	---	---
2002-03	---	---	---
2003-04	Sal seeds	20.425	5106
2004-05	-----	------	----
2005-06	Sal seeds	5.200	Not paid
Source: DFO,Angul			

In this division, Siali fibres are collected by DFO (KL), Angul and he pays royalty for the same. **Siali fiber collection during 2004-05 is shown at Table No 7.2**

Table No.7.2 DETAILS OF SIALI FIBER COLLECTION DURING 2005-06 TO 2015-16	
Collection Year	Quantity Collected (in Qtls.)
2005-06	60.421
2006-07	47.034
2007-08	49.641
2008-09	57.249
2009-10	69.168
2010-11	125.118
2011-12	69.318
2012-13	76.326
2013-14	69.894
2014-15	63.348
2015-16	53.448

2016-17	48.42
2017-18	48.46
2018-19	38.93
2019-20	33.46
2020-21	36.20

In March 2000 Government of Orissa announced the new NTFP policy. The orientation is changed from revenue earning to livelihood approach. The ownership of 68 MFP items has been vested with Gram Panchayats. Anyone who is interested in doing trade in NTFP has to get registered in Gram Panchayat concerned. The details of the policy are given in Appendix-VII. 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 details of these rules. The procurement price used to be fixed by the District Level Price Fixation Committee (DLPFC) up till 2000-2003.

7.8 Removal of fodder

In urban and semi-urban area the cattle population has been reduced. The people of the above area are kept cattle only for milk and practice of stall feeding as they have no forest land and sufficient Gochar land in the village or near to their village. Very few nos. of cattle going in the village agriculture field for open grazing after harvesting of crop.

The domestic animal (cow, buffalo, sheep and goat) population in 418 Forest fringe village of Angul Division is 342340. 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. 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 5 kg of fodder per day approximately. FSI investigation shows that nearly 30% of the fodder requirement is met from the forests. Buffalo consumes fodder approximately twice that of cow; sheep and goat consumes half that of the cow (FSI report, 1996). Based on the above observations, a rough calculation has been made to assess the fodder requirement and the fodder being consumed from the forest. The results are given below in Table No: 7.8.1.

Table: 3.13 ANNUAL REQUIREMENT OF FODDER

Sl. No	Livestock	Total Population	Fodder Requirement per Year (M. T.)	Fodder Obtained From Forests (M. T)
1	Cattle	187240	341713	102514
2	Buffalo	5640	20886	1066
3	Goat	129720	118370	35011
4	Sheep	16920	15440	800
	Total	339520	496409	139391

It is noticed from the table that the total fodder collected from the forests roughly comes to 139391 MT. If it is monetized, it comes to Rs. 906 lakhs (by taking minimum market price of green fodder as Rs. 650/MT). Mostly the fodder requirement is met from the Khesra Forests, Demarcated Protected Forests and also from the Reserved Forests. Some amount of fodder requirement is also met from the agricultural fields up to March and April. There is more pressure of grazing on the forest from July to November when the agricultural lands are covered under crops. It is observed from the records of the Divisional Forest Officer, Angul that no grazing fees from the year 2005-06 to 2017-18 have been realised.

7.9 Valuation of the products

7.9.1Schedule of rates

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.

The price trends of different forest timber in recent years i.e for the year from 2008-09to 2020-21 is furnished at Table No 7.9.1.

Royalty fixation Chart for The year 2008-09

Per Unite	Log	Size	Sal Pole	Teak Pole	Other Pole	Sal & Non Sal Firewood (per stack of 12'x3'x3')	Casuarinas (per Quintal)
1040	**150**	**180**	**30**	**25**	**20**	**300**	**120**

Royalty fixation Chart for The year 2009-10

Per Unite	Log	Size	Sal Pole	Teak Pole	Other Pole	Sal & Non Sal Firewood (per stack of 12'x3'x3')	Casuarinas (per Quintal)
1080	**157**	**204**	**35**	**30**	**25**	**330**	**130**

Royalty fixation Chart for The year 2010-11

Per Unite	Log	Size	Sal Pole	Teak Pole	Other Pole	Sal & Non Sal Firewood (per stack of 12'x3'x3')	Casuarinas (per Quintal)
1135	**167**	**217**	**40**	**35**	**25**	**365**	**140**

Royalty fixation Chart for The year 2011-12

Per Unite	Log	Size	Sal Pole	Teak Pole	Other Pole	Sal & Non Sal Firewood (per stack of 12'x3'x3')	Casuarinas (per Quintal)
1200	**180**	**234**	**42**	**37**	**25**	**365**	**140**

Royalty fixation Chart for The year 2012-13

Per Unite	Log	Size	Sal Pole	Teak Pole	Other Pole	Sal & Non Sal Firewood (per stack of 12'x3'x3')	Casuarinas (per Quintal)
1296	**198**	**258**	**44**	**39**	**25**	**375**	**140**

Royalty fixation Chart for The year 2013-14

Per Unite	Log	Size	Sal Pole	Teak Pole	Other Pole	Sal & Non Sal Firewood (per stack of 12'x3'x3')	Casuarinas (per Quintal)
1387	**212**	**276**	**47**	**40**	**27**	**385**	**140**

Royalty fixation Chart for The year 2014-15

Per Unite	Log	Size	Sal Pole	Teak Pole	Other Pole	Sal & Non Sal Firewood (per stack of 12'x3'x3')	Casuarinas (per Quintal)
1456	**220**	**286**	**50**	**40**	**30**	**385**	**140**

Royalty fixation Chart for The year 2015-16

Per Unite	Log	Size	Sal Pole	Teak Pole	Other Pole	Sal & Non Sal Firewood (per stack of 12'x3'x3')	Casuarinas (per Quintal)
1514	**230**	**299**	**52**	**42**	**31**	**385**	**150**

Royalty fixation Chart for The year 2016-17

Per Unite	Log	Size	Sal Pole	Teak Pole	Other Pole	Sal & Non Sal Firewood (per stack of 12'x3'x3')	Casuarinas (per Quintal)
1605	**244**	**317**	**55**	**45**	**32**	**385**	**150**

Royalty fixation Chart for The year 2017-18

Per Unite	Log	Size	Sal Pole	Teak Pole	Other Pole	Sal & Non Sal Firewood (per stack of 12'x3'x3')	Casuarinas (per Quintal)
1717	**261**	**339**	**55**	**48**	**32**	**397**	**155**

Royalty fixation Chart for The year 2018-19

Per Unite	Log	Size	Sal Pole	Teak Pole	Other Pole	Sal & Non Sal Firewood (per stack of 12'x3'x3')	Casuarinas (per Quintal)
1803	**274**	**356**	**55**	**48**	**32**	**397**	**155**

Royalty fixation Chart for The year 2019-20

Per Unite	Log	Size	Sal Pole	Teak Pole	Other Pole	Sal & Non Sal Firewood (per stack of 12'x3'x3')	Casuarinas (per Quintal)
1929	**293**	**381**	**55**	**48**	**32**	**397**	**155**

Royalty fixation Chart for The year 2020-21

Per Unite	Log	Size	Sal Pole	Teak Pole	Other Pole	Sal & Non Sal Firewood (per stack of 12'x3'x3')	Casuarinas (per Quintal)
2006	**305**	**397**	**60**	**50**	**35**	**405**	**155**

CHAPTER - 8

8 Maintenance and enhancement of social, economic, cultural and spiritual benefits

8.1 Number of JFMcommittees and area (s) protected by them

Having realized that the forests cannot be protected or managed properly without active involvement of local village communities, the State Govt. has taken various remarkable steps in this direction. First and the foremost action was promulgation of 'The Orissa Village Forest Rules, 1985', which envisage formation of Village Forest Committee (VFC) in each village for protection of the village forests. The members of the VFC were required to maintain the boundaries, protect the forests and plantations from fire, illicit felling, and theft and manage the forests by drawing a management plan. In turn, they were allowed to remove forest produce like fire wood and small timber, on realisation of a nominal cost.

The State Government vide Resolution No.17240 Dt.1.8.1988 and No 23638 dt.13.10.1988 introduced the concept of Joint Forest Management in the state for the protection of Reserved Forest by the communities. {**Appendix – IX& X.}**. Subsequently another resolution was issued by Government vide No.29825 dt.11.12.1990, which envisages protection of ReservedForests and ProtectedForests by the community and enjoy the usufructs{**Appendix –XI}**. They were granted certain concessions as per Section-24 of Orissa Forest Act 1972 to meet their bonafide requirement of firewood and small timber.

In Angul Forest Division 28 Village Forest Protection Committees (VFPC) were constituted pursuant to the 1988 resolution. They were formed both in Reserved and KhesraForests. All these VFPCs were notified in December 1990. Allotment of village forests to villagers for protection is not uniform, in some places like TentalkholDurgapurRange) and Kharianali (TalcherRange), a small patch of forest land of 24.28 ha each have been allocated while in other places like Karnapur (TalcherRange) and Badjora (TalcherRange), forest land of 545.13 ha each have been allocated. The list of VFPCS is given at **Appendix – XII**.

The concept of Participatory Forest Management, a modified form of the JFM, was introduced vide Govt. resolution No.16700 dt.3.7.1993 and No 22180 dt.30.09.1996. Emphasis was laid on formation of Van Samrakshyana Samiti (VSS) in each village adjoining the degraded reserved and protected forests. The VSS, with two adult member from each household, were required to protect and manage the forests through JFM. In turn, they were granted usufruct rights for collecting royalty-free small timber and firewood, along with 100% of the intermittent yield, and 50% of the final harvest. The details of the resolution are given in **Appendix – XIII &XIV**.

341 (Three Hundred Forty one) V.S.S have been constituted in the division as on 31.03.2015 pursuant to the 1996 resolutionis given **in Appendix - XV**. The range wise distribution of V.S.S is given in **Appendix – XVIII**. The village communities are protecting the reserved forests as well as khesra forest. In total, the Van Samrakshana Samities are protecting forest area of 47416.323 ha. Range-wise abstract of VSS formation is furnished below:

Range-wise Abstract of VSS Formation		
Name of the Range	**No of VSS formed**	**Total Area Assigned to VSS in ha.**
1	2	3
Angul	70	11008.556
Bantala	21	2784.320
Chhendipada	56	8255.926
Jarapada	50	8328.660
Kaniha	85	10353.977
Talcher	59	6684.884
Total	341	47416.323

8.2 Status of empowerment of JFMCs

8.2.1 Joint Forest Management Perspectives

The Joint Forest Management (JFM) in Odisha is implemented with objectives of forest restoration, promotion of sustainable management of forest by strengthening participatory forest management and improvement of livelihood of forest dependent community. Various participatory forest management programme has been supported through JFM communities in the field towards strengthening and development of the village community through forest development agency under titled of National Afforestation Programme (NAP), Support to VSS, Odisha Forestry Sector Development Project (OFSDP) and Ama Jangala Yojana (AJY).

8.2.1.1 FDA: - The scheme titled National Afforastation Programme (NAP) has been formulated by the merge of four 9th Plan Centrally sponsored Afforestation Scheme of the Ministry of Environment and Forests. In this project there is a scope for 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 scheme is implemented in the participatory mode by involving two tire set up namely the Forest Development Agency (FDAs) and Joint Forest Management Committees (JFMC). The FDA is a federated body of all the VSS of the division with District Level Officers and Joint Forest Management Committee is the village level body village is reckoned as a unit of planting and implementation of all activities under the Scheme is conceptualized at the village level with empowering the VSS members on participating in the decision making process.

In this division 100 nos. of VSS have included under FDA over an area of 11864.207 ha. Out of 11864.207 assigned area 4735 ha. was treated in ANR and AR. The list of VSS included under FDA

8.2.1.2Support to VSS: - It is a Govt. Scheme is implemented under Social Forestry head and Farm Forestry sub head. The State Forest & Environment Department during 2007-08. The scheme envisage ambitious with strengthening and empowerment of the VSS with financial support. In the division 10 nos. of VSS have included under support to VSS over an assigned area of 1163.49 ha. out of total assigned area 400 ha. has been treated in ANR and AR. The list of VSS included under Support to VSS

8.2.1.3Odisha Forestry Sector Development Project (OFSDP) : The Odisha Forestry Sector Development Project (OFSDP) project funded by Japan International Co-operation Agency (JICA) is the first major externally aided forestry project in the State of Odisha with aims at Restoration of degraded forests and livelihood promotion of the resident community by promoting sustainable forest managements and community / tribal development, with larger goals of improving environment and alleviating poverty. With this overall objective, the basic approach is:

a. To protect the existing dense natural forests, with their biodiversity.
b. To restore the vigor of natural regeneration through appropriate treatment
c. To improve crown density of degraded forests, through reforestation and afforestation.
d. To promote alternative livelihood options to reduce dependence on the forests.
e. To enhance the capacity of stakeholders, for sustainable forest management and technological up-gradation in forestry.

The total duration of project was 7 years starting from 2006-07 to 2012-13 and extended 2 years i.e 2013-14 & 2014-15.

In this division 206 nos. of VSS have included under OFSDP over an area of 30541.733 ha. Out of total assigned area 15429 ha. has been treated in ANR and AR. The list of VSS included under OFSDP

8.2.1.4Ama Jangala Yojana (AJY): -The AJY Scheme aims to achieve sustainable forest management in the project area through forest restoration initiative, along with providing income generating and livelihood opportunities to the forest dependent communities, so that the pressure on adjoining forests in relieved / reduced. The main project objectives of AJY Scheme are listed below:

1. To conserve and restore degraded forests through forest restoration initiatives.
2. To arrest further degradation of forests through participatory forest conservation and management strategy.
3. To empower forest dependent communities by building up their capacity to participate in the sustainable forest management.
4. To improve the livelihood opportunities of the forest dependent communities so as to reduce their dependence on forests.

8.2.2 Aspects related to regular meetings at the community level and representation and participation of members: -

The first meeting of General Body

The first meeting of the VSS/EDC General Body would be convened by the Secretary which would also be attended by FMU Chiefs, Forester, Forest Guard and Co-ordinator. The meeting would also be attended by Sarpanch and other representatives of other community based organization in existence, if any. Participation of Women should be ensured. In the meeting, the FMU Chief shall explain the project objectives, expected role of VSS/EDC members, executive committee, roles of project team and Co-ordinator and expected benefits to the community. This meeting would be used to take the commitment of members, Panchayat and also to assure community about the full support of the project. Project team should be prepared to answer wide variety of questions.

The data of next meeting would also be discussed and announced during this meeting.

8.2.2.1 Subsequent meeting of General Body:

The GB meeting of VSS /EDC shall take place at least once in every six months. However, for the first six month it can be held bimonthly or as frequently as may be required, and then for the next one year the meetings can take place once in three months. However, this increased frequency of meetings shall be decided by the President, the Secretary, Co-ordinator in consultation with Range Officer.

The Chairperson, with an advance notice of one week, will convene the meeting the GB. He shall be careful about deciding the date and time so that maximum number of members can attend the meeting. Special care should be taken to ensure the presence of women members. The meeting would be presided by the Chairperson and in his/her absence by the Vice Chairperson. Minimum 50 percent of members will constiture the quorum out of which 10% at least should be women. However, due to some genuine reasons, if the number of members present is not 50 percent, the meeting can be reconvened with at least 40 percent of the members. However, in the next meeting the quorum would be 50 percent.

No member of the GB would have any veto power and all the decisions would be taken by consensus or majority vote.

However, if VSS/EDC feels that a decision has been wrongly taken or general body intends to change the previous decision, it can be done in next meeting but in presence of members numbering more that 10% of the number present on previous occasion.

A decision in GB meeting cannot be changed in EC meeting and it will be deemed to have been approved by the EC.

8.2.2.2 Meeting of Executive Committee 9EC)

i. EC would meet as often as possible and necessary, but not less than once in two months.

ii. The meeting will be presided over by the Chairperson and in his absence by the Vice- Chairperson or any body authorized by the Range Officer.

iii. The quorum for any meeting of the EC shall be 50% of its membership, out of which at least one - third shall be women.

8.2.2.3 Special Meetings

Under special circumstances, GB meeting can be convened as and when so required. In this case at least one third of members have to request the chairperson in writing. For such meetings, at least 3 days, notice indicating the purpose has to be communicated to all. In such meeting presence of Chairperson / Vice Chairperson, Secretary, and NGO representative would be must and quorum for such special meetings would be 50 percent of total members. The decision in such meetings shall be taken by a minimum of 2/3rd members of VSS/EDC/EDC.

8.2.2.4 Record of Meetings

The proceedings of all meetings of VSS/EDC shall be recorded in Odia and maintained by the Secretary. All decisions taken in such meetings shall be recorded in form of "resolutions" duly signed by the Chairperson and the Secretary (Form2.6). A copy of the proceedings would be either pasted in a register or preserved in a guard file. All the resolutions passed by the VSS/EDC GB in a financial year are to be given running serial numbers. A copy of the proceedings is to be forwarded to the GP and the Range Officer and the Divisional Forest Officer. The Secretary shall be responsible for communicating the decisions in the form and language so that villagers understand it clearly. If the resolution requires specific activities to be under taken by specific individual members, the Secretary will inform the same to the concerned person(s).

The forthcoming EC will be elected in the last meeting of the GB convened (quorum would be 50 percent) one month before the end the term of the EC. It shall be binding on the part of the Chairperson to convene this meeting at least one month before the expiry of the term of the EC. In case the EC is not re-constituted as above, the VSS/EDC will be deemed to have become dysfunctional and the VSS/EDC account will remain inoperative during this period. The Range Officer will take immediate steps for reconstitution of the EC.

8.2.2.5 Project Imperative

Community Empowerments is critical for achieving the aim of sustainable forest management VSS being the community level institution needs strengthening for taking up development activities.

8.2.2.6 Process Adopted.

Transferring decision making to the community through adequate sensitization, capacity building and financial support for activities relating to forest & village development. Main Processes adopted were –

i. Discussions and brainstorming on the roles and responsibilities to be transferred / retained, a new set of administrative procedures that are acceptable within the existing policy framework

ii. Drafting of manuals and guidelines on the VSS procedures.

iii. Organizing orientations and training programs for the field staff.

iv. Regular monitoring on whether the procedures were followed or not.
v. Necessary mid – course corrections.

8.2.2.7Observation

i. Opening a VSS bank account and transferring the project fund to the account gave a sense of ownership of the project to the VSS and is a necessary step for community empowerment.
ii. Details of released fund (detail budget heads, unit rates and total cost, quantities of work, etc.) need to be informed properly to VSS for proper use.
iii. All fund withdrawal and expenditure must be approved by all VSS Executive Committee members and reported to General Body of VSS regularly. Such approval must be recorded in a VSS resolution book.

8.3 Labour welfare

The labour welfare states that anything done for comfort and improvement intellectual and social of the employee over and above the wage paid. It is a motivating force towards every labour and for those interested in it.

In Angul Forest Division the labours are engaged in forestry intervention work are purely temporary and daily wage basis. As per provision 1% of total estimate cost is deposited to Odisha Labour welfare fund every year. Besides above the labour which are engaged as Anti-smuggling squad, elephant depredation squad, elephant tracker are provided with musquioto, rainy coat, jacket, hunter shoes, stick, caps etc. and the fire watchers engaged seasonally are provided water bottle, shoes, fire prof gloves etc.. The labour engaged in forestry intervention works should be supplied drinking water and fast aid during the time of forest operation.

8.4 Use of indigenousknowledge

Micro plan is a guiding document for management of forest areas assigned the community under joint forest management (JFM) moved it is generally developed through participatory rural appraisal keeping in view of the availability of resources in any of scheme under which they are to be implemented. Hence, a micro plan aim at keeping a holistic view on availability of resources and sustainability use of these resources by the communities which depend on them during preparation of a plan more emphasis shall be given to the user group of a community and taking periodization of their indigenous knowledge in both preparation and implementation time for its sustainability.

8.5 Extent of cultural/ sacredgroves

Nature worship is an integral part of human society. Going back to historic time period, the tradition was quite evident in every continent as represented in the culture, religion and social norms of traditional societies. Nature worship has various forms, divinity could be assigned to any place or natural elements (eg. stone, rock, mountain, river, jungle etc.) or plant / animals depends on cultural and religious practices of a society. These practices were mostly viewed through socio-religious and anthropological aspects of the societies by the sociologists / anthropologists. The resurgence of worldwide interest in nature worship has increased manifold nowadays mainly due to the realization of importance of these community based practices in nature and natural resource conservation.

Sacred Groves, one form of nature worship, are considered as "Sacred Natural Sites" as per the definition provided by IUCN1. In common term, groves are the relic forest patches preserved in the name of religion/culture as observed in many societies.

Indian sacred groves have pre-Vedic origin. Most of them are associated with indigenous / tribal communities who mostly believe in divinity of nature and natural resources, therefore distinctly different from icon oriented main stream religions. However, it is not always the religious / cultural issues but some underlying practical experiences may play major role in establishment of the tradition. The expansion of agriculture and human settlement destroyed vast tracts of forest land which resulted into gradual wash out of fertile top soil, depletion of water resources and loss of local biodiversity which affected their livelihood to great extent. These adverse consequences lead them to realize the importance of forest ecosystem in soil and water conservation as well as livelihood security which ultimately manifested in the form of protection of remaining forest patches under various socio-religious norms.

The importance of sacred grove in nature conservation has been increased manifold in recent time especially after the declaration of Convention on Biological Diversity (CBD). Community based conservation initiatives are one of the prime agendas for CBD for which sacred grove tradition can be portrayed as role model. The importance of sacred groves in socio-religious life as well as livelihood security has been felt by the indigenous communities from time immemorial which are actually substantiated by numerous local customs, folk lore, social and religious taboos throughout India. However, the gap between these traditional knowledge and scientific understanding related to environmental and ecological importance of the groves still remains wider.

In odisha mostly in tribal districts many sacred grove exist and worshiped by the tribal's in belief that nature/tree are the goddess which protect their communities and help in their livelihood.

Details of sacred groves identified and management plan has been prepared as per site condition and discussion with the community for implementation.

Name of the Range	Name of the Village/ Community	Name of the Site	Name of the deity	Year of implementation.
Angul	Karatapata	Bhudhitakurani Pidha	Maa Bhudhithakurani	2015-16
	Manikajodi	Thakurani Madap	Dalaki	2015-16
	Badajharana	Mangala Pitha	Maa Mangala	2015-16
	Gurudhi	Thakurani Pitha	Maa Budhi	2015-16
Bantala	Labangi	Tikadei Thakurani Pidha	Tikadei	2015-16
	Madhupur	Bhaghuapata	Budhithakurani	2015-16
	Saruali	Chuleswari Thakurani Mandap	Chuleswari	2015-16
	Karabira	Karabira Thakurani	Maa Budhi	2015-16

		Mandap		
Chhendipada	Badaberana	Kuaondei pidha	Kuaondei	2015-16
	Languli	Debabhuin	Maa Budhi	2015-16
	Banaradiha	Banaradiha	Maa Tareni	2015-16
	Chakundapal	Chakundapal Pidha	Kalapata	2015-16
Jarapada	Balipata	Kundheswari Pitha	Maa Kundheswari	2015-16
	Dahimal	Girigobardhan Pitha	Krishna	2015-16
	Roadsigha	Bankamundi Pitha	Bankamundi	2015-16
	Jereng Dehurysahi	Jereng Budhipahad	Jangeleswari/ Banadurga	2015-16
Kaniha	Atabira	Atabira Pitha	Desa Oli	2015-16
	Phuljhari	Phuljhari Mundasahi	Desa Oli	2015-16
	Phuljhari	Phuljhari Merupidha	Maa Kali	2015-16
	Hanumanpur	Hamumanpur Mundasahi	Desa Oli	2015-16
Angul	Krushnachakra garh	Brahmanidebi Pitha	Brahmanidei	2016-17
	Karaptapata	Karatapata	Maa Bhudi Thakurani	2016-17
	Hinsirida	Hinsirida	Maa Grameswari	2016-17
	Manikjodi	Manikjodi	Dhalakithakurani	2016-17
Bantala	Hidising	Grameswari Pitha	Maa Kalapata	2016-17
	Kantamegha	Thakurani Mandap	Patharagarh	2016-17
	Nuagoan	Nuagoan	Dalkhai	2016-17
Chhendipada	Similipal	Purahiapat	Banadurga	2016-17
	Jaltap	Thakurani Pitha	Grameswari	2016-17
	Bhaliasar	Thakurani Mandap	Bhimeswar	2016-17
Jarapada	Kandhakorada	Thakurani Pidha	Patakanda	2016-17
	Tentoloi	Baragati	Maheswari	2016-17
	Tentoloi	Jharipani	Maa Gremeswari	2016-17
	Dangadharsahi	Dhangadharsahi	Maa Grameswari	2016-17
Kaniha	Arakhadahi	Asurabandha	Desaoli	2016-17
	Balarampur	Mundasahi	Hatudesaoli	2016-17
	Kaliadama	Kollasahi	Desaoli	2016-17
	Kaliadama	Chilantipasi	Grameswari	2016-17
	Kenduberini	Chuaputi	Maa Grameswari	2016-17

There are 418 forest fringe villages in Angul Division in these village people residing to close proximity in the sacred groves area have belief that god / goddess dwell their and any kind of interface with in its premises may cause devastation of the community. So the people unarguably based on the cultural, social, religious factors consider the place as sacred groves and protect the area. In the next plan these sacred groves of the forest fringe villages shall be identified and improvement of the sacred groves shall be taken up to rapport with the forest fringe dwellers for protection of nearby forest.

8.6 Ecotourism areas andactivities

8.6.1 Ecotourism spots are the places which are environmentally, socially and culturally sound in the last plan known eco-tourism spots were identified for development of ecotourism in Angul Division. In the revised plan one spot i.e. Mandargiri is proposed for ecotourism site it is 5 Kms distance from Angul town on the way of NH-55 towards Sambalpur. Mandargiri Mountain spreads over an area of 586 ha. and has the highest peak of 420 mtrs from MSL. The hills comprises two parts by a narrow line, one part is known as Mandargiri and another as Kalima.

8.6.2 Background History of Mandargiri hill: - As per Hindu mythology during Samundra Manthan, the Gods and Demons took Mandargiri and a snake called Ananta to churn the sea. During the churning process, the sea offered many "ratnas" including elixir of line namely the "Amrut". It is believed that a drop of elixir fell on the Mandargiri and hence led to abundance of plants of medicinal importance now found on it. The mountain-top was preferred by hermits and saints as a suitable place for meditation and yoga until 1950.

According to the local residents, a shepherd named Nepal of Rantalei village was resting under a tree after a tired journey. A monk asked him to accompany him to the hilltop but the boy showed his inability because of his tiredness. Then the monk came near and touched him gently. Surprisingly the little boy got the energy to get up and accompanied him to the hilltop. The boy was worried that his sheep might stray but the herd of sheep was under the command of the monk. From that day Nepal came to the hilltop from his village, worshiped the Lord and started curing people using medicinal plants available on the hill. He became popular as Nepali Baba. Mandargiri is a treasure of Bio-diversity and scenic beauty. The hill comes alive during Siba Ratri, Nagasaptami, Ramanabami and Makarsankranti around the Mandargiri Hill many of sacred temples exists in view of culturally belief of local people.

8.7 Social customs

Prevalent social customs relevant to forests

Forest fringe dwellers depend on forest for their day to day requirements including food, shelter equipments, medicines etc. In religious belief the forests are their mother. So they protect the forest as it is their life support system. The forest fringe dwellers worship the forest, mountain, trees in different days. Some of observations are found in Angul Forest Division. They are

8.7.1. Girigobardhana Puja - During Yuga of Dwapara the lord Krishna & inhabitants of Gopapura were worshiping the mountain for good vegetation for their cattle. In belief the villagers of Kathapal, Bagedia, Patrapada, Dahimal etc are worshiping the mountain during the month Odia Bhadraba for good vegetation and good shower of rain.

8.7.2. Banadurga Puja – In most of forest fringe villagers worship the goddess Banadurga in the forest on Odia Asinya month in belief that the goddess Durga will protect their forest, agriculture field from wild animal and epidemic diseases.

8.7.3 Massive Collection of leave –Around two hundred villagers of this division during Odia Bhadrab month one day go to the mountain pick up Baragaunia RF and Mandargiri RF worshiping the goddess the return to the foot hill in put hill of foot path while returning they collect leave of herbs, shrubs, trees from right side and keep on baskets. After reaching their village the next day make smoke gathering all collected leave in one place and passes their cattle in belief that the epidemic fatua will not attack their cattle.

8.7.4 Worship to trees – In religious belief for fulfill aims the peoples worship some of trees like Bara (Ficus bengalesis), Aswastha (Ficus religiousa), Amla (Emblica officinalis), Neem (Azadirachta indica), Patuli (Stereospermum suaveolens), Sahada (Streblus aasper).

8.8 Status of compliance ofForest Right Act (FRA)

8.8.1 Status of registration of all the claims and settlement

The Forest Rights Act (FRA) came in force on 29.12.2006, & has been implemented during 2008. It provides a legislative historical Justice to the Tribal people & forest dwellers in the country those who really depend on the forest for their livelihood.

In Odisha, the process of implementation the FRA began in January 2008 with the involvement of four departments – tribal welfare, revenue, and forest and Panchayat raj – working in coordination. Three types of committee are formed at District level headed by collector, sub-divisional committee headed by sub-collector of revenue sub- division, and village level committee through palli sabhas (village assemblies).

According the panchayat raj department finalized two dates i.e on 16 and 23 March 2008 to form FRCs at the village level. The dates for holding palli sabha were published in the local media. Officials at different levels to be entrusted for implementing the FRA.

Accordingly Angul Forest Division settled 123 cases (121 individual right and 2 nos community right) over an area of 68.049ha. The details of area settled in different forest blocks are given in **Table No. – 8.8.1.**

Table No. – 8.8.1.

Range	Tahasil	Village	Forest Block	Revenue Forest	No of Person	Area in ha
Bantala	Angul	Karabira Forest Village	Nuakheta RF, Compt. No. 2		8	14.34237
Durgapur	Chhendipada	Dahimal Forest Village	Similipathar RF, Compt. No. 2		42	22.73978
Talcher	Talcher	Kandhabereni, Barapali, Joragadia		Revenue Forest	29	3.278025
Kaniha	Kaniha	Balarampur, Kuadara, Lodhajhari, Kaliadama, Goalpur		Revenue Forest	42	25.08701
Bantala	Angul	Karabira village community	Nuakheta RF Comptt. No. 2		1	0.647511

		right				
Durgapur	Chhendipada	Dahimal village community right	Similipathar RF, Compt. No. 2		1	4.783488
Total					**123**	**70.878184**

8.8.2 Genuineclaims along with list of individuals and communities to whom forestarea is allotted.

150 nos. of beneficiaries were claimed for their genuineness getting patta and possession. Out of these 123 cases has been settled in Forest Right Act. The detailed list is appended in Appendix No. XVI.

Enlistment of those locations whom physicalpossession has been handed over on ground and its position on theforest map (with lat./long.), status of forest management of areasgiven to allottees.

8.9 Other Rights andConcessions

8.9.1

i. Each Reserve forest blocks of Angul Forest Division has admitted right & concession of habitants amended at the time of notification under section 21 of Govt. of Odisha Revenue Department. Which admitted as the local bona fide tenants may take timbers of unreserved species from annual coupe on payment of prescribed fees provided the timber is for their won bona fide domestic consumption/ or for agricultural implements only.

ii. They may take fuel, fencing materials, bamboos & other materials for basket, rope & broom making on payment of prescribed fees from annual coups for tenants.

iii. They may take free the forest produce like addible fruits, leaves, creepers & grass only for their personal consumption except the fruits & produces whose collection & removal as already been restricted under rule 21 of Angul Protected Forest Rule, 1922 & to be restricted from time to time by the state Govt.

iv. No free grazing is permitted. They may be allowed to graze their cattle on payment of grazing fees, specified under rules, in the person set apart. By the forest department, subject to the no which the forest can be support and subject to such silvicultural rules and control as may be necessary in the interest of scientific management of the forest. The grazing of sheep, goat, pig, ram, lamb & such other kind of animal as the State Govt. may be notification specify is absolutely prohibited

v. All removal except from (iii) should be covered by premise of the Forest Department. The rules here to mention are the rates specified in the schedule – 1 of Angul Protected Forest Rule, 1922 as it is or amended from time to time.

vi. The Right holders shall not sell or barter timber or any forest produce obtained in exercise of the above right except in the case of bargirl tribal's and land less labourers who can sell to other local person for their personal use & they have to maintain exterior boundary annually on payment of wages. But as per rule – 21 of Angul Protected Forest Rule – 1922 amended as

Reserved Forests of Angul Sub-Division: No rights exist in the reserved forests of Angul Sub-Division but the following concessions are allowed. Tenants of Angul Sub-Division were being supplied timber and bamboos from the reserved forests of Angul Sub-Division at the concessional rate of 50% of scheduled rate for their own domestic and agricultural requirements only and not for any other purpose, if these trees were not available in the forests adjacent to their villages or in the neighboring protected forests. The tenants would not however be entitled to supply of timber of the species Sissoo, Gambhari, Piasal and Teak under this concession. The supply has been made from U.D.P.Fs only on realization of one time full schedule rate of royalty. However prior to removal, application must be made to the Divisional Forest Officer who, before, granting such produce, will satisfy himself that:

i) The produce required is not available in any of the protected forests near the applicant's village.

ii) The produce is required for the applicant's own use and not for sale or barter in or beyond the limits of Angul Sub-Division. In meeting the requirement of the tenants, no deviation from prescriptions of sanctioned working plan will be permissible. That is to say those supplies will be made from the coupes of the year and subject to yield capacity. Grazing is allowed as per provisions of "The Orissa Forest (Grazing of Cattles) Rules 1980".

8.9.2 Reserved Forest of Talcher Sub-Division; No rights have been admitted in the Reserved Forests of Talcher Sub-division but certain concessions are allowed to the cess paying Rayats of the Ex-State. These are summarized below:

i) The resident tenants of Talcher are permitted as a privilege to collect edible fruits and roots, leaves, thatch grass and creepers for their bona fide use.

ii) Grazing inside the R.Fs both 'A' Class and 'B' Class is allowed on payment of grazing fees.

iii) The tenants are allowed to remove bamboo from the R.Fs on payment of full royalty.

iv) The tenants paying nistar cess can collect their requirement of timber and firewood from the 'B' Class R.F. at half the schedule of rate from annual coupes.

Now, however, grazing will be controlled in accordance with the provisions of the Orissa Forest (grazing of cattle) rules, 1980.

8.9.3 Demarcated Protected Forests: No rights have been recorded for D.P.F. blocks of Angul Sub-Division but the following privileges as per practice continue. Privilege of free grazing were allowed to bona fide tenants as non professional grazers, in such areas as were being set apart for such purpose from time to time by Forest Department. Now it should be controlled in accordance with the provisions of the Orissa Forest (Grazing of Cattle) rules, 1980.

8.9.4 On passage of long time the demand on fuel wood, small timber & bamboo has been increased as the population increased. So also cattle population increased.

Observing crop condition of the forest the Govt. of Orissa vide letter No 10488 Dtd.11.05.1990 of FF&AH Dept. and letter No 1696 Dtd.22.01.1991 and No 4565 Dtd.07.03.1991 of Forest & Environment Department have laid down the policies and principles on the basis of which forest materials like fuel wood, small timbers and bamboos etc. are to be supplied to the public. Salient features of the said guidelines are presented below:

1. According to the Government instructions, Nistar Cess paying tenants of the ex-State areas can fell, collect and remove fuel wood and small timbers by obtaining necessary Forest Department permits, subject to the condition prescribed therein for their bona fide domestic use at the prescribed rates as per the earlier practice prevalent till 11.5.90.
   In respect of the five Districts namely Koraput, Kalahandi, Phulbani, Bolangir and Ganjam, where felling of trees has been banned, neither the Cess paying tenants nor the other public could be allowed to fell trees. But they can only collect dead and fallen trees on the strength of such Forest Department permit from the forest floors, subject to the usual supervision by the local forest staff during collection of forest materials and transit.
2. Villagers living within 10 kms. of the protected forests can be allowed to collect fallen and dead wood at the prescribed rates relevant to the areas on the basis of Forest Department permits subject to availability of such materials.
3. The scale of supply of fuel wood per tenant is to be limited to two cart loads per year per family subject to availability on “First-com-first served” basis.
4. Forest Department permits for cutting and removal of bamboos can be issued from the khesra forests in the Ex-State areas where bamboos occur in the khesra forests. But the working in such khesra forests is not undertaken by the Orissa Forest Development Corporation under the coupe system after nationalization of the bamboo trade.
   In other areas, the sale of bamboos is to be organized by the Orissa Forest Development Corporation from their depots as per Forest and Environment Department Circular of 11.5.90.
5. Supply of forest materials in case of fire accidents like house building materials, agricultural implements etc. to the tenants will be made from the depots to be opened by the Orissa Forest Development Corporation and regulated as per F.F. & A.H. Department letter No.10488, Dt.11.05.90.

However grazing of cattle has been controlled in the area where forestry interventions are taken up.

8.9.5 Rights Granted Under JFM

Rights and concessions in this Working Circle shall be regulated in accordance with the provisions of the relevant gazette notifications of the respective forest blocks and the Govt. of Orissa policy with regard to JFM resolution 2011 on latest. The existing rights and concessions are elaborated clearly mentioned in 2011 resolution appended in Appendix-XVII.

8.10 Dependency of localpeople on NTFPs

The forests of this division are rich in various non-timber forest produce (NTFP) items like Kendu leaves, Harida, Bahada, Anla, Lac, Genduli gum, Sunari bark, Kuchila, Siali leaves, Mahua flower, Sal seeds, Simul cotton, Tamarind etc. NTFPs contribute sizable portion of household income of the tribal and people living around the forests.

People collect various kinds of fruits, flowers, leaves and tubers from the forest. Most of the time, fruits and tubers from forest become staple food of forest dwellers and people living in & around forest. Mango fruits and kernels are important food items for the tribal. Some of the fruits are also used for medicinal purposes. Animals also consume some of the fruits. The fruit bearing species available in the division are furnished in Table No: 3.18. 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 Table No: 8.10.1, 8.10.2, 8.10.3, 8.10.4&8.10.5. The important medicinal plants available in the division are given in table no. 8.10.6.

Table No. 8.10.6 Some of the NTFP(Medicianl Plants) Species and their Usage

Sl. No	Local Name	Botanical Name	Parts Used	Uses
1	Arjuna	*Terminalia arjuna*	Bark & Fruits	Tannin for leather, Medicinal
2	Asan	*Terminalia tomentosa*	Bark	Tassar cocoons, Medicinal
3.	Amba	*Mangifera indica*	Roots, bark, seed and kernel	Fruit is edible, medicinal,
4.	Ambada	*Spondias pinnata*	Roots, barks, Fruits and Seeds	Medicinal
5	Anla	*Emblica officinalis*	Root, bark, leaves and fruits	Fruit is edible, Medicinal
6	Arakha	*Calotropis gigantea*	Whole plant	Medicinal
7	Aswasthha	*Ficus religiosa*	Bark, shoots, fruits and seeds	Medicinal, Rope making, Fruits for animals.
8	Anchhu	*Morinda tinctoria*	Roots and leaves	Medicinal
9	Bandhan	*Ougeinia oojeinensis*	Bark	Medicinal

10	Bara	*Ficus bengalensis*	Root, bark, leaves, buds latex	Rope making, Medicinal, Fruits for birds and animals
11	Bela	*Aegle marmelos*	Roots, leaves & fruits	Fruit is edible, Medicinal
12	Bhalia	*Semecarpus anacardium*	Fruits	Medicinal
13	Bichhuati	*Tragia involucrate*	Roots and leaves	Medicinal
14	Baidanka	*Mucuna pruriens*	Roots, leaves, seeds and hair	Medicinal
15	Bana haladi	*Curcuma aromatica*	Rhizomes	Medicinal
16	Baula	*Mimusops elengi*	Bark, flowers, fruits seeds	Fruit is edible, Medicinal
17	Begunia	*Vitex negundo*	Whole plant	Medicinal
18	Babul	*Acaccia nilotica*	Bark, Gum, Fruits	Calico-printing, dyeing sizing material for silk, cotton, Medicinal, Tannin for leather.
19	Bahada	*Terminalia bellirica*	Bark and Fruits	Fruit edible for animals, Medicinal, Tannin for leather.
20	Bhuin anla	*Phyllanthus niruri*	Whole plant	Medicinal
21	Bhuinnimba	*Andrographis panicul*	Whole plant	Medicinal
22	Banakhajuri	*Phoenix sylvestris*	Fruits	Medicinal
23	Barakoli	*Ziziphus mauritiana*	Whole plant	Fruit is edible, Medicinal
24	Bhersunga	*Murraya koenigii*	Roots, bark and leaves	Medicinal
25	Banatulasi	*Ocimum americanum*	Leaves and seeds	Medicinal
26	Char	*Buchnania lanzan*	Roots and fruits	Fruit is edible, Medicinal
27	Chhatian	*Alstonia scholaris*	Barks and leaves	Medicinal
28	Chakunda	*Cassia tora*	Leaves and seeds	Medicinal
29	Champa	*Michelia champaca*	Whole plant	Perfumes, Medicinal
30	Duba ghassa	*Cynodon dactylon*	Whole plant	Medicinal
31	Dimiri	*Ficus hispida*	Bark and fruit	Fruit is edible, Medicinal
32	Dudura	*Datura fastusa*	Whole plant	Tannin for leather, Medicinal
33	Dhanan-twari	*Cymbopogon citratus*	Whole plant	Medicinal

34	Dhatki	*Woodfordia fruticosa*	Flowers	Medicinal

35	Dhaura	*Anogeissus latifolia*	Roots bark leaves seeds Gum	Medicinal, Sizing paper printing
36	Eucalyptus	*Eucalyptus indica*	Leaf	Oil , Medicinal
37	Genduli	*Sterculia urens*	Gums	Gum is edible Confectionaries.
38	Gohira	*Acacia leucophloea*	Barks	Medicinal
39	Gayasha	*Leucas aspera*	Leaves, flowers	Medicinal
40	Guluchi		Stem	Medicinal
41	Gambhari	*Gmelina arborea*	Whole plant	Fruit for animals, Medicinal
42	Gangasiuli	*Nyctanthes arbortristi*	Leaves, flowers and seeds	Medicinal
43	Ghikuanari	*Aloe vera*	Leaf juice	Medicinal
44	Harida	*Terminalia chebula*	Fruits	Tannin for leather, Medicinal
45	Hinjala	*Barringtonia acutangu*	Roots, leaves, and fruits	Medicinal
46	Hadabh-anga	*Vitis quadrangularis*	Whole plant	Medicinal
47	Jamu	*Syzygium cumini*	Bark, leaves and fruits	Fruit is edible, Medicinal
48	Jayasanda	*Litsia glutiness*	Fiber	Medicinal,
49	Jari	*Ficus microcarpa*	Roots, bark and leaves	Medicinal
50	Karanja	*Pongamia pinnata*	Whole plant	Oil & Medicinal
51	Kathhacha mpa	*Plumeria rubra*	Root, leaves and latex	Medicinal
52	Kochila	*Strychnos nuxvomica*	Bark, leaves and seeds	Fruit is edible- birds, Medicinal
53	Kendu	*Dyospyros melanoxyl*	Fruits and leaves	Fruit is edible, Leaves for Bidi making
54	Kaincha	*Abrus precatorius*	Roots, leaves and seeds.	Medicinal
55	Kainthha	*Limonia feronia*	Bark, fruits and gums	Medicinal
56	Kamala-gundi	*Mallotus philippensis*	Glandular hairs of the fruit	Medicinal
57	Khair	*Acacia catechu*	Bark and heart wood	Ingredient of Pan, Medicinal
58	Kantamaris	*Amaranthus spinasus*	Whole plant	Medicinal

59	Kanteikuli	*Flacourtia indica*	Roots, leaves and fruits	Medicinal
60	Kurein	*Holarrhena antidysent*	Bark, seeds and leaves	Medicinal
61	Kusum	*Schleichera oleasa*	Bark and oil	Fruit edible, Oil, Medicinal, soap
62	Kumbhi	*Careya arborea*	Bark, leaves and fruits	Medicinal
63	Kunkum	*Bixa orellana*	Roots, bark and seeds	Medicinal
64	Lantana	*Lantana camara*	Whole plant	Medicinal
65	Lajkuli	*Mimosa pudica*	Roots and leaves	Medicinal
66	Lodha	*Symplocus racemosa*	Bark	Medicinal
67	Mahula	*Madhuca Indica*	Flower and Fruits	Edible oil, Fruits, country liquor
68	Mohalimba	*Melia composita*	Whole plant	Medicinal
69	Mai	*Lannea coromondelic*	Bark and leaves	Medicinal
70	Mohakal	*Trichosanthes anguin*	Roots and fruits	Medicinal
71	Mundi	*Mitragyna parvifolia*	Roots, barks and leaves	Medicinal
72	Mohul	*Madhuca indica*	Bark, fruits and seeds	Medicinal
73	Neem	*Azadirachta indica*	Bark, leaves, seeds	Oil & Medicinal
74	Nageswar	*Mesua ferrea*	Flowers	Oil & Medicinal
75	Palasa	*Butea monosperma*	Root	Rope making
76	Piasal	*Pterocarpus marsupiu*	Heartwood and gum	Medicinal
77	Panasa	*Artocarpus heterophyl*	Roots, leaves, fruits seeds	Edible fruit, Medicinal
78	Poksungha	*Ageratum conyzoides*	Roots and leaves	Medicinal
79	Palas	*Butea monosperma*	Bark, seeds and gums	Medicinal
80	Phanaphana	*Oroxylum indicum*	Roots, leaves, fruits seeds	Medicinal
81	Raktachita	*Plumbago rosea*	Roots	Medicinal
82	Ritha	*Sapindus laurifolia*	Roots, bark and fruits	Herbal Sampoo, Soap,Medicinal
83	Sal	*Shorea robusta*	Leaves, Bark, fruits resin.	Tannin, Medicinal, Edible Oil, Leaf plates, Agarbati, Varnish
84	Siris	*Albizia lebbek*	Bark, flowers and seeds	Medicinal

85	Sissoo	*Dalbergia sissoo*	Roots, leaves, bark heart wood	Medicinal
86	Sunari	*Cassia fistula*	Whole plant	Medicinal
87	Satabari	*Asparagus racemosus*	Tuberous roots	Medicinal
88	Semul	*Bombax ceiba*	Roots, gum, bark and fruit.	Cotton , Medicinal
89	Salai	*Boswellia serrata*	Bark, gum and resin	Pleasant smell- burnt, Medicinal
90	Sahada	*Streblus asper*	Roots, Bark, leaves latex	Medicinal
91	Siali	*Shorea robusta*	Fibre	Rope making
92	Siju	*Euphorbia antiquor*	Roots juice	Medicinal
93	Tentuli	*Tamarindus indica*	Roots, fruits and seeds	Fruit is edible, Medicinal

Source: Field Survey

Table: 8.10.1 FRUIT BEARING PLANTS AVAILABLE IN THE DIVISION

Sl No.	*Local Name*	*Scientific Name*	Collection Period	Uses
1	*Amba*	*Mangifera indica*	April- May	Edible
2	*Ambda*	*Spondias pinnata*	Jan-Feb	Edible
3	*Anla*	*Emblica officinalis*	Dec-Jan.	Medicinal
4	*Bahada*	*Terminalia belerica*	Feb-mar	Medicinal & Edible for Animal
5	*Barakoli*	*Zyzyphus 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 acidissima*	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: 8.10.2 IMPORTANT OIL YIELDING PLANTS

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: 8.10.3 IMPORTANT FIBRE YIELDING PLANTS

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: 8.10.4 IMPORTANT GUM AND RESIN YIELDING PLANTS

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: 8.10.5 IMPORTANT TANIN YIELDING PLANTS

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 8.10.6 IMPORTANT DYE YIELDING PLANTS

Sl No	Local Name	*Botanical name*	Parts Yielding dye	Uses
1	Dhatuki	*Woodfordia fruticosa*	Flowers	Dying
2	Kamala gundi	*Mallotus philippensis*	Fruit	Cloth dying useful for scabies, ringworms

Economic dependency on NTFP along with clear rights andresponsibilities to access, use and manage the NTFPs resources;registration status of gatherers, traders and other stakeholders;existing regulation mechanism on transit storage and trade of NTFPs.

8.11 Other aspects - NA

CHAPTER - 9

9 Adequacy of Policy, Legal and Institutional framework

9.1 Existing policy and legalframework and theircompliance

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, especially 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 approvedworking plan andcompliance

9.2.1Summary of prescription of approved working plan:

The Summary of prescription of approved working plan is attached.

9.3 Number of forest offences

The Divisional 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, which has a great impact in reducing atleast the movement of timber through vehicles. The details of forest offence cases regisgtered are given in Table – **9.3.1.**

Table No. 9.3.1 offence cases booked in Angul Division during last plan period

Year	No. of Cases			Timber in cum	Materials			
	OR Cases	UD Cases	Total		Firewood in MT	Poles in nos.	Bamboo in nos.	Kendu leaves in Qtl
2007-08	821	266	1087	84.7877	172.9	1985	108	67.92
2008-09	745	237	982	97.4379	8.105	2068	265	7.16
2009-10	654	253	907	101.8992	8.475	3030	173	174.71
2010-11	627	240	867	79.2315	9.02	1935	168	186.32
2011-12	348	221	569	146.149	0.4561	1493	202	237.13
2012-13	1121	208	1329	85.647	32.24	4244	0	350.45
2013-14	473	128	601	48.8745	8.371	1840	0	361.29
2014-15	419	135	554	54.7917	7.215	2430	0	93.1
2015-16	450	104	554	43.3278	17.238	2411	0	145.0
2016-17	331	134	465	25.4024	16.35	1665	0	456.15
2017-18	415	138	553	56.6537	4.148	3122	89	1916.8
2018-19	396	88	444	50.0181	1.0085	3169	3169	77.37
2019-20	269	117	386	53.0671	15.88	1765	1765	47.32
2020-21	119	103	222	130.9212	98.588	936	0	59.1
Total								

However the illicitly felling is reduce due to initiation of JFM resolution of the State Government. The forest fringe villagers are coming forward in protection of forest constituting Vana Surkshya Samittee. This results a successful strategy.

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 areas of this Division.

3. Critically endangered area squad has been deployed in special area 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.

9.4 Status of research anddevelopment

The Silvicultural Division has a research garden in Chhendipada & Kosala RF over an area of 104 ha. This was constituted in the year 1982. Presently no active research works going on. It should be rejuvenated to full strength for better result in future.

There was a Preservation Plot 12.63 in Antulia – Tabeda , compartment no.5 for Ecological Study. But there is no maintenance like climber cutting, cleaning etc. in the plot. Only plus trees are marked and left over. No seed also collected by silvicultural division now a days. Hence the plot is also not looked after by the Silvicultural Division now.

9.5 Human resource capacitybuilding 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 trainings imparted under different categories during the period from 2007-08 to 2017-18. Different trainings on capacity building, SMC, Silvicxultural operatoion, community mobilization, Management of forest fire, Wildlife protection, Man Animal Conflict Management has been done in this division to boost the knowledge and strength of field staffs.

9.6 Forest ResourceAccounting

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.

9.6.1.2 Kendu Leaf:

Angul Kendu leaf Division is working for collection of kendu leaves. Annually approx 3000 Qtl is produced with a smull chunk of Mandays generation.

9.6.1.3 Timber & Firewood:

As there was no coup works in last working plan, so most of the timber and firewood are delivered to OFDC collected from salvaged operation, Forest Diversion and developmental projects and seized produce.

9.6.1.4 Bamboo: As there was no harvestable coup available in this division, so bamboo production was not done in recent years.

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 tothe forestry sector

Budget provision of the last plan period may be provided and theprescribed budget may be justified accordingly.

9.8 Existence of monitoring,assessment and reportingmechanism

9.8.1 The National Working Plan Code, 2014 prescribes use of Criteria and Indicators for monitoring and evaluation of Sustainable Forest management which is the objective of this Working plan. The Criteria and Indicator as devised by Indian Institute of Forest Management (IIFM), Bhopal and the location of information for indicators in the Working Plan at the Division level is provided as published in 'Incorporation of Criteria and Indicators in Forest Working Plans' by IIFM, Bhopal.

9.8.2 To monitor the effect of implementation of prescription in different working circles, the DFO in consultation with CF will select at least one point where sample point inventory (0.1 ha) has been carried out in every improvement series/treatment series for periodic monitoring of various parameters including change in vegetation. This data would be used in interim review of the plan.

9.9 Public awareness andeducation

Public awareness is creating by the DFO in the divisional level and by the Range Officer in Range level regularly through rally and meetings. The following days of observation./celebration are organizing every year.

9.9.1 Observation of World Forestry Day

The world forestry day is observed every year on 21st March where VSS members, staff of forest department and students are celebrated through rally holding banner in related theme such as forest protection, wildlife protection, forest protection from fire etc. After completion of rally a meeting is organized by the division where the District Collector, RCCF, All DFOs, of the circle and District Level Officer attended as dignitaries. In the meeting the dignitaries discussing about importance of forest, importance of planting and its care, Forest and Wildlife protection etc. Prizes also given to the best school and best panchayat.

9.9.2 Observation of World Environment Day

The world environment day is observed every year on 5th June where VSS members, staff of forest department and students are celebrated through rally holding banner in related theme such as protection of environment from pollution. After completion of rally a meeting is organized by the division where the District Collector, RCCF, All DFOs, of the circle and District Level Officer attended as dignitaries. In the meeting the dignitaries discussing about importance of environment, pollution and its control, global warming ect. Prizes are awarded to Prakruti Bandhu selected by District Level Committee.

9.9.3Observation of Van Mahotsav Week

Van Mahotsav was started by Kulapati Kanheiyalal Munshi (K. M. Munsi), the then Indian Union Minister for Agriculture and Food to create enthusiasm among masses for forest conservation and planting trees. It is now a week long programe celebrated on different days in different parts of India, but usually between 1st July to 7th July. The festival raises the awareness of trees among people, and highlights the need for planting and tending of trees as one of the best way to prevent global warming and reduce pollution. In Angul division it observe every year as district level function where VSS representive, school student, staff of forest department attended the programme. It is advised to the schools, govt. intuition, colleges to celebrate Van Mohotsav every year to create awareness for planting trees in and near their homes, offices, school and colleges etc.

9.9.4Observation of Wild life Week

Wildlife Week is celebrated every year in the division between October 1 to 8. Wildlife week as conceptualized in 1952 with overall goal of raising, awareness to serve the long term goal of safeguarding the lives of wildlife through meetings and rally. Accordingly in Angul Division celebrates wild life week during the period through rally and meeting. Where the VSS members staff of forest department attended the programme every year. The main theme of the campaign is to promote the preservation of fauna – i.e. Animal Life.

9.9.5Public Awareness for Forest Fire

Public awareness campaign also lunched at divisional level and range level to educated people especially in the fire prone areas not to resort to burning of ground flora and collect NTFP including kenduleaf. Besides awareness created in VSS level for forest protection from fire and incentive has been given for good performance.

9.10 Adequate manpower inforest division

9.10.1 The details of sanctioned permanent post

The cadre strength of permanent staff of the division was changed after reorganization of forest department in October, 2003. Again by latest cadre strength vide letter no. 1F(A) 23/2017-6958/F &E dt. 06.04.2017 of Government of Odisha, F&E department, the cadre of permanent staff is furnished in the table. 9.1

Table No. 9.1Sanctioned Strength of Angul Forest Division

SL No.	Name of the post	Sanctioned latest vide no. 1F(A) 23/2017-6958/F &E dt. 06.04.2017 of Government of Odisha, F&E department	Staff in position	Vacancy position	Reasons for vacancy
1	2	3	4	5	6
1	Dy. CF	1	01	00	
2	ACF	3	02	01	
3	Forest Ranger	6	03	03	
4	Dy. Ranger	6	06	00	
5	**Forester** Enforcement Afforestation Check Gate Section Attached/Spl.	(34+11) 1 6 1 23 14	- 01 06 01 23 05	- - - - - 09	
		45	35	10	Retired
6	**Forest Guard** Beat Check Gate Enforcement	 94 12 20	 65 06 10	 28 06 10	
		126	81	45	Due to Retirement and promotion
7	Head Clerk	1	00	01	
8	Jr. Accountant	7	04	03	Due to Resigned & Retired
9	Jr. Steno	1	00	01	Due to Retirement
10	Jr. Clerk	9	09	00	
11	FES	3	01	02	Due to Retirement
12	Driver (L.V)	2	01	01	Transferred to WPO, Angul
13	Dak Runner	02	01	01	Due to promotion
14	Office Choukidar	02	02	00	
15	Bungalow Choukidar	02	02	00	
16	Mali	02	02	00	
17	Watcher	04	03	01	
	Total	**221**	**154**	**69**	

9.10.2 Temporary Status

The staffs those were engaged as permanent labour before 1993 for protection and various works as Range Level the government of Odisha F&E department has been engaged as Temporary Status in pursuance of Govt. of Odisha Faineance Department Notification no. 31715/F dt. 04.04.2012, the PCCF, Odisha vide his order no. 3664 dt. 12.03.2013 approval the proposal for grant of Temporary Status. These staffs are engaged for special work assigned to forest section / Beat in Forest protection and Forest Management. On retirement their post abolished and no engagement in their vacancy post.

Table No. 9.2 Sanctioned Temporary Strength of Angul Forest Division

SL No.	Name of the post	Approval by the PCCF, Odisha vide no. 3664 dt. 12.03.2013	Staff in position	Vacancy position	Reasons for vacancy
1	2	3	4	5	6
1	Temporary Status	16	13	00	Due to retirement

9.10.3 Engagement of Squad (Watcher) as seasonal staffs

For smooth management of office DEOs have been outsourced in division office and range office in the CAMPA and AJY Scheme as given in Table . 9.3.

Table No. 9.3 DEO outsourced in Angul Division under CAMPA – APO – 2017-18

Name of the Scheme	Target	No. of DEO outsourced								
		Circle	Division	Angul	Bantala	Chhendipada	Jarapada	Kaniha	Talcher	Total
CAMPA – Maint. of Control Room at Div. Office	1	0	1	0	0	0	0	0	0	1
CAMPA – Maint. of Control Room at Circle Office	1	1	0	0	0	0	0	0	0	1
CAMPA – Logistic Arrangement for Range	6	0	0	1	1	1	1	1	1	6
CAMPA – Interest Money – Circle Office	2	0	2	0	0	0	0	0	0	2
CAMPA – Interest Money – Division Office	2	0	2	0	0	0	0	0	0	2
AJY Stat Plan	10	1	3	1	1	1	1	1	1	10
Total	**22**	**2**	**8**	**2**	**2**	**2**	**2**	**2**	**2**	**22**

The above no. of DEOs have been outsourced through the service provider. In future they may be engaged in the main stream for better management of the office.

9.10.4Outsourced of Squad (Watcher) as seasonal staffs

Some of staffs have been outsourced as seasonal staff for Anti-depredation, Tracker, Elephant Squad, Wildlife protection Squad, Anti – Smuggling Squad at Theft-prone area etc. in different scheme in the division as given in Table . 9.4.

Table No. 9.4 Squad (Watcher) Outsourced in Different Scheme in Angul Division

Name of the Scheme	Target	No. of Watcher Outsourced						
		Angul	Bantala	Chhendipada	Jarapada	Kanihha	Talcher	Total
State Plan – Intensive Protection in Critically endangered areas	20	10	0	0	10	0	0	20
State Plan – Management & Development of Elephant Corridor	20	0	5	10	5	0	0	20
Central Sponsored Plan – Elephant Management Project – Elephant Squad	5	0	5	0	0	0	0	5
CAMPA – Maint. Of Control Room at Divn. Office	3	3	0	0	0	0	0	3
CAMPA – Maint. Of Control Room at Circel. Office	3	3	0	0	0	0	0	3
CAMPA – Para Staff	30	5	7	6	5	3	4	30
CAMPA Wildlife – Wildlife Protection Squad	20	0	5	10	5	0	0	20
CAMPA Wildlife – Anti Depredation Squad	20	0	0	4	0	10	6	20
CAMPA Wildlife – Tracker	4	2	1	0	0	1	0	4
CAMPA Wildlife – Site Specific – Elephant Squad	7	0	0	0	0	0	7	7
CAMPA Wildlife – Site Specific – (Esst. Of MPTA Integrated Steel)	15	5	5	5	0	0	0	15
CAMPA Wildlife – Site Specific – Utkal Coal B2 Mines) Tracker	1	0	0	0	0	0	1	1
CAMPA Wildlife – Site Specific – (Utkal D Coal)	14	0	0	4	0	7	3	14
Total	162	28	28	39	25	21	21	162

9.10.5 Engagement of Fire Watcher as seasonal staffs

The locally experience staffs are engaged from 15th February to 15th June at daily wage basis in the fire prone areas as per discussion in the divisional meeting with the range staffs to prevent forest fires. The fire watchers stationed with vehicle at per discussion in the divisional level meeting.

9.10.6The rate of past and present wages

The government Labour and Welfare Department has been enhanced the wages of unskilled labour, semi skill labour, skilled labour & high skilled labour from time to time. The rate from 2007 to 2018 is prescribed in the table 9.5.

Table No.9. 5 Wage Rate in Rs.

Notification No.	Wage Rate in Rs.			
	Un-Skilled Labour	Semi-Skilled Labour	Skilled Labour	Highly Skilled
LL-1(AR) -11/2006-1096/ LE dt. 07.02.2007	70	80	90	100
6272-LL-1(AR) dt..08.09/LE dt. 13.07.2009	90	103	116	129
Special DA of Rs. 2.50/- has been raised vide notification no. 8686 dt. 13.07.2011	92.50	105.50	118.50	131.50
3146/LE dt. 20.04.2012	125	145	165	180
8536/LE 1(AR)2-12/LES dt. 06.12.2012	150	170	190	205
LL-1(AR)-1-15/3716 dt. 30.04.2015	200	220	240	260
From 01.04.2016 to 31.03.2017	207.20	227.20	247.20	267.20
From 01.04.2017 to 31.03.2018	213.50	233.50	253.70	273.50
From 01.04.2018 to 30.10.18	224.30	244.30	264.30	284.30
SRO No. 431/2018 dt. 30.10.2018	280	320	370	430

CHAPTER - 10

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, up to 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 over 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.40 818 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 subsequent paragraphs.

10.1.2 The information on the expenditure in the different Plan periods in Angul Division is available from the 7th Five Year Plan. The details of this information are given in Table 5.4.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 the use of less commonly known secondary Indian timber after proper seasoning and preservative treatment. Various schemes implemented during the third five-year plan were 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 forests based industries.

(c) 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 of the Plan period several important developments have taken place like promulgation of Wild Life (protection) Act, 1972 and launching of Project Tiger in 1973.

10.5.1 FINANCIAL ACHIEVEMENTS UPTO FOURTH FIVE-YEAR PLANS

Scheme-wise details of expenditure incurred on forest development in the country are given in Table No: 5.1.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.

10.6 The Fifth Year 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 was 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.

10.7 THE SIXTH YEAR 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. The necessity for constitution the Biosphere Reserves was also felt.

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	335.50	1181.40	553.01
6	Consolidation of forests (including survey and demarcation)	14.63	61.83	199.30	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	74.00	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	100.90	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	247.40	149.94	556.58	405.99
17	Amenities to staff and labour			48.05	14.63	62.68	31.10
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		56.20	34.67	6.43	97.30	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	100.00				100.00	6.85
	Total	849.78	2120.71	4566.59	4205.82	11742.90	8898.86

Source: Report Of The National Commission on Agriculture, 1976, Part IX, Forestry

10.8 THE SEVENTH PLAN (1985 – 90)

10.8.1 The basic approach to the Seventh Plan was 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

10.8.2 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.

10.8.3 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 ethno-biological relationships

10.8.4 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.

10.8.5 Review of the Seventh Plan

10.8.5.1 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 utilization 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.

10.8.5.2Forest 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.

10.8.5.3Afforestation 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
iv. Assistance in the implementation of the Tree Patta Schemes.

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, roadsides and canal embankments. Since the availability of community lands was limited, afforestation was also carried out on degraded forestlands. 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

SI 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	46.50	82.06
9.	Seventh	88.70	170.76

10.9 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 decentralize 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;
6. To ensure coordinated and integrated Governmental action aimed at conserving nature and sustainable use of natural resources;
7. To make individuals and institutions more accountable to the people for their actions impinging on environment and ecosystem; and
8. To monitor the state of environment.

10.9.1 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

10.9.2 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: 5.3 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.

10.9.3 Review of Eighth Plan

10.9.3.1 Bio-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.

10.9.3.2 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.

10.9.3.3 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.

10.9.3.4 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-TimberForest Produce Scheme
(iv) Grants-in-Aid Scheme
(v) Encouraging NGOs for taking up Afforestation and building upon peoples' movement.

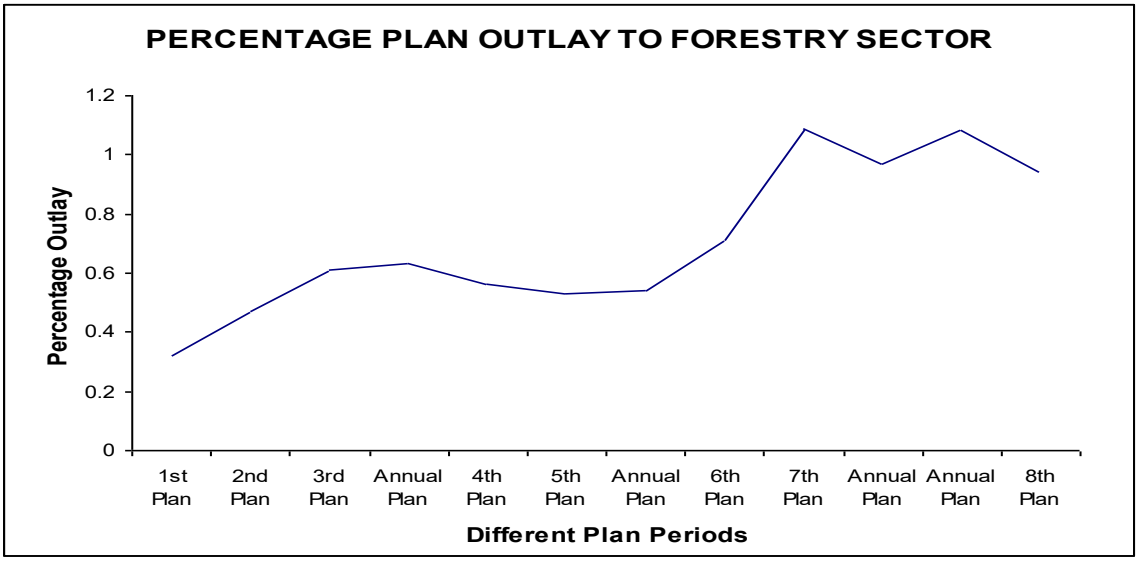


Table: 10.3 INVESTMENTS IN FORESTRY SECTOR Rs. In Million

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		0.90
Source: Developing Wastelands, Ministry of Environment and Forests							

10.10 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.

10.10.1 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.

10.10.2 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 forestlands 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 forestland available to the private entrepreneurs/Forest Corporations. The Working Group has submitted its report and has not recommended leasing of forestland to the private entrepreneurs either directly or indirectly through forest corporations.

10.11 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.
- Efforts would be taken to reduce the import of the timber and the timber requirement would be met from the community lands, private farm lands and degraded lands.
- 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)

WPO has to describe the activities taken up under preceding Five-yearplan, (plan wise and scheme wise) and make summary suggestions forfuture based on details of the prescriptions provided in variouschapters of the plan. Intersectional (rural development, tribal welfare,etc.) contribution may also be taken into account.

CHAPTER - 11

11 Past systems of management

11.1 General history of the forests

11.1.1 The present Angul Sub-Division originally formed one of the Feudatory Status of Orissa (then known as the Tributary Mohals). It was ceded to the British Government in 1803 by the Mahrattas and was subsequently annexed in December 1847 following a rebellion by the Raja.

11.1.2 Forest conservancy was not started until 1883 but it is probable that prior to this date many of the accessible forests along the Mahanadi had been exploited for timber and bamboos to supply to the town of Cuttack.

11.1.3 The forests were first notified under the Indian Forest Act in 1883 and Angul became a subdivision of the Orissa Forest Division, Puri forming the other subdivision. There is no record of what happened between this date and 1891 when Angul Division was constituted a separate charge, but it is reasonable to assume that demarcation constituted the chief work during the period. To judge from the annual revenue which seldom exceeded Rs.2,000 little exploitation could have been done. Expenditure was in the neighbourhood of Rs.9,000.

11.1.4 Following the severe famine of 1899 there was widespread agitation throughout the Angul Sub-Division against reservation of these forests. An officer was placed on special duty to report on the matter. Following his findings it was decided to move back the boundaries of the reserved forest which, it was alleged, passed too close to village lands and had included in the reserved forests, orchards and lands for toila cultivation. This matter was further investigated by Mr. B. Ribbentrop, Inspector General of Forests, who visited the division in 1893, and he further confirmed this decision. He also, in his report, stressed the need for encouraging the extension of permanent cultivation and the desirability of stopping jhuming. This resulted in the creation of protected forests in 1894 by the excision from the reserves of belts of forests, 22 chains broad, around every village in the vicinity of the reserved forests. A further notification in 1899 constituted as protected forests, all lands outside the reserved forests that had not been settled with cultivators and others or which might not be thereafter so settled.

11.1.5 The protected forests were placed for management under the Khasmahal Department Rules. For their management, rules were notified in 1899 and subsequently revised a number of times. At present the rules in force are the “Angul P.F. Rules, 1922”. Though many P.Fs have been declared “Reserved Forests” under Orissa Forest Act subsequently and new rules have been framed revising rate of royalty (Scheduled rate of royalty 1977), Grazing Regulation (Orissa Forest Grazing of Cattle Rules 1980), supply of bamboos {The Supply of Bamboos to Artisans including Co-operative Societies (Orissa) Rule 1980}, control of Minor Forest Produce (Orissa Minor Forest produce control of trade act and rules 1982). The Orissa Forest Produce (control of trade) Act, 1983, the Forest Conservation Act, 1980, the Forest Conservation Rules, 1981, the Angul P.F. rules 1922 has lost its relevance and required to be modified at the earliest.

11.1.6 Demarcation started in 1912 and was continued half heartedly and in a sporadic manner up to the year 1919. Then followed a conference at Cuttack (known as the Lalbagh conference) on the 10th February 1920. One of decisions reached at the conference was to hand over to the Forest Department the Staff employed by the Khasmahal Department on the protected forests. After that, demarcation proceeded a pace and the entire work was finished in June 1921. Management of the demarcated forests by the Forest Department may be said to date strictly from 1919-20. The guiding principle in demarcation, as the conference declared was to preserve what was worth preserving and to leave to the tenants full rights in the undemarcated area.

11.1.7 The Inspector General of Forests, Mr. Ribbentrop's note also contained suggestions for the preparation of the working plan. He sanctioned, pending completion of working plan, the felling of 2,000 trees a year in the event of demand for sleepers arising, the East Coast Section of the Bengal Nagpur Railway being then under construction. However, it appears that sleepers were only exploited on a very limited scale by departmental agency in 1892-93 and again in 1895-96, a small profit being made. The fellings were probably made under a sort of selection system. From 1897-98 efforts were made to dispose of Sal and Piasal under selection fellings in BantalaRange, and in 1903 a ten-year scheme was prepared for BaghamundaRange (the present Purunakote Range of Satkosia Wildlife Division) but abandoned owing to the death from drought of Sal over a large area in the West of Baghmunda Block. In Bantala there appears to have been difficulty in getting contractors work in Silvicultural lines. The year 1903-04 also saw the introduction of systematic working of bamboos on a three-year cutting cycle.

11.1.8 Along with other ex-states of Orissa, Talcher state was merged during 1948 and was placed under the charge of an administrator. It was then constituted into a Civil Sub-Division of Dhenkanal district subsequently. After merger, the entire Ex-state constituted a ForestRange under the Dhenkanal Forest Division and a Deputy Ranger was posted to look after the administration and management of the forests. In the year 1953 this Range was transferred to Angul Forest Division for administrative convenience and since 1960 the range has been kept in charge of a Forest Ranger as per the re-organization of Forest Department.

11.1.9 The first step towards conservation of forest in Talcher was taken up in 1901 when certain rules were framed to manage the forest under the Darbar Administration. Reservation of Forests were taken up from 1912 and commercial exploitation was first started during 1919 when the state was severely affected by a famine. Ten thousand trees over 3'(0.914 M) girth in Bulajhar block and 7000 trees of 2 ½' (0.762M) girth and up were exploited in Bajrakote section to provide employment to the people. Heavy irregular fellings were also resorted to during the IInd World War period i.e. from 1943-1945.

11.1.10 The reserved forests of Angul division as originally constituted comprised of three Ranges namely, Bantala, Baghmunda and Durgapur. Subsequently Baghmunda was divided into Baghmunda and PurunakoteRanges. In 1931 it was decided to reorganize the division. On reorganization FiveRanges were constituted namely Bantala (headquarters-Bantala), Purunakote (headquarters-Purunakote), Angul (headquarters-Angul), Durgapur (headquarters-Jarpara), Chhendipada (headquarters-Chhendipada). Later Chhendipada was included in DurgapurRange and TalcherRange was included in the division. Subsequently

headquarters of AngulRange was shifted to Angul. After creation of Satkosia Wildlife Division vide Govt. Resolution No.13060/F&E, dt.12.7.99 entire PurunakoteRange and part area of BantalaRange were transferred to Satkosia Wildlife Division. On reorganization of Forest Department during 2003, TalcherRange was divided into Talcher & KanihaRanges,DurgapurRange was divided into Durgapur and ChhendipadaRanges. Hence at present there are six Ranges in the Division namely Bantala (headquarters-Bantala), Durgapur(headquarters-Jarpara), Chhendipada (headquarters-Chhendipada), Angul (headquarters-Angul), Talcher (headquarters-Talcher) and Kaniha (headquarters- Kaniha).

11.2 Past system ofmanagement and theirresults

11.2.1 The First Working Plan:

11.2.1.1 The first working plan for the reserved forests of Angul was prepared by Mr. T.I. Pocock, Extra Assistant Conservator of Forests, and was sanctioned for the fifteen year period 1908-09 to 1922-23. The Southern forests of the division were allotted to three working circles: Bantala, Tikarapara and Tulka. The DurgapurRange formed a fourth working circle but no definite scheme of felling was prescribed except in Tabada Block, where 35 trees were to be removed annually.

11.2.1.2 The Raigoda and Tulka working circles were to be worked on the selection-cum-improvement system. The annual yield was fixed at 1,200 trees in Raigoda and 300 trees in the Tulka working circle, based on an enumeration of all Sal and Piasal trees of 12 inches diameter and over. The plan provided for the removal of all trees of 24” diameter and over and of half the number of trees in the 18” to 24” diameter within a period of 30 years. At the same time improvement fellings were to be carried out.

11.2.1.3 In the Tikarpara working circle no enumerations were made, only improvement fellings were prescribed. The yield was fixed by area with 24” as the exploitable diameter for sal and piasal.

11.2.1.4 Supplementary prescriptions consisting of creeper cutting and cleanings were prescribed for all working circles. Climber cutting was to be carried out in the year preceding the main fellings and cleanings in the year following. Besides this, climber cutting and cleaning was to be carried out over an area of 1214.1 hectare each year in other part of the forest in the better crops.

11.2.1.5 The main prescriptions of this plan were fully carried out, but the supplementary prescriptions are said to have been largely neglected. If one is to judge by the comparative figures given for the enumerations carried out in 1907-08 and in 1923-24 in Raigoda block, the system under which the forests were worked between 1908 and 1922-23 effected an improvement in the growing stock. There is the possibility that the first enumerations were not so complete as those carried out at the latter date and the fact that Dhaura, Asan and Bandhan were included in the second and not in first enumeration must be taken into account when assessing the value of the comparative figures. Nevertheless, the system prescribed in the first working plan appears to have worked satisfactorily and there was certainly no depletion of the growing stock during that period. If more attention had been paid to obtaining regeneration and to the removal of heavy bamboo growth in the course of supplementary operations, the results would have been better and there might have been greater justification for applying the system of concentrated regeneration in the second working plan than there appears to have been.

11.2.2 On the expiry of the first working plan a preliminary working plan report was prepared by Mr. L.R.Sabharwal, the then Divisional Forest Officer, and the reserved forests were worked under its prescriptions for four years. Later in 1925-26 a scheme was drawn up by Mr. W.D.M. Warren, Divisional Forest Officer, for the mixed forests of the division (reserved forests) and called the "Non-sal conversion working circles". These two schemes formed the basis of and were largely incorporated in the revised working plan for the reserved forests of the Angul Division, prepared by Mr. R.L. Derry in 1927-28.

11.2.3 Mr. Derry's Plan:

The working plan was prepared to cover a period of 24 years (1923-24 to 1946-47) with provision for an intermediate revision after the 12th year i.e. 1934-35. Four working circles were constituted as follows: -

Sal Conversion……..8620 hectares.
Miscellaneous……..16257 hectares.
Coppice with standards……..5410 hectares.
Bamboo……27776 hectares.

11.2.3.1Sal Conversion Working Circle:

11.2.3.1.1 This was confined to portions of Raigoda, Bolong, Tulka, Purunakote, Takersingha, Chhotamunda, Baghmunda, Majhipara, Kuru, Tabada and Kanloi blocks- P.B.I. being confined to Raigoda block. The conversion period was fixed at 120 years divided into five periods of 24 years each and of approximately equal area. The yield was calculated by volume based on a complete enumeration of the growing stocks (Sal, Piasal, Bandhan, Asan and Dhaura only) of 12" diameter and over in P.B.I. and was fixed at 43,220 cft. Per annum.

11.2.3.1.2 It was proposed to regenerate the whole P.B.I. in the first period of 24 years, the details, such as intensity of fellings, being left largely to the marking officer. A general sequence of fellings was indicated. The intensity of the fellings in any locality was dependent on the presence of regeneration. When regeneration was abundant, the whole crop would be removed in one operation, where it was scanty three or more fellings might be necessary, improvement fellings and cleanings were to follow the main fellings.

11.2.3.1.3 Areas were definitely allotted to the other periodic blocks II-V and the same treatment was prescribed viz-selection and improvement fellings on a 24 year cycle by area. P.B. last occupied the first 13 years of this felling cycle, no work being done in P.Bs. II-IV. Cleanings were to follow the main fellings as prescribed for P.B.I. and thinnings were to be carried out later.

11.2.3.2 The Miscellaneous Working Circle: This working circle comprised all the hilly areas lying outside the area allotted to the Sal Conversion Working Circle in the south of the Division and also included certain Protected Forest areas adjacent to the reserves. Three felling series were formed: Baghmunda, Purunakote and Raigoda. The forest was mainly of the mixed type and contained poor quality sal in places. The system employed was selection; the felling cycle prescribed was 20 years; and the yield was fixed by area. Minimum exploitable diameters were fixed for several species that for sal being 24" in valley type and 15" in hill type forest. Subsidiary operation similar to those laid down for the sal conversion working circle were prescribed wherever fellings were concentrated, if this was feasible.

11.2.3.3 The coppice with standard working circle: Similipathar, Durgapur and Katada blocks constituted this working circle. One felling series (Durgapur and Similipathar blocks) was constituted. Presumably Katada block was not to be worked. The rotation was fixed at 50 years with the object of producing a tree of 14" diameter. The yield was by area, the size of the annual coupe being 80.94 hectares. Thinning of both coppice and standards was prescribed.

11.2.3.4 The Bamboo Working Circle: This working circle was contained in all blocks and overlapped other working circles. The cutting cycle was fixed at 3 years, four felling series being constituted, one in each range. The selection of the annual coupes was left to the Divisional Forest Officer.

11.2.3.5 Other Prescriptions: Buildings were to be constructed under the existing programme. General repairs and realignment of roads was prescribed and the completion of the Baghmunda, Majhipara road was recommended. Fire protection was to be continued and certain measures were prescribed for the purpose. Boundaries were to be repaired on a four years cycle.

11.2.3.6 General Results:

11.2.3.6.1 Sal Conversion Working Circle: The Chief criticism that must be levelled at the sal conversion working circle is the poor allotment of forest areas to the various periodic blocks. The best forests and the most matured crops were allotted to P.B.I. and the successive P.Bs. contained poorer and poorer crops so that by the time the then P.B.V. would have come to P.B.I. the yield would have been reduced to one quarter of that during the first period. Also most of the forests allotted to the Sal conversion Working Circle were not suitable for concentrated regeneration. The mistake was found out early and before even the time due for intermediate revision, Mr. Derry's plan had to be completely replaced by a new plan prepared by Mr. Mooney that came into force from 1932-33.

11.2.3.6.2 The Miscellaneous Working Circle: The work carried out in this working circle was limited very largely to the exploitation of sal, there being little demand for other species. Many coupes were not worked for want of demand and silvicultural operations especially climber cutting were neglected as unproductive.

11.2.3.6.3 The coppice with standard Working Circle: Little work was done in this working circle for lack of demand. The forests of Durgapur and Similipathar blocks are on the whole too open in nature for the satisfactory application of this system.

11.2.3.6.4 The Bamboo Working Circle: A lease for 30 years was granted to M/s Heilgers and company for extraction of bamboos from this division in 1927 and therefore the provisions of Mr. Derry's plan could not be given effect to. However, a scheme was prepared by the Divisional Forest Officer, Mr. Dodsworth and the bamboo forests were worked according to this scheme.

11.2.4 Demarcated protected forest Working Scheme 1922: During the period the protected forests were under the Khasmahal department, the management was necessarily non-technical and elastic, but it afforded them a certain measure of protection. After their transfer to Forest Department in 1922 a working scheme was prepared which covered all the demarcated protected forest blocks except Krishnachakra, Burti and Bhogpal blocks which came under management in 1924 under a separate working scheme. The 1922 working scheme had three working circles namely: -

Purunagarh (Simple Coppice) Working Circle
Bamboo Working Circle
Kalapat (selection) Working Circle.

11.2.4.1 Purunagarh Working Circle: Simple coppice with a rotation of 24 years was prescribed. This included 36 out of 45 blocks and was the largest Working Circle. It worked well in places where the demand existed, but failed in places where there was little or no demand. At any rate the rotation was fixed too low.

11.2.4.2 Bamboo Working Circle: This overlapped a part of the Coppice Working circle namely Kurudu and Pathargarh. Five felling series were formed and a cutting cycle of 3 years was fixed. There was a little working of these forests for bamboos for lack of demand.

11.2.4.3 Kalapat Working Circle: Five blocks were allotted but only one block was open to fellings namely Kalapat. 10 years felling cycle with an exploitable girth of 6 feet was fixed, but fellings were not carried out.

11.2.5 Krishnachakra, Burti, Bhogpal, Working Scheme 1924: Burti and Krishnachakra were at first put under selection system with an exploitable girth of 5 feet. The whole of Burti and a part of Krishnachakra were worked under this system between 1924 and 1932. Bhogpal was excluded as few exploitable trees were to be found there. The bamboos were not under systematic working; but tenants were allowed to fell them anywhere within these 3 blocks.

11.2.5.1Grazing: Except in coppice coupes up to eight years old, grazing was permitted in all demarcated protected forest blocks without any check on the number and kind of cattle grazed.

7.2.5.2 Mr. Derry's working plan for the reserved forests as well as the above working scheme for the D.P.Fs were revised and two separate working Plan were prepared, one for the ReservedForests and the other for the Demarcated Protected Forests, by Mr. H.F. Mooney to come into force from 1932-33.

11.2.6 Dr. Mooney's Plan:

11.2.6.1 The Reserved Forest Working Plan:

Four working circles were constituted in the division. These were

Selection Working Circle
Plantation Working Circle
Bamboo Working Circle
Coppice Working Circle.

The entire Sal Conversion Working Circlearea, most of the Miscellaneous Working Circle area and the Coppice with Standards Working Circle area of Mr. Derry's plan were put under the selection system; parts of them suitable for teak plantation together with all existing plantations were put under the plantation-working circle. A few compartments of Tikarpara block were put under Coppice system, and the bamboos in all of the above forests were separately prescribed for under the Bamboo Working Circle.

11.2.6.1.1 Selection Working Circle: An area of 58122 ha. was allotted to this working circle, 13 felling series were constituted with a felling cycle of 24 years. Different exploitable sizes were fixed for Raigoda-Bolong, Purunakote- Konloi; Baghmunda- Majhipara- Tulka-Nuakheta- Tainsi- Chotamunda – Katada and Durgapur- Similipathar felling series differing

from species to species. Yield was regulated by area. Sepcial treatment was prescribed for old P.B.I. areas of Raigoda block.

11.2.6.1.2 Coppice Working Circle: Compartments 1,2,4,5 and 6 of Tikarpara block were allotted to this working circle to meet the fuel demand of the workers of Messrs. Heilgers and Company stationed near about Purunakote and Tikarpara. Standards upto 10 per acre were to be retained. A rotation of 24 years was fixed, and the yield was fixed by area.

11.2.6.1.3 Plantation Working Circle: 3873 hectare were allotted to this working circle. All areas suitable for planting up with teak were proposed to have been allotted to the working circle together with existing plantations. 40.47 hectares were to be planted up annually. Thinnings were to be carried out at the 10th and 20th year.

11.2.6.1.4 Bamboo Working Circle: This working circle overlapped all the other working circles. 4 years cutting cycle was prescribed. 13 felling series were formed to cater for Messrs. Heilgers and Company, for sales to Cuttack market, and for local demands.

11.2.6.1.5The Demarcated protected Forests Working Plan:

Four working circle were constituted, namely:
Coppice Working Circle
Selection Working Circle
Miscellaneous Working Circle
Bamboo Working Circle

11.2.6.2.1 Coppice Working Circle: 6611 hectares spread over 18 blocks were allotted to this working circle. Rotations of 30 years and 40 years were prescribed: 30 years for poorer crops and 40 years for better ones. Standards were to be retained to become seed bearers. 13 felling series were formed. Thinnings were prescribed in the 10th year, further thinnings at the 20th and 30th years were suggested.

11.2.6.2.2 Selection Working Circle: 19404 hectares were allotted to this working circle. 13 fellings series were formed. A felling cycle of 15 years was fixed. Exploitable sizes were different for Burti and Krishnachakra and other felling series, being higher in the former. Selection-cum-improvement system was prescribed.

11.2.6.2.3 Miscellaneous Working Circle: 3875 hectares of either poor quality forests or steep hillsides were put under this working circle and no felling was prescribed.

11.2.6.2.4 Bamboo Working Circle: 11672 hectares of bamboo forests were put under this working circle. It overlapped the other three working circles. 9 felling series were formed. A four-year cutting cycle was prescribed.

11.2.6.3 General results of Dr. Mooney's plan of Reserved Forests:

11.2.6.3.1 Selection Working Circle:

11.2.6.3.1.1 13 felling series were formed. The reasons for this large number was stated to be equalization of yield, avoidance of excessive concentration of work and necessity for catering to the needs of small contractors. But large coupes should have been divided into smaller "lots". Dispersion of work over a large area made the administration more difficult and it also made harder to provide coupe roads to facilitate extraction. Further, the distribution of blocks to felling series was confusing. Part of Baghmunda block was included in Majhipara felling series and part of Majhipara block was included in Baghmunda felling series. It would have been better to reduce the number of felling series to about 5 or 6.

11.2.6.3.1.2 Though 16 species were prescribed to be favoured to begin with, it was subsequently reduced to 6 principal and 5 secondary species in 1940.

11.2.6.3.1.3 Different exploitable diameters were fixed for four groups of felling series and with each group for seven classes of trees. This made marking too complicated a business for the staff. Quality classes were intermingled and it would have been better to have prescriptions based on the quality of the tree rather than on that of the locality. This was simplified by amendments issued in 1940.

11.2.6.3.1.4 The felling cycle was fixed at 24 years with no provision for intermediate tending. No crop of any value should have been left without any attention for such a long period. It would have been better to have adopted a cycle of 20 years with no intermediate felling or one of 30 years with intermediate Silvicultural attention at 10 or 15 years for areas justifying it. As the area is large the latter proposal would have been better.

11.2.6.3.1.5 The marking rules had obviously not been tested in the field. Only saleable trees were to be marked plus dead, dying or diseased trees whether saleable or not. Thinnings were only to be done if saleable (unless the Conservator of Forests specially sanctioned them). The only improvement felling prescribed was to help regeneration of valuable species. No attempt to tend the growing stock was prescribed unless the trees due for removal were saleable. No Silvicultural needs were considered. These were amended in 1940.

11.2.6.3.1.6 Areas previously worked out in the old P.B.I. and V were included in the Selection Working Circle and allotted for working towards the end of the felling cycle. It would have been preferable to constitute separate felling series of such areas so that separate treatment could have been given to them.

11.2.6.3.1.7 Owing to non-availability of trees over 14" in diameter the selection prescriptions have been a failure in Durgapur felling series. The crop is no better than in Demarcated Protected Forests felling series where a still lower diameter limit was fixed. The coppice system which was applied to these forests from 1940 had been giving good results.

11.2.6.3.2 Coppice Working Circle:

11.2.6.3.2.1 The Coppice Working Circle was constituted with the object of supplying fuel to the labour employed by Messrs. Heilgers and Company at Tikarpara. This demand was over estimated and no coupes were worked till 1943-44 when a demand for charcoal arose. A smaller area was worked under coppice to meet this demand for manufacture of charcoal.

11.2.6.3.2.2 As mentioned above coppice fellings were continued in Durgapur block except in Compartment I which contained better tree growth and was incorporated with the adjacent selection forests of Similipathar block.

11.2.6.3.3 Plantation Working Circle: The selection of areas for the Plantation Working Circle was unsatisfactory. The aim was to select as large contiguous areas as possible. Some areas formed parts of old P.B.V. and contained Sal pole forests, other areas contained good Sal regeneration. The areas, which were most suitable for immediate planting were Daba bamboo areas containing few trees of value or established regeneration of principal species. All amendments to this effect were issued in 1940, which was continued in Jee's plan. The old teak plantations, being irregular, could have been brought under selection Working Circle prescriptions.

11.2.6.3.4 Bamboo Working Circle: No distinction was made in the treatment of "Daba" and "Salia" bamboos and the cutting rules allowed of half and half cutting a system unsuited to the morphology of bamboos. Accordingly amendments were made in 1940 and the amended rules were continued.

11.2.6.4General results of Dr. Mooney's Plan of Demarcated Protected Forest Working Plan:

11.2.6.4.1 Coppice Working Circle:

11.2.6.4.1.1 The coppice rotations prescribed were 40 and 30 years, the latter being adopted for the poor quality forests. There is no doubt that this rotation is too low. It would have been preferable to increase the rotation and to add to the area included in Coppice Working Circle. Amendments were made to some extent in 1940 increasing the rotation to 50 years and 40 years and re-allotting some blocks to the coppice-working circle, which had been included in the Selection Working Circle.

11.2.6.4.1.2 The coppice coupes were not shown in the compartment history maps but were left to the Divisional staff to lay out from year to year. This was a bad omission, which has led to practical difficulties.

11.2.6.4.1.3 Standards were prescribed purely for silvicultural reasons and not for the production of large timber. This was a mistake as under the prescribed rotations 12" diameter trees fit for plough timber (essential demand of the local population) could not be produced. The prescriptions were too vague. Further in the poorer types of forest, such as those occurring on igneous rocks, there were practically no trees fit for retaining as standards. A great deal of time was wasted looking for suitable standards which did not exist and in the end unsuitable trees marked. Also no provision was made for excluding eroded areas from working or for retaining an increased number of standards therein.

11.2.6.4.1.4 Cleanings were prescribed in the year following coppice fellings and it was suggested they would be necessary in the 3rd and 5th year. In these poor dry types of forest, mainly of low value, cleanings were not necessary; climbers were undoubtedly bad in some areas, but it should not have been left to the discretion of the Divisional Forest Officer to deal with them.

11.2.6.4.1.5 Thinnings were prescribed in coppice coupes at 10 years age. Except in the good quality forests thinnings were not worthwhile before about the 15th year, especially as in most cases the produce were unsalable.

11.2.6.4.2 Selection Working Circle and Miscellaneous Working Circle:

11.2.6.4.2.1 Many blocks which had hitherto been included in coppice working circle were transferred to the selection or miscellaneous working circle; for the reasons either that the demand was not extensive enough to justify working under coppice or that block contained an extremely poor crop hardly fit for systematic exploitation. The opening of the Talcher collieries led to a demand for pit crops, which could be partly met, from certain forests, which had been transferred to the selection-working circle. Again the coppice selection system described earlier had not been a success as in many of the forests trees over 12" in diameter hardly occurred. The result had been that very few trees were marked in the Coppice-Selection Coupes and market values were insignificant. These forests had been closed to grazing under the working plan prescriptions but in practice a considerable amount of grazing occurred. It would be easier to control grazing if only parts undergoing

regeneration were closed to grazing. Amendments were made in 1938 re-allotting most of these blocks to Coppice working circle.

11.2.6.4.2.2 The selection working circle was divided into far too many felling series. The demand was not purely local and would have made management simple to have fewer annual coupes, without inconveniencing purchasers of produce.

11.2.6.4.2.3 The selection felling cycle of 15 years is far too short for forests of very low value. It would have been preferable to have fixed a longer cycle and lower exploitable diameter limits, so as to make the yield more concentrated. Owing to non-availability of suitable areas coupes remained after unsold. By an amendment issued in 1939 the felling cycle was raised to 30 years.

11.2.6.4.2.4 The selection marking rules were purely exploitation rules, and did not provide for any improvement fellings. This was an omission, which was rectified by amendments issued in 1939.

11.2.6.4.3 Bamboo Working Circle: A few blocks, eg. Bhogpal and Madhpur, were excluded from this working circle which contained exploitable bamboos. These were later included by issue of amendment slips on 1939. The cutting rules permitted half and half clear felling of congested clumps a system, which caused death and deterioration of the clumps. These rules were amended in 1939 and better cutting rule were provided.

11.2.6.4.4 On the whole Dr. Mooney's plan was a great improvement on the scientific management of forests. Subsequent revision by Sri S. Jee followed mainly the provisions of that working plan with certain modifications to bring the intensive management of forests in changed conditions. It is important to examine the prescriptions of this plan and its results as this plan was followed till 1980-81. The revised plan of Dr. C.R. Mohapatra came into force from 1981-82.

11.2.7 Jee's Plan:

Under Sri Jee's Plan (1944 – 45 to 1964 – 65 extended up to 1980 – 81) following six working circles were formed for R.Fs and D.P.Fs.

Selection Working Circle- Area……..66933.76 hect.
Coppice Working Circle- Area……17132.97 hect.
Plantation Working Circle- Area…… 512.47 hect.
Miscellaneous Working Circle
Bamboo Working Circle……...Over lapping.
Kath Working Circle.

11.2.7.1 The selection working circle included mostly the best forests of the division that were capable of producing big size timber. 11 felling series were formed having 10,20 and 30 years felling cycle for different felling series according to crop. Exploitable diameter too varied specieswise and felling series wise with minimum 10" (25cm) to 20" (50 cm.). Yield was regulated by area only. Provision was made to take up Teak plantation in suitable areas of this working circle as decided by D.F.O. Provisions were made also for cleaning and supplementary fellings, additional cleaning and thinning of dense required patches, strict fire protection up to 5 years from the year of coupe working, no browsing and grazing upto 5 years of year of coupe working, closure of grazing for 1 year in any area where forest fire

breaks in and carrying capacity for grazing at the rate of 4 acres per cow and 6 acres per buffalo.

11.2.7.2 Coppice working circle included all the areas that were worked under coppice working circle in last plan of Dr. Mooney. It included 35 whole D.P.F. blocks and 2 R.F. blocks. Rotation was kept 30,40 and 50 years according to crop for different felling series. Total 20 felling series were formed in this working Circle. Silvicultural system adopted was coppice with standards but except in eroded area retaining of standards were not insisted, provisions were kept for departmental cleaning after working of coupe, sowing and planting in poor area, cleaning and supplementary felling, thinning, climber cuttings, strict protection from fire up to 5 years of coupe working (15 years in case of planting), no browsing and no grazing up to 5 years (10 years in poor areas) of year of coupe working.

11.2.7.3 Teak plantation working circle included all planted areas upto 1944-45, plantations were serially numbered and prescription were made for future planting and thinning. Provisions were also kept for 15 years strict protection from fire and grazing.

11.2.7.4 The area that were not allotted to above working circle or portion of blocks that were proposed for excision and all forest villages were included in miscellaneous working circle.

11.2.7.5 Rest 2 working circles were overlapping. For Bamboo working, two cutting cycles 3 years for RaigodaRange and 4 years for rest areas were provided, Khair working circle was also overlapping to exploit Khair trees.

11.2.7.6Result of Sri Jee's Plan:

11.2.7.6.1 Selection Working Circle:

11.2.7.6.1.1 Selection working Circle of Sri Jee's plan included the forest area varying in crop composition. Crop varies from pure Sal forest to heterogeneous miscellaneous forest. Prescriptions were general in nature and not based upon enumeration and regeneration status. As a result, stock of exploitable girth class trees decreased. Prescriptions for gap planting, strict fire protection, grazing, cleaning, tending, thinning were not fully implemented, as a result regeneration status deteriorated. Compartment histories were not maintained, 10 years felling cycle for Raigoda and Purunakote felling series resulted in abrupt drop in yield and it was increased to 20 years later by Conservator of Forests, Angul Circle. The yield had not been regulated on basis of number of trees or volume and it had been approximately regulated on area basis, which fluctuate considerably from year to year in some felling series. Regeneration of valuable species and improvement of forests had not resulted in selection working circle and degradation had set in. Proportion of inferior species increased particularly in Majhipara, Similipathar, Burti, Krushachakra and Bolong blocks.

11.2.7.6.1.2 Marking rules were defective to the extent that silviculturally available girth trees had not been taken into consideration and as such trees were prescribed for marking irrespective of whether the regeneration was present or not. In some of the blocks like Baghmunda, Majhipara, Krishnachakra, Tainsi and Kuru it is rare to find at least one sound tree per acre. Although the marking had prescribed to retain some sound trees above exploitable limit, this discretion was given to the ignorant marking staff. The result thus obtained was not better than expected from the staff. In fact under improvement marking more trees just below the exploitable girth class had been removed in absence of specific provision to safe guard this girth class. Rules framed for the improvement fellings were capable of misinterpretation giving chance to marking officer for removing a number of trees in consideration of slight defects.

11.2.7.6.1.3 Under cleaning and subsidiary silvicultural operation, emphasis was not laid for inducing natural regeneration of Sal and other valuable species. No prescription was made to create favourable condition for establishing Sal regeneration by proper canopy manipulation, removal of interfering species and tending operations. D.F.O. was given option to take any suitable area for teak plantation in selection working circle, which resulted unsystematic plantations of variable sizes. Though strict protection from fire and grazing were prescribed but it was hardly implemented.

11.2.7.6.1.4 No special emphasis was laid for extending and improving Sal forest. No attention was paid for management of the fauna of the division.

11.2.7.6.2 Coppice Working Circle: In this working circle rotation prescribed varied from 20 to 50 years for different felling series. The prescription was not based upon enumeration results and coppicing capacity of species in site conditions. Rotation of 20 years was too short. Emphasis was not laid on retention of standards. Coppice of higher hill slope paved way for soil erosion, bamboo invasion and degradation of forest. Areas having poor stock and fit for rehabilitation measures were put in this working circle, which resulted in, further degradation and denudation. No measure was taken to check soil erosion. Though provisions were made for sowing, planting, cleaning, fire protection and grazing but these were not properly and fully implemented.

11.2.7.6.3 Bamboo Working Circle: Adoption of 3 years cutting cycle in Raigoda Range and 4 years in other Ranges was neither based upon any study nor any study was conducted to compare the results. No prescription was made to restrict bamboo working during rainy season, to protect from fire and to protect from grazing. Some felling series such as Tainsi and Purunakote were too large to be managed intensively and it resulted in over exploitation in accessible areas while no exploitation in interior areas, higher slopes and hilltops. Kanta bamboos were not exploited as desired in the working plan.

11.2.7.6.4 Teak Plantation Working Circle: The teak plantations upto 1944-45 have been included in Shree Jee's plan. There was no specific allotment of areas to be planted. As mentioned earlier the option of selecting suitable areas and their extent of plantation was left to the discretion of the Divisional Forest Officer. Thereafter during the plan period quite a number of teak plantations have sprang up as selected by the Divisional staff and scattered all over the division. They do not have any continuity. Quite often the plantations have been taken up in the higher slopes leaving valleys and better areas. This has resulted in failure of the plantations. Thinnings have been neglected in the past though prescribed due to want of funds. Many good miscellaneous forests as well as sal forests have been sacrificed in the process.

11.2.8 Though Shree Jee's plan had certain limitations but it was definitely a further improvement over previous plans and its success as desired could not be achieved as prescriptions wee not implemented fully and properly either due to financial or other constraints. This plan brought a number of improvements such as serially numbering the plantations, year wise thinning schedule, simple and practicable prescriptions, etc. However the need for revision was felt during 1965-66 and revised plan was prepared for a period (1970 – 1990) by Dr. C.R. Mohapatra, I.F.S. But this plan could not get sanction of Govt. till 1980. The plan was implemented from 1981-82 after being sanctioned and till 1980-81 Shree

Jee's plan was followed. But before discussing the prescriptions and result of Dr.Mohapatra's plan it is necessary to look about past system of management of Talcher forests.

11.2.9 Premerger period (Talcher Forest):

11.2.9.1 No authenticated records are available to indicate system of management followed during ex-state time. However as pointed out in Sri N.R. Bohidar's scheme, regular management of forests was first introduced during 1937 when an employee of ex-state prepared a scheme prescribing selection and coppice working circle with overlapping working circles for bamboos and Kath exploitation. In selection working circle Bulajhar, Tangiri, Mankadchua, Nialu-Lokdhajharia-Sapakata, Phuljhari, Dhankoili, Kiajhar and Durgapur R.Fs. were included forming Bulajhar felling series for Bulajhar R.F. and second felling series forest. Coupe working in Bulajhar felling series was started during 1938 while in second felling series started in Tangiri block during 1941. Working was suspended from 1943 to 1946 and when resumed irregular felling were resorted in all blocks to meet war supply.

11.2.9.2 In coppice working circle four felling series namely Kandhal felling series (404,7 hect.) Kanheijena felling series (947 hect.) Kauchiakhol felling series, and Hirapur felling series were formed and were worked on 30 years rotation cycle except Kanheijena which was worked on 40 years rotation. Bamboo was worked on 4 years cutting cycle in two felling series namely Biripal and Sadarkhol felling series and bamboos were supplied on permits to local people. As per prescription all trees above 3' girth and dead and dying trees below 3' girth were felled during Bamboo working. Khair working circle had one felling series consisting Khajuria, Biripal, Sadarkhol, Tangiri, Bulajhar, Dalak and Kiajhar blocks with felling cycle of 20 years.

11.2.10Post merger period: (Talcher Forest):

11.2.10.1 Champati's scheme: Late P. Champati, the then D.F.O., Dhenkanal, prepared working schedule just after the merger of this Ex-State in the Dhenkanal Division who provided nine coppice felling series with a rotation of 40 years. The felling series were as below: -

Sl. No.	Name of the felling series		Annual coupe Area
Petchira- Pathura	"A" Class	(18.21 hect.)	45 acres
Kanheijena	-do-	(20.23 hect.)	45 acres
Makundanali	-do-	(6.60 hect.)	15 acres
Chandrapada	-do-	(11.33 hect.)	28 acres
Mankadchua	-do-	(12.95 hect.)	32 acres
Durgapur	-do-	(14.56 hect.)	36 acres
Kauchiakhol	"B" Class	(18.51 hect.)	46 acres
Rabipur	-do-	(31.16 hect.)	77 acres
Badakathia	-do-	(31.56 hect.)	78 acres

11.2.10.2 Bohidar's Scheme: Late Bohidar's scheme, which was drafted during 1957, could not be implemented up to 1962. During 1962 when the scheme was taken up for implementation certain discrepancies regarding area were noticed and fieldwork was again taken up. Finally the scheme was operative from 1964-65 for ten years with the following working circles.

Coppice Working Circle
Bamboo Working Circle
Plantation Working Circle
Afforestation Working Circle
Protection Working Circle

11.2.10.3 Result of the scheme:

11.2.10.3.1 The blocks allotted to selection working circle during the last plan prior to late Champati's plan and confined to be under selection after merger were worked under coppice system with long rotation and short rotation of 60 and 40 years. The reasons attributed for change over to coppice system was due to growing demand of small timber and poles both by the public as well as collieries. As per this scheme all coupes were worked during 1964-65 and then few coupe here and there in selective way up to 68-69 by the O.F.C. Ltd. Since 1969-70 no systematic working of the coupes in the Range was done which may be due to (i) poor condition of crop (ii) Non-working by the O.F.C. Ltd. (iii) less competition amongst the contractors resulting in low bidding. However, much after the expiry of the scheme period during 1979-80 some of the arrear coupes were sold by the. D.F.O. Angul and the prices offered in the auction were abnormally high. No records are available to indicate whether cultural operations were taken up in the forest as per the prescription of the scheme.

11.2.10.3.2 Most of the forests worked under this system as well as the blocks allotted to the working circle are in a highly degraded state and many of the areas are either open or devoid of any forest cover. The prescription of tending and cultural operations had been hardly followed. Natural regeneration of Sal in most of the blocks is inadequate and is not able to establish due to repeated fire, unregulated excessive grazing, clandestine removal of pole crop for fencing and firewood by the local villagers and by smugglers for sale to colliery suppliers.

11.2.10.3.3 Bamboo forests were not being worked during the period of the scheme excepting issue of few permits but regular theft of bamboos from forests by the local villagers continued. The blocks allotted to this working circle are in the close proximity of the Rengali Dam Project and bordering the Ex-State of Palalahara as well as Bamra. As such these blocks have suffered much due to constant biotic pressure from all sides. Presently these blocks have lost their productivity and the only way to revive them is to work them under Rehabilitation Working Circle.

11.2.10.3.4 The scheme provided to take up plantation in such of the blocks having poor crop and heavy local demand. Hardly the prescriptions of the scheme were followed though plantations in scattered patches here and there were raised in the R.Fs like Pathuria, Sardhapur, Rakas and Rabipur. Such haphazard plantations with no recording of the details of year of planting, spacing, cost and species etc. and most of the plantations are found substandard with poor percentage of survival due to inadequate after-care, resulting on total negligence in course of time.

11.2.10.3.5 The afforestation working circle covered some of the forest blocks where the site condition were of refractory nature. The prescriptions of the working circle mainly intended Rehabilitation and to restock the area with suitable species so that they can revive productivity and supplement the needs of the local villagers by yielding firewood, small poles, grazing stock and bamboo. The prescriptions here too were not implemented due to inadequacy of funds throughout the scheme period. However, from the year 1978-79 "Social

Forestry" programme was taken up in the area and plantations as well as rehabilitation of sal rooted wastes with trench fencing are being taken up in the R.F. Blocks like Sardhapur, Rakas, Kauchiakhol, etc. In some of the blocks like Nuabhuin,Kauchiakhol, Pathuria, Sardhapur, Makundanali, etc. plantation of Acacia auriculiformis and Eucalyptus were raised in past.

11.2.10.3.6 Hardly any work has been done in the area assigned to protection working circle. Most of these blocks are in worst stage of depletion due to quarrying of stone, heavy grazing, extension of colliery activities and encroachments coupled with illicit removal of bamboo, small timber and fire-wood by the local villagers.

11.2.10.3.7 To sum up, the past system of management of these forests reveal only timber exploitation and large scale irregular fellings since 1917 in which practically all good and matured trees were removed during the war period ending 1945. The working scheme prepared during 1937 was merely an exploitation scheme with hardly any emphasis on development of the resource base. The exploitable girth was not prescribed excepting for Bulajhar block where undersized trees were also removed. There were no marking rules and no coupes were laid out in any map while the annual coupe area was mentioned as 200 acres (80 hect.). As per this exploitation programme in the scheme the entire area was covered within only 13 years though a felling cycle of 20 years was adopted. The coppice coupes were also not shown in the map but the annual area to be cut had been mentioned. There was no prescription for retention of standards nor any cultural operations were prescribed. The forests were worked with the main intention of earning revenue rather than any improvement of the growing stock for achieving progressively increased yield. The prescriptions given under the Khair working circle of the scheme could not be followed as all the trees were exploited within a short period. This exploitation was so heavy that during Bohodar's plan, it was difficult to locate a good and mature Khair tree in any of the forests.

11.2.10.3.8 The practice of opening of bamboo coupes could not be followed though the villagers were issued permits to remove bamboo for their domestic consumption. Since coupes were not being laid down, the cutting of bamboo was spread all over the area. The prescriptions of the scheme were not implemented resulting in rapid denudation of the bamboo forests of the area.

11.2.10.3.9 In Champati's scheme retention of 5 standards per acre was provided but this scheme did not deal with all the blocks in the Range and hence cannot be called as a scheme but was a mere cutting programme. Since Champati's scheme only dealt with nine blocks the selection system of the previous scheme was extended during the period till the entire Bulajhar block was covered. Bohidar's scheme had discouraged selection working and all the blocks worked under selection system in the past were included in coppice working circle either with long or short rotation. His argument in support of the prescriptions was that there is heavy local demand of small timber, pole and firewood and to meet the growing demand of the expanded collieries of Talcher area. It is seen that there was no systematic working of the coupes during the scheme period and hardly any cultural operation was taken up.

11.2.10.3.10 It is also felt that all the good areas had been worked or rather over-exploited while the poorer areas were either not sold or taken delivery by the Orissa Forest Corporation Ltd. The objectives of the scheme have failed miserably for lack of foresight as well as absence of post felling care and deviations in regular and systematic working of coupes. There was hardly any bamboo forest left to be worked by the time the scheme was ready for

implementation. The Rengali Dam project was started with full vigour near these bamboo-bearing areas and there was hardly any scope to open up bamboo coupes and attend to the various cultural operations prescribed in the scheme. Plantations and Afforestation on the degraded blocks was taken up haphazardly without any reference to the prescriptions in the scheme. None of the plantations raised during the period can be reckoned as successful and established except in one at Pathuria (Gambhar) and Nuabhuin (Akasia) and Kandhal (Teak). The prescriptions of protection working circle have hardly been followed in practice. As such the results of the scheme are rather disappointing and the general condition of the forests had undergone further deterioration without any significant improvement any where in the scheme area. Hence the necessity of revision of the Bohidar's scheme was felt and revised working plan was prepared by Sri B.C. Mohapatra, I.F.S. for a period of 10 years from 1981-82 to 1990-91.

11.2.11Dr. C.R. Mohapatra's Plan of Angul Forests (1970-1990):

Dr. Mohapatra's plans have following working Circles:

Sal Selection Working Circle	14932. hect.
Selection (Misc. Spp.) Working Circle	50916.6 hect.
Coppice Working Circle	10465.9 hect.
Teak plantation Working Circle	6837.4 ect.
Soft Wood Working Circle	Over lapping
Bamboo Working Circle	Over lapping
Rehabilitation Working circle	2773.6 hect.
Soil Conservation Working Circle	Over lapping
Miscellaneous Working Circle	2251.5 hect.

11.2.11.1 Sal Selection Working Circle:

11.2.11.1.1 Sal Selection Working Circle included all compartments of selection working circle of Sri Jee's Plan having more than 20% of sal. This working circle constitution was based on enumeration results and it was to provide special treatment to sal. 3 felling series namely Raigoda felling series, Purunakote felling series and Similipathar felling series were formed with felling cycle of 20 years. This working circle had the provisions of removing evergreen species hampering establishment of sal, nurturing the existing regeneration by weedings, shrub cutting, and opening the canopy, planting artificially the blank areas and protecting the area from fire and grazing. In doing so preference was given to sal, piasal, sissoo, Teak, Bandhan and Gambhar (Principal species) over Asan, Kurum Mitkunia, Kangada and Bamboo (Secondary species) and all other species (inferior species). Exploitable diameter for different species fixed were: -

Species	Felling series		
	Raigoda	Purunakote	Similipathar
Sal,Piasal, Teak	50 CM.	50 CM.	45 CM.
Sissoo, Gambhar	45 CM.	45 CM.	40 CM.
Asan, Kurum, Mundi, Kangada	55 CM.	55 CM.	45 CM.
Bandhan	35 CM.	35 CM.	30 CM.
Others	50 CM.	50 CM.	45 CM.

11.2.11.1.2 Yield was regulated according to number of exploitable trees to be removed per hectare determined by Smithy's safe guarding formula after reducing the area or quality III which was taken as unit. As per this calculation percentage of exploitable trees to be removed were 47% in Raigoda, 98% in Purunakote and 44% in Similipathar. The average number of exploitable trees available for felling per hectare in Raigoda, Purunakote and Similipathar were 1.5,0.3 and 0.6 respectively. However a correction to the effect for retaining sound trees of principal species above exploitable girth to the extent of 50% in Raigoda and Similipathar and 25% in Purunakote was in-corporated.

11.2.11.1.3 In sal selection working circle, different marking rules were prescribed for thinning marking, improvement marking, marking in eroded areas and general marking. Under general marking, marking of all exploitable trees were prescribed except trees standing in blank patches, within 3 meter from Nala bank and soft wood trees. Under improvement marking, all dead, definitely dying, seriously defective, diseased, interfering with Sal or likely to interfere with Sal were prescribed. In eroded areas marking of only marketable trees above exploitable girth if not necessary to retain on soil conservation or silvicultural ground were prescribed. If after above marking any congested patch remains there, thinning marking was prescribed for improvement of the crop by retaining seed bearers. For doing so Sal sapling of 2 meters height in drier area and 3 meters height in moist area were taken as established. Subsidiary cultural operation, climber cutting, fire protection, protection from grazing, sowing and planting were other prescriptions in this working circle.

11.2.11.2 Selection Working Circle: Rest areas of selection working circle of Sri Jee's plan were kept in selection working circle in Dr. Mohapatra's plan. 8 felling series were formed and felling cycle of uniform 20 years was adopted. Exploitable diameter for different species fixed were: -

Felling Series Species	Bhurkundi, Kantamegha Katrang, Tarva, Baghamunda F.S.	Katada, Manikjodi, Purunagarh.
Bandhan	30 Cm.	30 Cm.
Kurum, Asan, Mitkundla, Siris Semul.	55 Cm.	45 Cm.
Sal, Piasal, Teak, Gambhar.	50 Cm.	45 Cm.
Others.	50 Cm.	45 Cm.

Yield was regulated by area only. Marking rules prescribed marking of all exploitable girth trees except the trees in blanks, within 3 meter width from Nala bank and soft wood species. Marking of all diseased, dead, definitely dying, seriously defective, and interfering or likely to interfere with principal species were prescribed under improvement marking and even after if any congestion remains thinning marking were prescribed. In doing so preference were given to Sal,Teak,Piasal, Bandhan, Sissoo, Gambhar, Asan, Kurum, Mitkunia, Kangada, Jamu and Siris (principal species) over all other species including Bamboo (Secondary species). Provisions were also kept for climber cutting, subsidiary silvicultural cleaning, sowing and planting, protection from fire and grazing control in the working circle.

11.2.11.3 Coppice Working Circle: It included the areas kept under coppice working circle in Sri Jee's plan and 11 felling series were formed with rotation of 40 years, Yield was regulated by area reduced for density only with each series divided into 40 coupes. The Silvicultural system followed was coppice with standards. Provisions were kept to mark minimum 65 evenly distributed standards of principal species per hectare between 20 to 25 cm. dia besides having fruit trees. Provisions were kept to maintain a register of standards kept. Exploitable diameter was fixed at 30 cm. for all species. Provisions for no marking on steep slopes, conservating marking on southern and western aspects, climber cutting at time of marking, cleaning after coupe working, sowing and planting, thinning, protection from fire and grazing were also kept.

11.2.11.4 Teak Plantation Working Circle: It included 2225 hectare. teak plantations already raised in past and 4612.4 hect. proposed teak plantation area with total 6837.4 hect. area. Exploitable diameter of 50 cm. and rotation of 70 years were fixed. Serial numbers were assigned to plantations and its thinning schedules were prescribed. Planting technique and maintenance were also described in this working circle. Miscellaneous regulation such as protection from fire and grazing, weeding, creeper cutting were also prescribed.

11.2.11.5 Soft wood working circle: An over-lapping working circle for exploitation of soft wood was formed with 3 felling series namely Purunakote, Raigoda and Durgapur with felling cycle of 20 years and exploitable diameter of 40 to 60 cm. according to species and felling series. Yield was regulated by area only. No special regulations were prescribed for this working circle.

11.2.11.6 Bamboo Working Circle: Another over lapping working circle for exploitation of Bamboos was formed with 28 felling series with uniform 4 years cutting cycles. Each felling series was divided into 4 annual coupes A,B,C,D and yield was regulated by area. Different cutting rules were prescribed for salia and Daba bamboos. While the cutting rules for Salia prescribed min. 10 up-right holder culms, clear felling was prescribed for Daba on 12 years rotation i.e. prescription for clear felling 1 clump while leaving 2 adjacent ones. Other miscellaneous regulations such as protection from fire and grazing, cleaning were also prescribed.

11.2.11.7 Other Working Circles: 11 D.P.F. blocks of area 2773.6 hect. were prescribed in working circle for rehabilitation measures. Degraded area of extent 4587.6 hect.was prescribed under soil conservation working circle. A chapter on wildlife management was incorporated. Left over areas and forest village areas were kept under miscellaneous working circle.

11.2.11.8 Result of Dr. Mohapatra's Plan:

11.2.11.8.1 Sal Selection Working Circle:

11.2.11.8.1.1 It is observed that there is no appreciable improvement in percentage of Sal. Regeneration status of sal is not satisfactory. This is because prescriptions of working plan has not been followed properly and no favourable treatment was provided to this area in comparison to selection working circle area, Subsidiary silvicultural operations, climber cutting, etc. have either not been done systematically or if done only in part of coupes towards road side. No sowing and planting has been taken up. Hence this working circle has not yielded desired result due to non-implementation of plan till 1980-81 and improper implementation after that.

11.2.11.8.1.2 On the basis of analysis carried out it has been concluded that in Raigoda and Similipathar felling series one out of two exploitable trees must be exploited while in Purunakote felling series 3 out of 4 shall be exploited. The exploitation percentage in Purunakote is certainly high. Further average number of exploitable trees per hectare as per enumeration carried during 1968 available for felling were 1.5 in Raigoda, 0.3 in Purunakote and 0.6 in Similipathar with an average of 0.8 per hectare. But no such restriction was imposed. While on the other hand number of trees exploited/hectare in this working circle comes to 3.5 trees/hectare, which is very high than above figure. As such heavy exploitation has been carried out in absence of check measures based on enumeration, which has resulted adversely to the crop.

11.2.11.8.1.3 Though prescribed in working circle, no checking is being exercised on coupe demarcation and marking either by A.C.F. or D.F.O. Practically marking is being done by either Forester or Forest Guard. This has resulted in irregular marking and some times faulty laying out of coupes. Also marking is not carried out evenly. Prescriptions have been made that no marking shall be done within 3 meters of nala bank but this 3 meters width is quite inadequate and has accelerated soil erosion. Marking rules for exploitation marking, improvement marking, thinning marking, marking on eroded area create confusion and have resulted in heavy marking in coupes. On the whole marking rules were more revenue oriented.

11.2.11.8.1.4 Since most of the area of this working circle comes to sanctuary area of Satkosia Gorge sanctuary and no special attention has been paid in prescription of working circles for wildlife preservation. Further many compartments of this working circle has denuded extensively due to theft of forest produce, excessive grazing & forest fire etc.

11.2.11.8.2 Selection Working Circle: Marking rules prescribed does not provide a safeguarding check on marking of number of exploitable trees. As such almost all exploitable size trees have been marked. The marking rules has led to heavy exploitation, which comes to an average of 4.7 trees per hectare. This has resulted adversely to the coupes. Many compartments of this working circle are not at all suitable for exploitation. Limit prescribed in working circle for no marking along nalas is only 3 meters width, which is not adequate and has accelerated soil erosion. Prescription regarding subsidiary silvicultural operations like climber cutting, sowing and planting, protection from fire and grazing has not been properly implemented.

11.2.11.8.3 Coppice Working Circle: The area allotted to this working circle are the areas near habitation where population of men and cattle both have considerably increased and in spite of the prescription of working plan it had not been possible to control the illicit removal of forest produce from these areas, regulate grazing and protect from forest fire. Site has deteriorated and soil has become refractory in nature. The prescriptions were not based upon any study of coppicing vigour of different species. Though standards were left but removed subsequently by villagers. Subsidiary silvicultural operations have not been carried out and on the whole the crop has not responded to the system.

11.2.11.8.4 Rehabilitation Working Circle and Soil Conservation Working Circle: The desired objectives of these two working circle have not been achieved due to improper implementation of the prescriptions, adverse conditions of site and lack of continuity.

11.2.11.8.5. Soft Wood Working Circle: The objective to give preferential treatment to soft wood species has not been achieved due to non working of all the coupes, part working of coupes due to larger coupes, less availability of soft wood species of exploitable size, scattered working and the working without paying attention to the regeneration of these species.

11.2.11.8.6 Bamboo Working Circle: Due to large coupes and inadequate inspections, working of bamboos has not been carried out according to prescriptions of working plan which has resulted in deterioration of clumps, congestion and uprooting. Retention of 10 up-right bamboos in case of salia is inadequate. No prescription for putting soil around clump on manuring has also deteriorated the clump condition. Unscientific illicit removal of immature bamboos by artisans & villagers is another cause of serious concern. Clear felling in case of Daba Bamboo is also not appropriate which had affected the clumps adversely. Inadequate felling of Daba bamboos has created congestion.

11.2.11.8.7 Teak Plantation Working Circle: To maintain the previously raised plantation a thinning regime has been prescribed but thinning has not been carried out as required silviculturally. Climber cutting and weeding have also not been carried out properly in young plantation. A target of 200 hect.per year was prescribed in plan, but due to financial constraints mainly it has been carried out at the rate of 100 hect. per year. Raising of teak plantation has also not been done as per prescriptions of working plan. Lack of suitable size teak stumps are faced every year and as a result whatever stumps are available are put in field without any choice. Inadequate stump-stock also leads to treatment of seed in March- April and sowing in polythene bag to be planted in June-July. The planting of sub-standard planting stock in field, improper soil working, manuring and weeding, maintenance of incomplete plantation journals oftenly without map and record of growth, no record of all operations carried out are some of the short-comings in the field responsible for more casualty in plantations and failure some times.

11.2.11.8.8 Chapter on Wildlife, M.F.P. and Miscellaneous Working Circle: Though two chapters have been enclosed namely on wild life management and M.F.P. but it has not provided suitable emphasis on the subject.

11.2.12 Talcher Plan by Mr. B.C. Mohapatra: (period 1981-82 to 1990-91): It had three working circles namely Selection Working circle (4299 hect.) Coppice working Circle (6684 hect.) and Rehabilitation Working Circle (8319 hect.).

11.2.12.1 Selection Working Circle: Selection working circle had 3 felling series namely Bulajhar, Phuljhari and Nialu-Sapkata-Lodhajhari felling series with a felling cycle of 20 years with exploitable dia of 33.44 cm. in case of Sal and Bandhan while 38.21 cm. in case of other species. Yield was regulated by area. Sal along with Bija, Kasi, Gambhar and Sissoo were taken as principal species while Asan, Haldu, Mundi, Bandhan, Siris, Tentara, Bamboo as secondary and others as inferior species. Edible and commercial fruit and oil seed bearing trees and trees yielding M.F.Ps were termed as guest species not to be felled. Felling was recommended for 66% available exploitable trees except in degraded condition where 50% removal of available exploitable trees was recommended. Other prescriptions included prescriptions for climber cutting, subsidiary silvicultural operations, protection from fire and grazing. Marking of 50% available exploitable trees with all dead and uprooted trees were prescribed except the trees on blank eroded patches, roadsides and of guest species.

11.2.12.2 Coppice Working Circle: Kanheijena, Mankadchua, Durgapur, Kiajhar, Gumpha, Tangiri, Dalak, Dhankoili, Sadarkhol, Pedi, Kanteikolia, Langolkhol and Patkhaman were included in this working circle and 10 felling series were formed each having 40 annual coupes and to be worked on 40 years rotation. The silvicultural system prescribed was coppice with standards. Yield was regulated by area and other prescriptions were prescribed for subsidiary silvicultural operations and protection from fire and grazing.

11.2.12.3 Rehabilitation Working Circle: All other blocks were kept in Rehabilitation Working Circle with 9 felling series. Areas were divided into different types and different measures suiting to site were prescribed for rehabilitation.

11.2.12.4 Result of Talcher Plan: The 50% of exploitation of available exploitable diameter was high in Talcher conditions. But the tremendous increase in demands due to population increase, industrialization, collieries, thermal power plants, NALCO, F.C.I. construction of Rengali Dam Project, Samal Barriage etc. created market for any type of forest produce and most of the forest deteriorated very fast. Repeated coppicing of the crop under coppice system was a failure due to above reasons as even standards left were removed illegally. Due to adverse conditions rehabilitation works could not show improvement.

11.2.13 Sri B.P. Singh's plan of Angul Forests (1990-91 – 1999-2000):

In the outgoing plan prepared by Sri B.P. Singh, IFS for the period from 1990-91 to 1999-2000, the forests of Angul Division including the forests of Talcher Range have been worked under following working circles.

Sal Selection Working Circle.	4722.451hect.
Selection Working Circle (Misc. species)	19058.026hect.
Improvement Working Circle	39384.316hect.
Rehabilitation Working Circle.	39688.525hect.
Plantation Working Circle.	9530.849hect.
Bamboo Overlapping Working Circle.	
Soil Conservation Overlapping Working Circle.	
Wild life Management Overlapping Working Circle.	
Miscellaneous area (Balance area)	1397.13hect.

11.2.13.1 Sal selection Working Circle:

11.2.13.1.1 Compartments of 4 R.F. blocks were put in this working circle, covering an area of 4,722.451 ha. A statement showing the R.F. blocks/compartments and their areas is furnished in Table 7.1. Entire area of 4,722.451 ha.of the working circle was kept in one felling series. The exploitable girth was fixed for Sal, Teak, Piasal at 155cm,Sissoo& Gambhar at 140cm, Bandhan at 110cm. The felling cycle was fixed for 20 years. The yield was regulated by area with a check on the removal as calculated in accordance with Smithy's Safe guarding formula.

Table 11.1 Areas under Sal Selection Working Circle

Sl. No.	Name of R.F.	Compartment No.	Area in ha.
1	2	3	4
01	Raigoda	1a	181.587
		2a	267.869
		4a	195.219
		6a	194.496
		7	202.453
		9	275.657
		15a	169.862
02	Tulka	1a	320.951
		6a	194.776
		10	586.780
		11a	260.650
03	Bolong	10a	187.012
		12a	319.563
		6a	198.090
04	Purunakote	7a	220.591
		14	184.802
		15a	391.901
		20	370.192
	Total: -	18 Compartments	4,722.451

11.2.13.1.2 No coupe was worked out in this working circle as the area was transferred to Satkosia Wild Life Division from 1990.

11.2.13.2 Selection Working Circle (Miscellaneous species):

11.2.13.2.1. This working Circle spread over an area of 19058.026 ha. covering 74 compartments of 10 R.F. blocks namely Raigoda, Tulka,Bolong, Jacob,Takarsingh, Purunakot , Majhipara, Baghamunda , Tainsi & Kumuri except portion bearing teak plantation of an area of 4 ha. or more which have been taken over to Teak plantation Working Circle. Four felling series have been constituted .The forests of this working circle consists of miscellaneous species with Sal less than 18% of the crop and crown density more than or equal to 0.4.

11.2.13.2.2 The special object of management for this working circle was to improve the density, condition and composition of forest cover with due emphasis on soil and water conservation. Besides, it aimed to proper tending operations to encourage establishment of natural regeneration. The system of management was selection system and Sal, Teak, Piasal, Bandhan, Sisoo, Phasi, Gambhar, Asan, Kurum, Mitkunia, Dhaura , Kangada , Kasi ,Siris were treated as principal species whereas Mahul, Ambada, Tentuli, Kusum, Karanja, Anla, Bahada , Char ,Bela ,Amba, Kendu, Jamu were treated as guest species and rest all species were taken as secondary species . 20 years felling cycle was fixed with regulation of yield by area and check on the removal as calculated in accordance with Smithy's safe guarding formula.

11.2.13.2.3 Subsidiary Silvicultural operations like cutting of all climber, twinners except that of endangered species and malformed, defective trees were prescribed for creating favourable condition for the future crop. Artificial regeneration of suitable species were prescribed in blank, open and eroded patches with proper soil and moisture conservation measures. Other regulations such as grazing, fire control, and regulated collection of Sal seeds have also been prescribed.

11.2.13.2.4 The annual coupe working was carried out only during 1990-91 and 1991-92 in Bolang R.F. and the details of coupe working, production of timber, firewood are discussed in Chapter- 3 & 4. The moratorium on tree felling was imposed vide G.O.No. 27161 dt.11.12.1992 and hence coupe working stopped from that day. Silvicutural operations had also not been carried out properly. The forest blocks close to habitations were subjected to severe biotic interference like grazing, illicit felling, encroachments etc. and on the whole the crop has not responded to the system. Therefore, it is necessary to abandon this working circle & put all its area to improvement working circle for appropriate improvement measures.

11.2.13.3 Improvement working circle:

11.2.13.3.1 This was a new working circle introduced in the outgoing plan and comprised the area of sal selection and selection working circles of previous plan where the crop condition has been deteriorated drastically to an extent that crown density had reduced below 0.4 except teak plantations of area 4 ha.or more. The total area of this working circle was 39,384.316 ha. extending over 142 compartments of 30 R.F and P.F. blocks in Purunakote, Raigoda, Durgapur, Talcher & PurunagarhRanges. There were 9 improvement series in the working circle.

11.2.13.3.2 The special object of management of this circle was to improve the density, condition and composition of the crop by proper tending with due emphasis on soil conservation and watershed management. Besides it aimed at to cover up all blank patches with plantations. The system of management was selection system with 20 years improvement cycle for all improvement series except 3 improvement series of protected forests where improvement cycle was fixed to 10 years. Regulation of yield was prescribed according to improvement area as exploitation of only dead trees was intended.

11.2.13.3.3 Subsidiary Siliviculltural operation prescribed sowing and planting in blank patches. Other regulations such as grazing, fire protection & regulated collection of sal seeds have also been prescribed.

11.2.13.3.4 Coupes were worked out in the R.F./PRF blocks of Labangi, Bolong, Burti, Talsira, Sapakata, for the year from 1990-91 to 1992-93 and no work done after that due to moratorium on tree felling. The details of area worked out, trees felled, timber and firewood obtained is discussed in Chapter 3 & 4. The very objects to improve the crop condition under this working circle have been defeated as various silvicultural operations prescribed were not done properly. More emphasis required to be given for improvement of the crop and site condition with suitable soil & moisture conservation measures.

11.2.13.4 Rehabilitation Working Circle:

11.2.13.4.1 This Working circle was constituted with 39, 688.525 ha. of area covering almost all the blocks /compartments not covered in 1st three working circles, viz. Sal Selection,. Selection and Improvement Working Circles except the area covered by large size blanks

(more than 10 ha.,)or existing successful plantations in Durgapur, Purunagarh, Purunakot, Roigoda, TalcherRanges over 101 blocks of R.F./PRF. 9 rehabilitation series were constituted and rehabilitation cycle of 10 years was fixed .

11.2.13.4.2 The object of management of this working circle was to restock the depleted forests through new plantations and tending the existing crop as well as to develop the deteriorated site condition by taking soil and water conservation measures and by providing effective protections against illicit removal, grazing, browsing, fire. No conventional silvicultural system was prescribed for the working circle. Exploitation was banned except removal of dead and uprooted trees. The area of the working circle was categorized as follows for different type of treatments prescribed in the plan.

Category – I: - Areas having good coppice regeneration of sal & other species.

Category – II: - Areas having sal rooted waste.

Category –III:-Areas of completely barren, eroded and plain area devoid of forest growth.

Category – IV: - Hill slopes with scanty forest growth and mine spoils.

Category – V: - Already planted up areas.

11.2.13.4.3 Very less work is done during the plan period. Gap plantation done in few forest blocks in different years is given in Table –7.2. The areas prescribed for different type of treatment like soil & water conservation measure, thinning, cleaning etc. has not been done properly for one reason or the other including paucity of funds. No adequate attention seems to have been given for fire protection, grazing, and illicit felling resulting in depletion of forests. An intensive integrated approach is necessary for rehabilitating the degraded forests successfully & accordingly prescriptions require to be revised.

Table 11.2 – Details of Gap planting done between 1990 – 91 to 2000 – 2001.

Sl. No.	Name of Forest Block	Year of work	Area in ha.	Total
1	2	3	4	5
1	Durgapur	1991-92	60	
		1992-93	100	
		1995-96	20	
		1996-97	20	200
2	Mukundanali	1991-92	40	40
3	Rakas	1992-93	79	79
4	Matharugudi	1992-93	46	46
5	Mankadachua	1995-96	25	25
6	Bolong	1995-96	4	
		1996-97	96.6	100.06
7	Talasira	1995-96	6	6
8	Sorispal	1996-97	20	20

Source: - Divisional Forest Officer, Angul Division.

11.2.13.5 Plantation working circle: This working circle contains 2 parts, viz.i) Teak Plantation Working Circle & ii) Miscellaneous Plantation Working Circle.

11.2.13.5.1 Teak Plantation working circle: This part of the working circle covers 4,024.462 ha. of old teak plantations raised in Angul Division since the year 1919 excluding scattered teak plantations of extent of less than 4 ha. Area and area having inadequate forest growth or barren lands extending over 34 R.F. and PRF blocks. The object of management was to replace the inadequate forest growth by teak plantation in the suitable site and to rehabilitate the barren and degraded areas through teak plantations with suitable soil and water conservation measures. Rotation was fixed at 70 years aiming to achieve 130-cm. of girth in site quality II/III and 105 cm. in site quality IV.

11.2.13.5.2 Miscellaneous plantation working circle: This part of the working circle covers 935.217 ha. old plantations of species other than teak which are of extent of more than 4 ha. and 2065.17 ha blank areas which are of extent of more than 4 ha patches for plantations of miscellaneous species during the plan period identified & proposed for teak plantations consisting 3 planting series with 10 planting coupes each. The objects of management were to cover up large gaps with artificial regeneration and tending of existing plantation as well as forest growth.

11.2.13.5.3 During the plan period 760 ha. Teak plantations were raised during different years is furnished in Table 7.3. In many areas tending operation in the existing plantation was not done. The plantation areas were not properly protected from illicit felling, fire and grazing. The working plan prescriptions have not been followed properly for one reason or the other including paucity of funds. No plantation has been taken up in respect of miscellaneous plantation working Circle by Angul Forest Division. But the Orissa Forest Development Corporation Ltd. have raised 870 ha. of mixed commercial plantation in the reserved forests of this Division, details of which are given at Table No .7.3 (a). The planting of sub – standard planting stock in field, improper soil working, manuring & weeding, maintenance of incomplete plantation journals oftenly without map & record of growth, survival percentage of plants, no record of all operations carried out are some of the short-comings in the field responsible for more casualty in recent plantations & failure sometimes. Suitable planting prescriptions with proper counter check mechanism is required to be prescribed along with planting & maintenance technique for teak & miscellaneous species suitable according to need & site conditions.

11.2.13.6 Bamboo-overlapping Working Circle:

11.2.13.6.1 The areas containing bamboo were allotted to this working circle and it overlapped areas of Sal Selection, Selection Working Circles fully and improvement, Plantation working Circles partly. The total area of this working circle was 61,409.027 ha which is about 54 percent of total forest area of the division, included in 19 R.F. & 14 P.F. of Raigoda, Purunakote, Durgapur and Purunagarh Ranges. Salia Bamboo (Dendrocalamus strictus) is most common and important species. Daba/Kanta Bamboo (Bambusa arundinacea) occurs in moist areas near Nalas and in moist valleys. Bolongi /Susongi Bamboo (Cephalostachyum pergracile) is very localized, occur in small patches in few blocks.

Table 11.3 – Details of Teak plantation taken up during the plan period.

Name of Range	Year of Plantation	Name of Block R.F/P.R.F.	Area planted In ha.	No. of Seedling/ Stump Planted
1	2	3	4	5
Durgapur	-do-	Similipathar	27	43,200
Raigoda	1990-91	Nuakheta	28	44,800
-do-	-do-	Katada	20	32,000
Purunagarh	-do-	Badadandasahi	14	22,400
Talcher	-do-	Bulajhar	21	33,600
		Total:-	110	
Raigoda	1991-92	Bolang	20	32,000
Purunagarh	-do-	Madargiri	20	32,000
Durgapur	-do-	Durgapur RDF	60	18,000
Talcher	-do-	Mukundanali	40	12,000
		Total:-	140	
Raigoda	1992-93	Bolong Block	20	32,000
Purunagarh	-do-	Mandargiri Block	20	32,000
Talcher	-do-	Rakas R.D.F.	79	23,700
Purunagarh	-do-	Mandargiri RDF	20	32,000
Talcher	-do-	Rakas RDF	79	23,700
Purunagarh	-do-	Mandargiri RDF	46	13,800
		Total:-	165	
Raigoda	1993-94	Bolong Block	15	32,000
Durgapur	-do-	Antulia Block	15	24,000
Purungarh	-do-	Kulasingha Block	10	16,000
		Total:-	40	
Raigoda	1994-95	Bolong Block	20	32,000
Durgapur	-do-	Antulia -Tabada	20	32,000
		Total:-	40	
Durgapur	1995-96	Nuakheta	25	40,000
Durgapur	-do-	Antulia	40	64,000
Purunagarh	-do-	Krushnachakra	20	32,000
Talcher	-do-	Mankadachua RDF	25	7,500
Durgapur	-do-	Durgapur RDF	15	4,500
		Total:-	125	
Purunagarh	1996-97	Kulasingha PRF	20	32,000
Raigoda	-do-	Nuakheta RF	15	24,000
Durgapur	-do-	Antulia	15	24,000
Purunagarh	-do-	Sorispal RDF	20	6,000
Durgapur	-do-	Durgapur RDF	20	6,000
		Total:-	90	

Purunagarh	1997-98	Kulasingha	25	40,000
Durgapur	-do-	Antulia	25	40,000
		Total:-	50	
		Grand Total:-	760	

Source: - Divisional Forest Officer, Angul Division.

Table 11.3 (a) – Details of Misc. Plantation taken up during the plan period by The OFDC Ltd.

Name of Range	Year of Plantation	Name of Block R.F/P.R.F.	Area planted In ha.	Species planted	Crop condition
1	2	3	4	5	6
Kaniha	1989-90	Badkathia RF	150	Eucalypts	Scattered and poor
Chhendipada	1990-91	Jeypur RF	110	Eucalypts	Scattered and poor
Durgapur	1991-92	Katada RF	110	Eucalypts	Scattered and poor
Durgapur	1992-93	Katada RF	100	Eucalypts	Scattered and poor
Durgapur	1991-92	Similipathar	40	Eucalypts	Scattered and poor
Purunagarh	1988-89	Kuio	360	Bamboo	Scattered and poor

{Source: Divisional Manager, Angul (C-KL) Division, The OFDC Ltd.}

11.2.13.6.2 The basic object of management was to improve the growing stock and to obtain maximum possible sustained yield. The silvicultural system prescribed was culm selection – cum-clump improvement for Salia bamboos and clump improvement for Daba Bamboos with a felling cycle of 4 years, yield being regulated entirely by area. A set of cutting rule was prescribed both for Salia & Daba bamboo. The subsidiary silvicultural operation was prescribed after the main felling which included cutting of all dead, dry culms, high stumps and climbers etc. and to free from fire hazards.

11.2.13.6.3 The coupe working had been carried out on regular basis by O.F.D.C. Ltd. The working was more in valleys, down hill portions, quite low in uphill portions leading to over exploitation in down hill and congestion in up hill portions. The details of working of bamboo coupes are furnished in Chapter-3.

11.2.13.6.4 In general bamboo cutting rules had not been followed properly. Hardly there was any protection from fire and grazing. In the first four years of plan period, no silvicultural operation was carried out. From 1994-95 to 1998-99 except 1997-98, silvicultural operations were carried out depending on availability of funds. The details of silvicultural operations done during the plan period are furnished in Table – 7.4

Table.7.4 Details of Bamboo Silvicultural operations done during 1990-91 to 2004-05 in Angul Division.

Year	Name of Coupe	No. of Clumps Treated
1	2	3
1990 – 1991	Nil	
1991 – 1992	Nil	
1992 – 1993	Nil	
1993 – 1994	Nil	

1994 – 1995	Jocub-1	4200
	Raigoda-1,2,3 & 4	1540
	Burti-6	1160
	Krushnachakra	1160
	Dandasingha-Bhagatpur PF	1414
	Similipathar-7	1432
	Purunakote-6 to 12 & Chhotikei-1	1585
	Kuru-1,2,5 & 6	4213
	Tikarpara-1,2,3,4,5,16 & Tikarpara PF	4394
	Badhmunda-Tainsi-2,3, & 4	3218
	Tuika-12	210
	Total	26426
1995 – 1996	Burti-3	9711
	Burti-5,6 & 7	72480
	Krushnachakara-3 & 4	5175
	Kurudu-1 & 2	61984
	Kulasingha RF	17470
	Bolonga-5,6,11 & 13	53119
	Jocub-1,2, & 6	19511
	Raigoda-3 & 4	35354
	Taimul-Nuakheta-1,3,& 4	27716
	Taras-Nuakheta-5	44191
	Takarsinga- 1 & 2	17823
	Antulia-Tabada-5 to 10 Tabada PRF	57670
	Katada- 1,2,6 & 7	32971
	Similipathar- 6 & 7	27302
	Konloi-2	1000
	Purunakote-1,2,4,5,6,7 & 17	155863
	Takarsinga-1,2,& 5	47900
	Katrang- 2 & 3	60300
	Majhipada- 11 & 17	39200
	Tainsi- 12 & 13	67971
	Tulka-2,3,4,6,9,10 & 12	41766
	Total	896477
1996 – 1997	Bolonga-6	5500
	Jocub-6	5250
	Takarsinga-3	12500
	Takarswinga-6	3250
	Burti-2	8485
	Krushnachakra-1	2515
	Katranga-3	5000
	Majhipada-7	2500
	Majhipada-8	7500

	Baghmunda-8	5625
	Baghmunda-9	14375
	Tulka-7	9650
	Total	82150
1997 – 1998	Nil	
1998 – 1999	Krushnachakra	45
	Raigoda Comptt. No.2	5770
	Baghamunda Comptt.7	450
	Tikarpada Comptt.9	2950
	Chhotmunda Comptt. No.1	736
	Kurudu Comptt. 1	533
	Similipathar Comptt.7	3696
	Total	14180
1999 – 2000	Nil	
2000 – 2001	Nil	
2001 – 2002	Nil	
2002 – 2003	Nil	
2003 – 2004	Nil	
2004 – 2005	Nil	

Source: - Divisional Forest Officer, Angul Division.

From 1999 – 2000 onwards, no silvicultural operation has been carried out. This has created an adverse impact on the bamboo forest. The bamboo crop has tended towards degeneration over a period of time due to non-working or less working of forest. The presence of dry bamboos has increased the risk of fires. Unscientific illicit removal of immature bamboos by artisans & villagers is another cause of serious concern.

11.2.13.7 Soil Conservation working circle:

11.2.13.7.1 This was an overlapping working circle meant to take up suitable soil conservation measures at the time of subsidiary Silvicultural operations in all annual coupes of sal selection, selection and improvement working circles and at the time of plantation works in plantation and rehabilitation working circles. Different soil conservation measures like contour bounding, contour trenching, plantation of trees and grasses, protection from grazing and fire, construction of check dams have been prescribed for different types eroded areas.

11.2.13.7.2 No such specific activity has been taken up as prescribed due to paucity of funds etc. However the soil conservation measures were restricted to plantation areas only and in areas considered very essential subject to the availability of funds.

11.2.13.8 Wildlife Management Working Circle: This was an overlapping working circle. Two special management units were suggested to be constituted namely i) Wildlife Management in sanctuary area and ii) Wildlife Management in other areas

11.2.13.8.1 Wildlife Management in sanctuary area: Satkosia Wildlife Sanctuary have been assigned the status of wildlife protected area and declared as sanctuary under wildlife protection act 1972 by the Government of Orissa vide F.F.& A.H. Department Notification No.4F (W) 12727/FFAH, dt.19.05.1976. The portion of Angul Forest Division constitutes 57% area of the sanctuary covering 45421.125 ha. The outgoing plan had prescribed management of 27,864.133 ha. Core area and 17,440.692 ha.of buffer area with the aim to develop and maintain an ideal habitat for the wildlife population. The special object of management of this circle was to improve the habitat by strict protection against fire, grazing, illicit felling, illegal poaching, conservation of soil and water, improvement of food and cover.

11.2.13.8.2 Wildlife Management in outside the sanctuary area: The habitat in the area outside the sanctuary which have been kept in Improvement, Rehabilitation and Plantation Working Circles were kept in this working circle with the object of management to improve the three basic necessities for wildlife i.e. Food, Water and Shelter in the forests to protect and improve the population of wild animals.

11.2.13.8.3 No work has been taken up as prescribed by the plan in core and buffer area as the sanctuary area of 45,421.125 ha. had been transferred to Satkosia Wildlife Division during 1999. For Wildlife Management in outside the sanctuary area, no such specific activity has been taken up as per Working Plan prescriptions.

11.2.13.9 Miscellaneous Regulations:

11.2.13.9.1 Management of balance area (Miscellaneous area): This includes the balance forest area not covered under any working circle as detailed below.

Sl. No.	Category of area	Area in ha.	Objective of management	Agency for management.
1	2	3	4	5
1	Sample plots	0.702	For experimental purpose. To determine growth and yield statistics of sal.	Silviculturist, Orissa
2	Preservation plots	20.72	For ecological study	-do-
3	Research gardens	104.00	For Forest Research	-do-
4	Forest Villages (5)	366.669	For ForestVillage	D.F.O. Angul
5	Riverbed.	272.63	River bed of Mahanadi	D.F.O.(W.L.)Angul
6	Rest house	5.00	Rest house and Crocodile Project at Tikarpara.	-do- & D.F.O. Angul.
7	Encroachments	343.309	Encroachment village, Badmula and displaced persons of Derjang project.	D.F.O. Angul
8	Mining	284.100	Coalmines	-do-
	Grand Total area-	1397.13		

11.2.13.9.2 Area shown under the category of sample plots, preservation plots & research gardens have been managed by the Silviculturist, Orissa, Bhubaneswar according to various research programmes. Forest villages namely as Tarava, Asanbahal & Bhurkundi are situated inside Kuru R.F., Tainasi R.F. & Raigoda R.F. respectively now under Satakosia Wildlife Division. Two forest villages namely Karabira & Dahimal are situated in Angul Forest Division. Developmental works done in each of forest villages are furnished in Table No. – 7.5.

Table No. – 11.5 Details of Forest Villages

Sl. No.	Name of ForestVillage	Location in Forest Block/ Compartment	Area of the Village in ha.	Population	Category of Population	Developmental Work Done During 1995
1	Karabira	Nuakheta R.F. Compt. No.– 2	27.920	74	SC – 00 ST – 52 Others – 22	Pucca Well – One Medical – Aid Centre – One Pond – One
2	Dahimal	Similipathar Compt. No.– 2	68.799	273	SC – 06 ST – 29 Others –238	Kalapata Asthan – One Kothaghara – One Forest Road – One Community Hall – One Pucca Well – One Pond – One

Source: - Divisional Forest Officer, Angul.

Regarding encroachment villages of Badmula over an area of 183.734 ha.in Similipathar R.F. of Compartment No. – 5 & 6 & encroachment village of displaced persons of Derjang project over an area of 159.575 ha. in Kerjang R.F. nothing has been done during the plan period. In case of mining encroachments 18 P.R. cases have been booked from 2001 – 02 to 2004 – 05 against M.C.L. authorities, details of which are furnished in Table No. – 7.6.

Table No. – 11.6: Details of Unauthorized Mining

Year	P.R. No.	Name of the Person Prosecuted	Type of Unauthorized Work Done	Area	Name of R.F.
2001 – 2002	12	S. Banarjee, C.G.M., Jagannath, O.C.P.	Construction of road		Baishnabarugudi R.F.
2002 – 2003	1	Sri Ram Bahadur Singh, M.C.L., Talcher, Ananta O.C.P.	Digging of pit		Rakash R.F.
	2	- do -	Breaking of forest land		- do -
	6	Sri Ram Bahadur Singh, M.C.L., Jagannath O.C.P.	Destruction of forests		- do -
	17	Gurumukha Singh, Hingula Mines	Encroachment		Gopalprasad R.F.
	24	B. Samal, Jagannath O.C.P.	- do -	1 Ha.	Rakish R.F.
	25	S.D. Katiyar, R.P. Bansal, Manager, Kalinga O.C.P.	- do -	30Acs.	Brahmaibahal
	26	- do -	- do -	15Acs.	- do -
	27	- do -	- do -	5Acs.	- do -

2003 – 2004	23	Bansidhar Sahu	- do -	2.5Acs.	- do -
	24	G.B. Garnaik, Vill. – Rakash	- do -	700' X3'	- do -
	25	R.B. Sarma, F.O., Jagannath O.C.P.	- do -	3000mts X 1mts	- do -
	26	K.D. Prasad, Engineer	- do -	480Sqmt.	- do -
2004 – 2005	48	S.P. Dutta, G.M., Hingula O.C.P	- do -	90' X 19' = 0.4Ac.	Gopalprasad R.F.
	49	B.R. Nanda, Staff, Hingula OCP	- do -	200Sft.	- do -
	51	A.K. Mishra, Engineer, Hingula O.C.P.	- do -	200Sqft.	- do -
	15	G.M. & F.O., Hingula	- do -	0.39Acs.	- do -
	25	F.O., Jagannath O.C.P.	- do -	2Acs.	Rakash R.F.

Source: - Divisional Forest Officer, Angul.

11.2.13.9.3 Exploitation of M.F.P: The important M.F.P. items available in the Division are Kendu Leaves, Sal Seed, Genduli & other gums, Lac etc. The prescriptions were given in the plan regarding potential of M.F.P., collection time & techniques etc., which could not be implemented properly although such activity have the potential to generate enormous employment opportunities in rural population.

11.2.13.9.4 Fire & Grazing: The prescriptions were given for the protection of forest fire & grazing in each working circle, could not be implemented due to paucity of funds. As a result incidence of forest fire & damages thereof are increasing day by day. It is not possible to mitigate the fire hazard with the low investment in the forest.

11.2.13.9.5 Reservation of Forest Blocks: It was prescribed in the working plan to take steps for reservation of 30 forest blocks but only one forest block such as Derjang – Golabandha has been notified under section – 21 on 08/03/2000. Not much progress has been achieved in this aspect.

11.2.13.9.6 Roads, Buildings, Check Gates, Game Tanks, Wells: It was prescribed in the plan to improve the condition of existing ones & construct new buildings, roads, check gates, game tanks, wells. Some of prescriptions could be implemented. Some amount could be spent on repair of forest roads, which is furnished in the Chapter – III. Some new buildings were constructed during the plan period.

The system of management which has been followed in the past will bebriefly discussed, with a view to prevent repetition of such mistakes asmight have been made and also to understand and appreciate thepresent condition of the crop. In general the account given in theexpiring plan will be adopted and updated unless there are definitereasons of revising it. Further, there should be specific mention ofstatus of JFM, community involvement and functioning of the forestdevelopment agencies in the division along with the change matrixanalysis. Assessment of invasive weed eradication, reduction ingrazing, reduction in

fuel wood and fodder collection, insect pestmanagement and catchment protection needs to be done. Heresecondary data could be used followed by ground truthing on samplebasis.

11.2.14.1 Prescription and result of past Working Plans (2007-08 to 2016-17)

The present working plan of Angul Forest Division has been prepared by Mr Arjun Behera, WPO, Balasore Working Plan Division for the period from 2007-08 to 2016-17. Considering the ground reality, crop condition of forest blocks and unattended area of the last plan of Angul forest Division, the Working Plan Officer prescribed the following working circles with an aim to further improve the growing stock and management of the forest blocks.

1. The improvement Working Circle
2. The Rehabilitation Working Circle
3. The plantation (Over lapping) Working Circle
4. The Bamboo (Over lapping) Working Circle
5. The Wild Life (Over lapping) Working Circle
6. The NTFP (Over lapping) Working Circle
7. The Protection (Over lapping) Working Circle
8. The JFM (Over lapping) Working Circle

The detail of area allotted to above working circle and proposal for allotment of area to different working circle in the revised working plan in given below in table **no. 2.1More area has been proposed in the new working plan than the out going working plan taking in to account 900.814-hec of protected forest.**

Table no. 11.4

Working Circles	Area as per out going WP (in Ha)	Working Circles	Area proposed in proposed W.P (in Ha)	Remarks
The improvement Working Circle	26605.199	The improvement Working Circle	27586.678	
The Rehabilitation Working Circle	43016.936	The Rehabilitation Working Circle	22586.239	Diverted to STR, Plantation WC and Protection WC
The Plantation (Overlapping) Working Circle	5576.87	The Plantation Working Circle	8142.106	
The Bamboo (Overlapping) Working Circle	11263.724	The Bamboo (Overlapping) Working Circle	6513.201	Area Diverted to STR, Angul
The Wild Life (Overlapping) Working Circle	69836.48	The Wild Life (Overlapping) Working Circle	64610.0503	Area Diverted to STR, Angul
The NTFP (Overlapping) Working Circle	69836.48	The NTFP (Overlapping) Working Circle	64610.0503	Area Diverted to STR, Angul
The Protection (Overlapping) Working Circle	26597.745	The Protection Working Circle	6295.027	
The JFM (Overlapping) Working Circle	58794.57	The JFM (Overlapping) Working Circle	47416.323	Area Diverted to STR, Angul

11.2.14.2 The Improvement Working Circle

This working circle has been formed with an objective to further improve the growing stock. In fact, the blocks covered under this circle are mostly Sal mixed miscellaneous forests of un-even age group with good crown density. Suitable silvicultural operations has already been taken up to improve the crop condition. No felling operation has been prescribed except removal of dead and uprooted trees from the forest blocks. Majority of the forest blocks coming under this circle are in Durgapur, Raigoda, Purunagarh, Talcher and Kaniha Range.

11.2.14.3 Area allotted

The total area under improvement working circle as per current working plan is 26605.199 ha. 20nos of forest blocks in six Ranges are included in this working circle. This improvement working circle divided into ten improvement series, the improvement series fixed for ten year which is synchronized to plan period reflected in **table no 2.2** as under.

Table 11.2 Improvement Series wise Area of Improvement Working Circle

Sl. No.	Name of Improvement Series	Name of Range	Name of Forest Block	Compartment No.	G.I.S. Area in ha.
1	Bolong	Raigoda	Balanga RF	1 to 10 & 13	3097.126
			Balanga PRF		53.522
			Total		3150.648
2	Nuakheta	Raigoda	Nuakheta RF	1 to 9	2889.93
			Talsira DPF		49.564
			Labangi DPF		69.96
			Total		3009.454
3	Antulia	Durgapur	Antulia-Tabada RF	1 to 10	2247.17
			Tabada PRF		210.582
			Dandasinga-Bhagatpur PRF		221.38
			Total		2678.132
4	Katada	Durgapur	Katada RF	1 to 7	3142.494
5	Similipathar	Durgapur	Similipathar RF	2 to 8	2211.513
			Kandhakurudu RF		98.948
			Total		2310.461
6	Kanloi	Chhendipada	Kanloi RF	1 to 8	2066.12
7	Bulajhar	Talcher	Bulajhar RF	1 to 10	1948.152
			Langalkhole RF		125.123

			Total		2073.275
8	Phuljhari	Kaniha	Phuljhari RF (Silakhani)	1 to 5	933.211
			Nialu-Lodhajhari-Sapkata RF	1 to 5	1225.276
			Total		2158.487
9	Krushnachakra	Purunagarh	Krushnachakra PRF	1 to 5	2489.598
			Bhogapal RF		184.56
			Total		2674.158
10	Burti	Purunagarh	Burti PRF	1 to 7	3135.584
			Kurudu PRF	1	206.386
			Total		3341.97
			Grand Total		26605.199

11.2.14.4 Special objective of management

The special objectives of the management of the improvement working circle are within the scope of general objectives of the management of the entire division. These are as follows:-

1. To conserve and improve the forest cover by soil and water conservation measures following the principle of watershed development.
2. To obtain the yield on sustainable basis to cater the need of the people subject to silvicultural availability.
3. To ensure appropriate soil and moisture conservation measures on watershed basis for improvement of site condition and eco-restoration.
4. To maintain and improve the biodiversity of the forest blocks.
5. To build up the growing stock and improve stand structure by adopting suitable silvicultural operations.
6. To establish natural regeneration of indigenous species.

11.2.14.5Achievement

During this current working plan period up to 2013-14, 8373.453 ha of area has been worked out as per prescription laid in the working plan, under the scheme state plan budget of 13th F.C. The year wise coupe wise achievement is in **table no. 11.3**

Table no. 11.3

Year	Name of the Range	Name of the forest block, RF/PRF/DPF	Name of the Management Unit/ Comptt. No.	Area covered	Amount spent	Name of the Scheme
1	2	3	4	5	6	7
2009-10	Chhendipada	Kanloi RF	KN.L-Imp-I	166.502	159120	13th F.C
2009-10	Chhendipad	Kanloi RF	KN.L-Imp-II	192.14	163800	13th F.C

	a					
2009-10	Durgapur	Katada RF	KTD-IMP-II	97.5	46800	13th FC
2009-10	Durgapur	Similipathar RF	SPT-IMP-II	104	89910	13th FC
2009-10	Durgapur	Antulia Tabada RF	ANT-IMP-II	178	155920	13th FC
2009-10	Purunagarh	Burti PRF	BRT-IMP-II	115	100625	13th FC State plan
2009-10	Raigoda	Nuakheta RF	Comptt. No. 3	316.948	219700	13th FC
2009-10	Raigoda	Balanga RF	Comptt. No. 2	307.878	330290	13th FC
2009-10	Talcher	Bulajhar R.F	BLJ-IMP-II	100	90000	13 th F.C
Total				**1577.968**	**1356165**	
2010-11	Chhendipada	Kanloi RF	KN.L-Imp-III	226.93	203400	13th F.C
2010-11	Durgapur	Antulia Tabada RF	ANT-IMP-III	307.678	276900	13th FC
2010-11	Durgapur	Similipathar RF	SPT-IMP-III	300.036	270000	13th FC
2010-11	Durgapur	Katada RF	KTD-IMP-III	331.117	298000	13th FC
2010-11	Kaniha	Phulajhari R.F	PLI IMP-III Comp No.-3	188.97	170000	13th FC
2010-11	Purunagarh	Krushnachakra PRF	KCH-IMP-III	227.86	205074	13th FC State plan
	Purunagarh	Burti PRF	BRT-IMP-III	303.53	273177	13th FC State plan
2010-11	Raigoda	Balanaga RF	Comptt. No. 2 and 3	307	277000	13th FC
2010-11	Raigoda	Nuakheta RF	Comptt. No. 3	316.948	285200	13th FC
2010-11	Talcher	Bulajhar R.F	BLJ-IMP-III	168.441	151597	13 th F.C
Total				**2678.51**	**2410347.9**	
2011-12	Chhendipada	Kanloi RF	KN.L-Imp-IV	268.2014	241370	13th F.C
2011-12	Durgapur	Antulia Tabada RF	ANT-IMP-IV	235.609	212000	13th FC
Year 2011-12	Durgapur	Katada RF	KTD-IMP-IV	217.684	195000	13th FC
2011-12	Durgapur	Similipathar RF	SPT-IMP-IV	215.852	134840	13th FC
2011-12	Durgapur	Kandhakurudu RF	SPT-IMP-IV	58.948	54000	13th FC
2011-12	Kaniha	Phulajhari R.F	PLI IMP-IV Comp No.-2	184.37	165880	13th FC

2011-12	Purunagarh	Krushnachakra PRF	KCH-IMP-IV	217.97	196173	13th FC State plan
	Purunagarh	Burti PRF	BRT-IMP-IV	297.15	267435	13th FC State plan
Year 2011-12	Raigoda	Balanga RF	Comptt. No. 4	287.66	259500	13th FC
2011-12	Raigoda	Nuakheta RF	Comptt. No. 4	362.644	316750	13th FC
2011-12	Talcher	Bulajhar R.F	BLJ-IMP-VIII	50	45000	CATP
Total				**2396.088**	**2087948**	
2012-13	18	Phulajhari R.F	PLI IMP-V Comp No.-1	250.55	201759	13th FC
2012-13	Talcher	Bulajhar R.F	BLJ-IMP-IV	185.603	167043	C.Afforestation
2012-13	Purunagarh	Krushnachakra PRF	KCH-IMP-V	222.74	200466	13th FC State plan
	Purunagarh	Burti PRF	BRT-IMP-V	326.2	293580	13th FC State plan
Total				**985.093**	**862847.7**	
2013-14	Chhendipada	Kanloi RF	KN.L-Imp-VI	185.061	310924	13th F.C
2013-14	Purunagarh	Krushnachakra PRF	KCH-IMP-VI	304.733	45710	13th FC State plan
2013-14	Raigoda	Nuakheta RF	Comptt. No. 6	100	150000	13th FC
2013-14	Raigoda	Balanga RF	Comptt. No. 6	97	145500	13th FC
2013-14	Raigoda	Labangi DPF		49	73500	13th FC
Total				**735.79**	**725633.95**	
Grand Total				**8373.45**	**7442943**	

1. During 2007-08 and 2008-09 no operation has been carried out in this working circle due to late approval of the current Working plan.
2. During the period from 2009-10 to 2013-14 subsidiary silvicultural operation have been worked out. over 8373.453 ha. as per availability of funds. Balance shortfall areas will be treated from CAMPA and other funds within 2016-17.

11.2.14.6 Observation

1. During 2007-08 no silvicultural operation have been worked out in improvement coupes due to late receipt of the revised working plan.
2. During 2008-09 no silvicultural operation have been worked out in improvement coupes due to funds constraint.
3. During the year 2009-10 no dead & uprooted trees found for removal from the prescribed improvement coupes. Only subsidiary silvicultural operation have been worked out by high stump cutting, Climber cutting & effective soil & moisture

conservation works. Out of total target area for the year 2357.003ha, only 1577.968ha have been achieved. Balance area could not be worked out due to funds constraint.

4. During the year 2010-11, 2678.510ha of area have been treated, out of target area 2761.884ha by subsidiary silvicultural operation. Balance area could not worked out due to very steep terrain of Burti PRF.
5. During the year 2011-12, 2396.0884ha of area have been worked out of target area 2679.13ha through subsidiary silvicultural operation. Balance area could not be worked out due to paucity of fund.
6. During the year 2012-13, 985.09ha of area have been treated out of target area 2715.74ha through subsidiary silvicultural operation. Balance area could not be worked out due to insufficient allotment.
7. During the year 2013-14, 735.794ha of area have been treated out of target area 2779.74ha through subsidiary silvicultural operation. Balance area could not be worked out due to insufficient allotment.
8. No subsidiary silvicultural operation has been done during the year 2013-14, due to non availability of fund.
9. Out of total area allotted to improvement working circle 8373.453 ha. have been covered and it is far- far away from the prescription area.
10. It is observed that annual treatment coupes have been demarcated properly as per the prescription.
11. Clearance of coupe line of 1.5Mtr width, posting of stone cairns and painting the same in white paint has not been done. Climbers still exist with thick base.
12. Existence of invasive weeds causes low percent of regeneration.
13. Soil & moisture conservation work has been taken up, which is not that much effective as the entire area has not been treated.
14. Fire protection measures have been taken up in most of the treatment area by creation of new fire line, maintenance of the old ones and engagement of fire fighting squad.
15. Sign boards showing compartment Line, coupe line has not been provided.
16.

11.2.14.7 Result/Impact of working of the circle

Because of relevant treatment including soil moisture conservation & rigid fire protection work there is profused regeneration of the important coupes. Soil degradation has almost come to a halt there by increasing soil moisture regine by which the health of the plant have improved a lot. Which in terms give rise to quality growing stock quantitatively and qualitatively. Because of regeneration of naturally growing species the NTFP production will be augmented to a great extent, which will help the forest fringe villagers in their livelihood support.

11.2.14.8Suggestion for future plan

1. To enable the growing stock for improvement & to achieve the sustainable yield through improvement circle the present area under the circle will be managed in this circle in the future plan.

2. In the worked out area canopy density has increased up to 0.6 which comes under moderately dense forest category. So the forest blocks of this circle shall be kept as such in improvement working circle in the future plan.
3. The total area of 35416.928ha shall be kept under improvement working circle in future plan including 8310.40ha area from rehabilitation working circle of current plan taking into account increase in crown cover. During the outgoing plan period. Appropriate treatment of different working circle has resulted in increasing in the crown density of forest cover in Angul District over 35sqKm. The detail given **in table 11.4**

Table 11.4

Assessment year	Geographical area in sqKm	Very Dense Forest in sqKm	Moderate dense forest in sqKm	Open forest in sqKm	Total in sqKm	Percentage of geographical area in sqKm	Change in sqKm	Scrub in sqKm
2005	6375	0	1716	941	2657	41.68	1	144
2007	6375	364	1355	950	2669	41.87	2	133
2009	6375	364	1355	950	2669	41.87	2	133
2011	6375	363	1353	951	2667	41.84	-2	134
2013	6375	362	1350	990	2702	42.38	35	117
2015	6375	373	1378	953	2704	42.42	2	118

4. The coupe wise area statement for future plan under improvement working circle will be given in detail during final plan after field inventory.

11.2.14.9The Rehabilitation Working Circle

This working circle is an important working circle to rehabilitate the degraded/ Denuded Forest blocks with degraded Sal & other Miscellaneous Forests. This Working Circle includes mainly denuded/degraded forest blocks with degraded Sal and other miscellaneous forests. These blocks have adequate root stock and coppice growth which can be improved by cultural operations supplemented with artificial regeneration. These areas are in need of urgent rehabilitation and restoration measures. All such areas are found to be in close proximity to human habitation and therefore attempt has to be made to involve the local people in the protection of these degraded forests, so that natural regeneration will come up. An area of 43016.936ha has been allotted to this working circle in current working plan. Which is approximately 61.6% of the total forest area covered in the plan.

11.2.14.10Area of allocation

The total area allotted to Rehabilitation working circle was 43016.936ha extending over 105 Forest Blocks. The total area have been divided in to 9 treatment series that is Purunagarh, Pathargarh, Durgapur, Devinagar, Marudhip, Chhendipada, Dera, Kaniha & Rengali. Each treatment series is divided in to 10 annual treatment coupes to synchronized the plan period in 10 years. The Block wise area allotted to each treatment series in **table 11.5.**

Table No. 11.5 TREATMENT SERIES (T.S.) WISE AREA OF REHABILITATION WORKING CIRCLE

Sl. No.	Treatment Series (T.S.)	Range	Block	Compartment	Area of Treatment (G.I.S. Area in ha.)
1	Purunagarh	Purunagargh	Mandargiri-Kalima RF		606.995
			Nanda RF		55.408
			Derjang-Golabandha RF		176.649
			Derjang-Golabandha PRF		27.844
			Kerjang PRF		466.011
			Saharagoda RF		184.713
			Kulasingha PRF	1 & 2	641.715
			Chandanpur PRF		446.364
			Madhapur RF		221.793
			Badadandasahi RF		284.431
			Nandapur-Berhampur RF		40.975
			Pokunda PRF		371.416
			Kurudu PRF	2	505.835
			Guranga RF		59.007
			Kalapat PRF	1 to 4	1214.713
			Total		**5303.869**
2	Pathargarh	Durgapur	Pathargarh PRF	1 to 4	1633.067
		Purunagargh	Sorispal-Hinsar PRF		763.359
			Sorispal RF		216.198
		Durgapur	Rodasingha PRF		143.939
			Para PRF		1052.774
		Raigoda	Baragaunia RF		70.634

			Kangulei PRF		46.009
			Total		**3925.980**
3	Durgapur	Chhendipada	Durgapur RF	1 to 8	2945.682
		Purunagargh	Durgapur RF	9 & 10	684.439
		Durgapur	Durgapur (A) RF		55.486
			Arisuliasulia RF		142.044
			Durgapur PRF		56.305
		Purunagargh	Malibrahmani RF		150.391
			Kaliakata RF	1 & 2	205.691
			Total		**4240.038**
4	Devinagar	Durgapur	Devinagar PRF (P)		1364.600
		Chhendipada	Devinagar PRF (P)		1838.330
			Kanloi PRF		69.769
		Durgapur	Pitacheri PRF		60.853
		Chhendipada	Putgadia RF		68.159
		Durgapur	Sudagoleswar PRF		98.877
			Similipathar RF	1	313.660
			Total		**3814.248**
5	Marudhip	Chhendipada	Marudhip PRF		1351.149
			Nunamati PRF		440.620
			Dangapal PRF		831.814
			Kankurpal RF		929.905
			Sunarijharan PRF		450.817
			Total		**4004.305**
			Khalpal RF		101.698
			Brahmanbil Rf		203.108
			Bahianali RF		33.690

			Similisahi RF		307.148
			Jaltap RF		444.978
			Chakundapal DPF		178.821
			Chhendipada RF		1824.968
			Kosala RF		243.127
		Purunagargh	Nisha RF		625.600
			Kumunda-Taltalia RF		38.779
			Kuio-Sakasingha RF		88.722
			Paranga RF		222.077
			Kuio RF		534.329
			Total		**5325.308**
7	Dera	Talcher	Gopalprasad RF		154.057
			Nuabhuin (Malibandha) RF		293.076
			Gengutia RF		56.178
			Makundanali RF		66.153
			Dera PRF		76.229
			Kandhal RF		189.700
			Ganthigadia DPF A & B		109.245
			Balaramprasad RF		51.421
			Kauchiakhole RF		549.995
			Hirapur RF		209.577
			Rabipur RF		1182.925
			Sibarampur PRF		290.559
			Kanteikolia RF		299.493
			Kandhaberini PRF		243.076
			Kanheijena RF		1393.382
			Pitacheri-Pathuria		289.763

			RF		
			Rakas RF		564.549
			Baishnabarugudi RF		62.770
			Total		**6082.148**
8	Kaniha	Kaniha	Badakathia RF		1581.145
		Kaniha	Matharagudi RF		45.855
			Sardhapur RF		113.778
			Pital Hill RF		27.903
			Gohiradanda RF		29.755
			Bhan RF		63.214
			Chandrapada RF		303.143
			Santarabandha RF		172.556
			Jaghani RF		38.856
			Arakhadiha RF		679.496
			Patkhamana RF		438.412
			Kukurkhai RF		16.735
			Gumpha RF		37.359
			Durgapurdanda RF		227.963
			Kaijhar RF		277.085
			Dhenkoili RF		694.667
			Dalaka (Poipaldanda) RF		645.413
			Total		**5393.335**
9	Rengali	Kaniha	Godigotha RF		346.450
			Tangiri RF		265.847
			Pedi RF		392.464
			Rameswar Hill RF		84.033
			Saleimeda RF		356.095

			Bripal RF		1239.340
			Bandhuli RF		65.361
			Budhia RF		116.725
			Sachi RF		97.130
			Khajuria RF		136.076
		Talcher	Seepur RF		242.085
			Silling RF		106.470
			Mankadachua RF		402.188
		Kaniha	Sadarkhole RF		1077.441
			Total		**4927.705**
			Grand Total		**43016.936**

11.2.14.11The Special objectives of management

The following special management prescriptions are recommended in the current working plan with an aim to improve the quality of forest.

1. To improve quality and to restore the existing crop through silvicultural operation and ANR with Gap plantation with suitable indigenous species.
2. To rehabilitate the area and improve soil condition by taking suitable soil and moisture conservation measures.
3. To induce natural regeneration and improve the condition of existing forests through protection against grazing, fires and illicit felling.
4. To increase the biodiversity and heterogeneity in the forest crop by encouraging natural regeneration.
5. To provide protection against illicit felling, grazing and fire so as to check further destruction of existing forest growth.
6. To provide adequate rehabilitation measures to protect hill slopes, nallah bank and eco-fragile area.
7. To increase the water retaining capacity of the soil.

11.2.14.12 Achievement

To achieve the aim and objectives of the Rehabilitation Working Circle various activities have been taken up under various schemes. In the present plan the entire area under Rehabilitation Working Circle was divided into four Treatment Series covering 105 Forest Blocks. The list of activities carried out in these forest blocks during the plan period up to 2014-15 is given in **Tablel -11.6.**

Out of total allotted area of 43016.936ha under this working circle, 24394.52ha has been treated during the plan period up to 2014-15 under the financial budget of state plan, OFSDP, NAP, CAMPA and CATP is in **table no. 11.6.**

Table no. 11.6

Year	Name of the Range	ANR in Ha		
		With Gap Plantation	Without Gap plantation	Total
1	2	3	4	5
2007-08	Chhendipada	726.769	166	892.769
2007-08	Durgapur	470	128	598
2007-08	Kaniha	717.5	186	903.5
2007-08	Purunagarh	1026.5	77	1103.5
2007-08	Raigoda	106	60	166
2007-08	Talcher	465	368	833
Total		**3511.769**	**985**	**4496.769**
2008-09	Chhendipada	612	616.4826	1228.4826
2008-09	Durgapur	667	480	1147
2008-09	Kaniha	633	505	1138
2008-09	Purunagarh	621.975	813	1434.975
2008-09	Raigoda	240	160	400
2008-09	Talcher	597	218	815
Total		**3370.975**	**2792.483**	**6163.458**
2009-10	Chhendipada	254	674	928
2009-10	Durgapur	60	596	656
2009-10	Kaniha	5.4	1208	1213.4
2009-10	Purunagarh	53	840.779	893.779
2009-10	Raigoda	175.02	302	477.02
Total		**547.42**	**3620.779**	**4168.199**
2010-11	Chhendipada	0	738	738
2010-11	Durgapur	0	207.486	207.486
2010-11	Kaniha	118	527	645
2010-11	Purunagarh	0	360	360
2010-11	Raigoda	0	183	183
Total		**118**	**2015.486**	**2133.486**
2010-11	Talcher	142.55	995	1137.55
2011-12	Chhendipada	0	940.245	940.245
2011-12	Durgapur	0	20	20
2011-12	Kaniha	100	680	780
2011-12	Purunagarh	70	760.956	830.956
2011-12	Talcher	0	846.86	846.86
Total		**312.55**	**4243.61**	**4555.611**
2012-13	Chhendipada	114	0	114

2012-13	Durgapur	55	155	210
2012-13	Kaniha	4	200	204
2012-13	Purunagarh	35	65	100
2012-13	Talcher	20	200	220
Total		**228**	**620**	**848**
2013-14	Chhendipada	570	0	570
2013-14	Durgapur	150	0	150
2013-14	Kaniha	282	0	282
2013-14	Raigoda	400	0	400
2013-14	Purunagarh	150	120	270
2013-14	Talcher	50	50	100
Total		**1602**	**170**	**1772**
2014-15	Chhendipada	50	0	50
2014-15	Kaniha	0	100	100
2014-15	Purunagarh	15	92	107
Total		**65**	**192**	**257**
G.Total		**9755.714**	**14638.8086**	**24394.5226**

During the present plan period up to 2014-15, under the financial budget provision of state plan of 11th plan and 12th plan period, MGNREGS, NAP and CAMPA various activities worked out in the Forest Blocks of Rehabilitation Working Circle.

To enhance soil productivity through soil and moisture conservation measures and to regulate surface water run off to enhance percolation and water availability down the stream. SMC works such as gully plugging, percolation pit, check dam, contour bund, check dam with loose boulder, staggered trench works have been carried out over 24394.5226ha.

The silvicultural operations carried out for facilitating regeneration through soil moisture conservation, climber cutting and tending operation under CAMPA scheme, RDF works and economic plantations, under13th FC PWC scheme, under CA (Non- plan) scheme under RDF without gap plantation and RDF with gap plantation schemes over 24394.522 ha.

To restock the barren areas through artificial regeneration, plantations have been raised under various schemes such as Compensatory afforestation, Economic plantation, plantation under 13th F.C grant, bamboo plantation under NBM and state plan in forest areas of Raigoda Range, Durgapur Range, purunagarh range, Chhendipada Range, Talcher Range & Kaniha Range. The total plantations under various schemes and the silvicultural operations carried out over 24394.522 ha. in Rehabilitation Working Circle area during the plan period.

To protect the existing stand and to partner the local community various works such as restore of forest land, support to VSS etc has been carried out during the plan period.

Apart from the above activities in rehabilitation area the forest adjoin mining area of the division are managed under various site specific Wild Life Conservation Plans. Special emphasis has been given on creation of water bodies, salt licks, watch tower and meadow development programmes along with massive plantation to improve the condition of the forests.

11.2.14.13Observation/ Analysis

1. The objectives fixed for this Working Circle have been achieved successfully. However efforts have been given to restore the degraded forest area by silvicultural operations & protection measures.
2. Silvicultural systems are adopted as the basic aim to restore the vegetative cover of degraded area & promote growth of established saplings to regain its original composition. Some of the areas have the potentiality to be restored with natural regeneration after proper fire protection & control of illicit felling over ten years. Now illicit felling has been reduced significantly, but further protection measures are required to be taken for fire protection, control grazing etc.
3. It is observed that in most of the forest blocks gap plantations have been raised with the fast growing species such as Casia siamia, Acacia & Sisoo which is recommended considering the degraded site condition.
4. In some forest blocks the treatment area which was demarcated earlier by stone cairns or masonry pillars are now in dilapidated condition which require repair.
5. After regeneration cleaning, multiple shoots have come up which needs singling out operation to support promising shoots.
6. Gap plantation has been done in the gap with NTFP species. In some of forest blocks it is observed that gap planting has been done with exotic species like Acacia auriculiformis, Cassia siamea which shall be avoided in future plan.
7. Action has been taken for retention of rain water through soil & moisture conservation work over an area of 24394.52ha by drainage line treatment from rill to nalah, percolation pits in flat area and staggered trench in hill slopes up to 7% slope.

8. In Angul Division VSS activities of Purunagarh, Raigoda, Durgapur, Kaniha, and Talcher & Chhendipada Range have become successful due to good participation of the concerned VSS members. This resulted in increase in forest cover in the Division.
9. During the plan period efforts have been given for protection, Rehabilitation, Restoration, Afforestation & people participation to check further degradation of the forest blocks of this Division. However mining operation, increasing population, industrialization & urbanization are the major factors creating pressure on forest protection of the Division.

11.2.14.14Suggestion for future plan

The area allotted to this circle is 25258.675ha.

On analysis the canopy density has been increased from 0.4 to 0.6 in the forest blocks namely: - Putagadia RF, Kankurpal RF, Bahianali RF, Durgapur RF, Kosala RF, Brahamanbil RF, Similisahi RF, Chakundapal DPF of Chhendipada Range, Badakathia RF, Dhanakoili RF, Gohiradanda RF, Kukur Khai RF, Pattakhaman RF, Santrabandha RF of Kaniha Range, Chandanpur RF, Kumanda Talataila RF, Kurudu PRF, Kulasinga PRF Derjang Golabandha RF, Kuio RF of Purunagarh Range, Kanehijena RF, Kandhal RF, Kanteikulia RF, Sibarampur PRF of Talcher Range. An area of 8310.40ha in 23 forest blocks have been proposed to include in improvement working circle of future plan. The total area of 25258.675ha has been allotted for future plan under the rehabilitation working circle. The forest block wise canopy density with extent of area is intable no 11.7**.**

Table No. 11.7

Sl.No	Name of the forest block	Legal status, RF/PRF/DPF	GIS Area (in ha.)	Area Proposed for future plan in Ha
1	2	3	4	5
1	Chhendipada	RF	1852.968	1280.968
2	Jaltap	RF	444.978	401.978
3	Jaypore	RF	478.263	467.263
4	khalpal	RF	101.698	101.698
5	Dangapal	PRF	831.814	703.938
6	Devinagar (P)	PRF	1838.33	3043.93
7	Kanloi	PRF	69.769	57.769
8	Marudhipa	PRF	1351.149	1192.149
9	Nunmati	PRF	440.62	398.62
10	Sunarijharan	PRF	450.817	450.817
11	Chakundapal	DPF	178.821	178.821
12	Arisulia - Sulia	RF	142.044	122.044
13	Durgapur (A)	RF	55.486	55.486
14	Pathargarh	PRF	1633.068	1563.068
15	Durgapur	PRF	56.305	56.305
16	Para	PRF	1052.774	909.774
17	Pitachari	PRF	60.853	60.853
18	Rodasingha	PRF	143.939	116.939
19	Sudagolasar	PRF	98.876	89.876
20	Arakhadahi	RF	679.496	300.496
21	Bandhuli	RF B	65.361	65.361
22	Bhana	RF	63.214	62.608
23	Biripal	RF	1239.34	1147.18
24	Budhia	RF	116.725	116.725
25	Chandrapada	RF	303.143	303.143
26	Durgapur Danda	RF	227.963	169.963

27	Godigotha	RF B	346.45	321.45
28	Gumpha	RF	37.359	37.359
29	Jaghani	RF	38.856	38.856
30	Kiajhar	RF	277.085	272.197
31	Khajuria	RF B	136.076	136.076
32	Matharagadi	RF	45.855	45.855
33	Pedi	RF B	392.464	392.464
34	Pital Hill	R.F	27.903	27.903
35	Poipal Danda (Dalak)	R.F	645.413	573.413
36	Rameswar hil	R.F	84.033	84.033
37	Sadarkhol	R.F	1077.441	956.737
38	Saleimada	R.F	356.095	326.095
39	Saradhapur	R.F	113.778	50.89
40	Sachi	R.F	97.13	91.13
41	Tangiri	R.F	265.847	254.847
42	Badadandasahi	RF	284.431	196.631
43	Guranga	RF	59.007	59.007
44	Kaliakata	RF	205.691	180.241
45	Kuio-Sakasinga	RF	88.722	68.722
46	Madhapur	RF	221.793	173.917
47	Malibrahmani	RF	150.391	122.541
48	Mandargiri-Kalima	RF	606.995	443.995
49	Nanda	RF	55.408	55.408
50	Nandapur-Berhampur	RF	40.975	40.975
51	Nisa	RF	625.6	434.93
52	Paranga	RF	222.077	166.387
53	Saharagoda	RF	184.713	159.713
54	Sorispal	RF	216.198	191.207
55	Hinsar-Sorispal	PRF	763.359	705.699
56	Kalapat	PRF	1214.713	1115.713
57	Kerjang	PRF	466.011	441.011
58	Derjang-Golabandha	PRF	27.844	27.844
59	Pokunda	PRF	371.416	290.976
60	Derjang-Golabandha	RF	176.649	123.649
61	Baragounia	R.F.	70.634	55.634
62	Kangulei	P.R.F.	46.009	46.009
63	Talsira	DPF	49.564	3.564
64	Silling 'A'	RF	106.47	39.003
65	Mankadachua	RF	402.188	339.188

66	Gengutia	RF	56.178	30.834
67	Baishnabaragudi	RF	62.77	12.194
68	Makundanali	RF	66.153	32.66
69	Nuabhuin	RF	293.076	8.506
70	Petachira-Pathuria	RF	289.763	289.763
71	Seepur R.F.B	RF	242.085	107.085
72	Rabipur R.F.B	RF	1182.925	1052.799
73	Rakas R.F.B	RF	564.549	288.862
74	Kauchiakhol R.F.B	RF	549.995	56.215
75	Hirapur R.F.B	RF	209.577	168.007
76	Gopalprasad	RF	154.057	102.254
77	Balaramprasad	RF	51.421	51.421
78	Dera	PRF	76.229	76.229
69	Kandhaberini	PRF	243.076	219.576
80	Ganthigadia 'A'	DPF	87.976	63.738
81	Ganthigadia 'B'	DPF	21.259	21.259
82	Talagarh, Kantamegha, Ragudiapada	PF	168.232	168.232
	Total		**28895.778**	**25258.675**

1. The degraded forest blocks included in this circle will be emphasized for treatments of Soil and Moisture Conservation measures. The gap plantation will be prioritized with indigenous species, fruit bearing species and NTFP producing species.
2. The encroached forest areas should be treated specifically for rehabilitation of the area with Soil and Moisture Conservation measures and massive plantations.
3. The newly regenerated bamboo shoots are to be strictly protected from fire and silvicultural operation of bamboo is to be carried out randomly in various Forest Blocks to revive the bamboo forest.

11.2.14.15The plantation overlapping working circle

This Working Circle includes all the forest blocks, which have permanent large sized gaps and blanks without much vegetative growth. These areas have generally no forest growth due to many factors including illicit felling, grazing and soil conditions. These areas cannot be easily restocked through natural regeneration methods within a reasonable time frame, ,since these areas require intensive artificial regeneration measures. The existing plantations raised in different blocks during the previous years are also included in this Working Circle. The total area allotted to this Working Circle is 5576.87 ha inclusive of 4526.87. ha of existing plantations.

11.2.14.16Area Allotted

Total area allotted to this Working Circle is 5576.87 ha. It comprises of both the plantable area as well as existing plantations including compensatory afforestation. The block wise distribution of area is summarized in **Table No:11.8.**

Table 11.8:BLOCKWISE AREA OF PLANTATION (O) WORKING CIRCLE

Name of Range	Forest block	Area under plantation in ha, taken up before the out going working plan				Area allotted during the out going Working plan period	Area achieved during the out going Working plan period	Cumulative area covered under plantation up to the end of the out going Working plan till 2015-16
		Teak	Misc.	Eucalyptus	Bamboo			
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Purunagarh	Bhogapal	10.866	15	-	-	-		25.866
	Badadandasahi	14	18.3	-	-	30	30	62.3
	Sorispal-Hinsar	77.66	-	-	-	-		77.66
	Pokunda	15.44	-	-	-	30	30	45.44
	Kulasingha	55	-	-	-	-		55
	Krushnachakra	76.64	-	-	-	-		76.64
	Burti	146.82	-	-	-	-		146.82
	Kurudu	28.6	-	-	-	30	30	58.6
	Nisha	-	14.87	-	-	-		14.87
	Kaliakata	-	15.45	-	-	-		15.45
	Madhapur	-	22.88	-	-	-		22.88
	Derajang-Golabandha RF.	-	53	-	-	-		53
	Kuio	-	20	-	360.00(OFDC)	-		380
	Malibramhani	-	20	-	-	-		20
	Mandargiri-Kalima	86	20	-	-	-		106
	Kalapat	-	30	-	-	-		30
	Kamanda-Taltalia	-	7	-	-	-		7
	Total-	**511.026**	**236.5**	**0**	**360**	**90**	**90**	**1197.53**

Chhendipada	Chhendipada	-	289	-	-	-		289
	Kosala	-	28	-	-	-		28
	Jeypore	-	-	110.00(OFDC)	-	-		110
	Dangapal	-	22.88	-	-	-		22.88
	Durgapur	-	138.82	-	-	260	235	373.82
	Total	**0**	**478.7**	**110**	**0**	**260**	**235**	**713.7**
Talcher	Siling	-	47.47	-	-	-		47.47
	Kandhal	15.25	0.59	-	-	-		15.84
	Mukundanali	40	13.49	-	-	-		53.49
	Nuabhuin	-	73.26	-	-	-		73.26
	Rakas	79	15.85	-	-	-		94.85
	Rabipur	-	108.52	-	-	50	50	158.52
	Kandhaberini	-	3.5	-	-	-		3.5
	Sibarampur	-	4	-	-	50	50	54
	Seepur	-	40	-	-	-		40
	Mankadachua	25	-	-	-	-		25
	Total	**159.25**	**306.68**	**0**	**0**	**100**	**100**	**565.93**
Kaniha	Badakathia	-	20	150.00 (OFDC)	-	-	-	170
	Sachi	-	-	-	-	20	20	20
	Biripal	-	-	-	-	20	20	20
	Rameswar hill	-	-	-	-	30	30	30
	Bhan	-	-	-	-	30	30	30
	Pital hill	-	-	-	-	10	10	10
	Gohirdanda	-	-	-	-	10	10	10
	Pedi	-	-	-	-	50	50	50
	Godigotha	-	-	-	-	40	40	40
	Arakhadihi	-	-	-	-	50	50	50
	Patakhaman	-	-	-	-	20	20	20
	Santarabandha	-	-	-	-	40	40	40
	Total	**0**	**20**	**150**	**0**	**320**	**320**	**490**

Raigoda	Bolang	228.145	-	-	-	160	160	388.145
	Nuakheta	163.93	-	-	-	-		163.93
	Total	**392.075**	**0**	**0**	**0**	**160**	**160**	**552.07**
Durgapur	Durgapur	-	31	-	-	30	30	61
	Similipathar	183.75	-	40.00 (OFDC)	-	-		223.75
	Katada	20	-	210.00 (OFDC)	-	-		230
	Antulia-Tabada	565.95	-	-	-	-		565.95
	Para	28	-	-	-	30	30	58
	Sodagoleswar	-	-	-	-	40	40	40
	Dandasingha-Bhagatpur	-	-	-	-	20	20	20
	Total	**797.7**	**31**	**250**	**0**	**120**	**120**	**1198.7**
Division	**G. Total**	**1860.051**	**1072.88**	**510**	**360**	**1050**	**1025**	**4827.93**

It is worthy to note that 1025ha of block plantation under plantation overlapping working circle has been achieved during the outgoing working plan up to 2015-16 against the allotted area of 1050ha.

11.2.14.17Special objective of Management.

The special objective of the management of this Working Circle is within the scope of general objectives of the management for the entire division. These are as follows: -

1. To cover up blank areas with vegetation of species suitable for site and useful for the locality.
2. To tend the existing plantations to get maximum increment.
3. To increase the production of bio-mass per unit area.

11.2.14.18Implementation & Achievement.

As per the prescription of present working plan **1050 ha.** area was allotted for plantation in these 22 forest blocks starting from the year 2007-08 to 2016-17. However plantations have been raised over an area of **1025 ha.** starting from 2007-08 to 2014-15. The detail list of plantations raised in different forest blocks of plantation working circle during the plan period is given in **Table-11.9**.

Table-11.9.

Year	Name of the Range	Name of the forest block, RF/PRF/DPF	Target as per ongoing working plan in ha	Area achieve in ha	Type of Plantation	No of seedling planted	Percentage of survival	Under the Scheme
1	2	3	4	5	6	7	8	9
2007-08	Kaniha	Badakathia R.F		50	Economic	80000	70%	B Economic
2008-09	Chhendipada	Chhendipada RF		2	FF	5000	70%	OFSDP
	Chhendipada	Chhendipada RF		12	NTFP	4800	50%	OFSDP
	Chhendipada	Chhendipada RF		4	ECO	6400	75%	OFSDP
	Chhendipada	Chhendipada RF		4	FF	10000	70%	OFSDP
	Chhendipada	Chhendipada RF		1	Bamboo	400	65%	OFSDP
	Chhendipada	Chhendipada RF		4	ECO	6400	70%	OFSDP
	Chhendipada	Chhendipada RF		4	FF	10000	60%	OFSDP
	Chhendipada	Chhendipada RF		1	Bamboo	400	65%	OFSDP
	Chhendipada	Chhendipada RF		9	Bamboo	3600	20%	NBM
	Chhendipada	Chhendipada RF		4	ECO	6400	65%	OFSDP
	Chhendipada	Chhendipada RF		4	FF	10000	50%	OFSDP
	Chhendipada	Chhendipada RF		1	Bamboo	400	10%	OFSDP
	Chhendipada	Chhendipada RF		4	ECO	6400	65%	OFSDP
	Chhendipada	Chhendipada RF		4	FF	10000	55%	OFSDP
	Chhendipada	Chhendipada RF		2	Bamboo	800	15%	OFSDP
	Chhendipada	Chhendipada RF		11	Bamboo	4400	20%	NBM
	Chhendipada	Dangapal PRF		2	Eco	3200	25%	OFSDP
	Chhendipada	Dangapal PRF		2	FF	5000	15%	OFSD

								P
	Chhendipada	Dangapal PRF		2	Bamboo	800	12%	OFSDP
	Chhendipada	Dangapal PRF		10	NTFP	4000	7%	OFSDP
	Chhendipada	Dangapal PRF		2	ECO	3200	55%	OFSDP
	Chhendipada	Dangapal PRF		2	FF	5000	22%	OFSDP
	Chhendipada	Dangapal PRF		10	NTFP	4000	22%	OFSDP
	Chhendipada	Kanloi PRF		4	ECO	6400	75%	OFSDP
	Chhendipada	Kanloi PRF		2	F&F	5000	60%	OFSDP
	Chhendipada	Kanloi PRF		2	Bamboo	800	3%	OFSDP
2008-09	Durgapur	Similipathar RF		1	Bamboo	400	54%	OFSDP
	Durgapur	Katada RF		2	Eco-Teak	3200	65%	OFSDP
	Durgapur	Devinagar PRF		2	Bamboo	800	74%	OFSDP
	Durgapur	Devinagar PRF		2	Bamboo	800	78%	OFSDP
	Durgapur	Pathargarh PRF		1	Eco-Teak	1600	78%	OFSDP
	Durgapur	Pathargarh PRF		1	Bamboo	400	62%	OFSDP
	Durgapur	Pathargarh PRF		5	NTFP	2000	58%	OFSDP
	Durgapur	Para PRF		2	Eco-Teak	3200	82%	OFSDP
	Durgapur	Para PRF		2	F&F	5000	65%	OFSDP
	Durgapur	Para PRF		2	Bamboo	800	69%	OFSDP
	Durgapur	Para PRF		20	NTFP	8000	62%	OFSDP
2008-09	Kaniha	Arakhadahi R.F		6	Eco Teak	9600	55%	OFSDP
	Kaniha	Arakhadahi R.F		6	F&F	15000	61%	OFSDP
	Kaniha	Arakhadahi R.F		2	Bamboo	800	38%	OFSDP
	Kaniha	Dalak- Poipal Danda R.F		5	Eco Teak	8000	90%	OFSDP
	Kaniha	Dalak- Poipal Danda R.F		5	F&F	12500	85%	OFSDP

	Kaniha	Dalak- Poipal Danda R.F		2	Bamboo	800	40%	OFSDP
	Kaniha	Saleimada R.F		2	Eco Teak	3200	73%	OFSDP
	Kaniha	Saleimada R.F		8	F&F	20000	68%	OFSDP
	Kaniha	Kiajhar R.F		2	F&F	5000	92%	OFSDP
2008-09	Purunagarh	Badadandasahi RF	30	2	Eco Teak	3200	73%	OFSDP
	Purunagarh	Badadandasahi RF		1	Bamboo	400	75%	OFSDP
	Purunagarh	Badadandasahi RF		13	NTFP	5000	56%	OFSDP
2010-11	Purunagarh	Badadandasahi RF		30	Eco Teak	48000	79%	OFSDP
2011-12	Purunagarh	Badadandasahi RF		10	Bamboo	4000	73%	NBM
	Total		**30**	**55.50**				
2009-10	Purunagarh	Pokunda PRF	30	2	Eco Teak	3200	84%	OFSDP
	Purunagarh	Pokunda PRF		2	F & F	5000	75%	OFSDP
	Purunagarh	Pokunda PRF		1	Bamboo	400	73%	OFSDP
	Purunagarh	Pokunda PRF		15	NTFP	6000	79%	OFSDP
	Purunagarh	Pokunda PRF		30	Eco Teak	48000	80%	OFSDP
2010-11	Purunagarh	Pokunda PRF		10	NTFP	4000	51%	OFSDP
2012-13	Purunagarh	Pokunda PRF		5	Eco Teak	8000	85%	FDA
	Total		**30**	**65**				
2010-11	Purunagarh	Kurudu PRF	30	30	Eco Teak	48000	78%	OFSDP
2012-13	Purunagarh	Kurudu PRF		25	Eco Teak	40000	84%	OFSDP
2013-14	Purunagarh	Kurudu PRF		25	Eco Teak	40000	83%	OFSDP
	Total		**30**	**80**				
2009-10	Chhendipada	Durgapur RF	260	4	Misc Plantation	6400	55%	CAMPA APO
2010-11	Chhendipada	Durgapur RF		2	Eco	3200	65%	OFSDP
2010-11	Chhendipada	Durgapur RF		5	NTFP	2000	55%	OFSDP
2010-11	Chhendipada	Durgapur RF		2	Eco	3200	45%	OFSDP

2010-11	Chhendipada	Durgapur RF		2	NTFP	800	75%	OFSDP
2010-11	Chhendipada	Durgapur RF		10	Misc Plantation	3000	55%	Comp .Affn
2010-11	Chhendipada	Durgapur RF		8	Eco	10400	50%	OFSDP
2010-11	Chhendipada	Durgapur RF		4	F&F	10000	58%	OFSDP
2010-11	Chhendipada	Durgapur RF		6	NTFP	2400	65%	OFSDP
2010-11	Chhendipada	Durgapur RF		50	Teak	80000	68%	OFSDP
	Total		**260**	**93**				
2009-10	Talcher	Rabipur RF	50	2	F & F	5000	72%	OFSDP
2009-10	Talcher	Rabipur RF		1	Bamboo	400	48%	OFSDP
2014-15	Talcher	Rabipur RF		10	Misc Plantation	11000	65%	NAP
	Total		**50**	**13**				
2009-10	Talcher	Sibarampur PRF	50	1	Bamboo	400	45%	OFSDP
2009-10	Talcher	Sibarampur PRF		25	Misc Plantation	40000	66%	Industrial Plantation
	Total		**50**	**26**				
2010-11	Kaniha	Sachi R.F	20	1	F&F	2500	65%	OFSDP
2010-11	Kaniha	Sachi R.F		5	NTFP	2000	41%	OFSDP
	Total		**20**	**6**				
2010-11	Kaniha	Biripal R.F	20	3	Eco Teak	4800	95%	OFSDP
2010-11	Kaniha	Biripal R.F		3	F&F	7500	83%	OFSDP
2010-11	Kaniha	Biripal R.F		5	Bamboo	2000	76%	OFSDP
2010-11	Kaniha	Biripal R.F		10	NTFP	4000	45%	OFSDP
2010-11	Kaniha	Biripal R.F		2	Eco Teak	3200	83%	OFSDP
2010-11	Kaniha	Biripal R.F		4	F&F	10000	81%	OFSDP
2010-11	Kaniha	Biripal R.F		5	Bamboo	2000	42%	OFSDP
2010-11	Kaniha	Biripal R.F		10	NTFP	4000	48%	OFSDP
2010-11	Kaniha	Biripal R.F		2	Eco Teak	3200	65%	OFSDP

2010-11	Kaniha	Biripal R.F		3	F&F	7500	80%	OFSDP
2010-11	Kaniha	Biripal R.F		15	NTFP	6000	52%	OFSDP
2010-11	Kaniha	Biripal R.F		2	Eco Teak	3200	70%	OFSDP
2010-11	Kaniha	Biripal R.F		4	F&F	10000	78%	OFSDP
2010-11	Kaniha	Biripal R.F		20	NTFP	8000	48%	OFSDP
	Total		**20**	**88**				
	Kaniha	Rameswar Hill	30	0				
	Kaniha	Bhana RF	30	0				
	Kaniha	Pital Hill RF	10	0				
2013-14	Kaniha	Gohiradanda R.F	10	10	Misc Plantation	16000	92%	Comp. Affn.
	Kaniha	Pedi RF	50	0				
2009-10	Kaniha	Godigotha R.F	40	4	Eco Teak	6400	68%	OFSDP
2009-10	Kaniha	Godigotha R.F		1	F&F	12500	64%	OFSDP
2009-10	Kaniha	Godigotha R.F		5	Bamoo	400	35%	OFSDP
2010-11	Kaniha	Godigotha R.F		15	NTFP	6000	45%	OFSDP
	Total		**40**	**25**				
2008-09	Kaniha	Arakhadahi R.F	50	6	Eco Teak	9600	55%	OFSDP
2008-09	Kaniha	Arakhadahi R.F		6	F&F	15000	61%	OFSDP
2008-09	Kaniha	Arakhadahi R.F		2	Bamboo	800	38%	OFSDP
2009-10	Kaniha	Arakhadahi R.F		50	Economic	80000	76%	OFSDP
2009-10	Kaniha	Arakhadahi R.F		50	Economic	80000	82%	OFSDP
2010-11	Kaniha	Arakhadahi R.F		5	Bamboo	2000	34%	OFSDP
2010-11	Kaniha	Arakhadahi R.F		25	NTFP	10000	38%	OFSDP
2013-14	Kaniha	Arakhadahi R.F		45	Economic	72000	81%	OFSDP
2014-15	Kaniha	Arakhadahi R.F		10	Misc Plantation	16000	90%	MGNREGS
	Total		**50**	**199**				
2009-10	Kaniha	Pattakhaman R.F	20	1	Eco Teak	1600	63%	OFSDP

2009-10	Kaniha	Pattakhaman R.F		2	F&F	5000	61%	OFSDP
2009-10	Kaniha	Pattakhaman R.F		1	Bamboo	400	33%	OFSDP
2009-10	Kaniha	Pattakhaman R.F		1	Eco Teak	1600	60%	OFSDP
2009-10	Kaniha	Pattakhaman R.F		1	Bamboo	400	32%	OFSDP
2009-10	Kaniha	Pattakhaman R.F		3	Eco Teak	4800	75%	OFSDP
2009-10	Kaniha	Pattakhaman R.F		4	F&F	10000	73%	OFSDP
2009-10	Kaniha	Pattakhaman R.F		1	Bamboo	400	38%	OFSDP
2009-10	Kaniha	Pattakhaman R.F		1	Eco Teak	1600	68%	OFSDP
2009-10	Kaniha	Pattakhaman R.F		1	F&F	2500	60%	OFSDP
2009-10	Kaniha	Pattakhaman R.F		1	Bamboo	400	34%	OFSDP
2010-11	Kaniha	Pattakhaman R.F		5	Bamboo	2000	36%	OFSDP
2010-11	Kaniha	Pattakhaman R.F		20	NTFP	8000	41%	OFSDP
	Total		**20**	**42**				
2010-11	Kaniha	Santrabandha R.F	40	8	Eco Teak	12800	85%	OFSDP
2010-11	Kaniha	Santrabandha R.F		5	F&F	12500	75%	OFSDP
2010-11	Kaniha	Santrabandha R.F		25	NTFP	10000	51%	OFSDP
	Total		**40**	**38**				
2008-09	Raigoda	Balanga RF	160	4	Eco-Teak	6400	80%	OFSDP
2008-09	Raigoda	Balanga RF		2	F & F	5000	85%	OFSDP
2009-10	Raigoda	Balanga RF		5	F & F	12500	82%	OFSDP
2009-10	Raigoda	Balanga RF		2	Eco-Teak	3200	95%	OFSDP
2009-10	Raigoda	Balanga RF		15	NTFP	6000	75%	OFSDP
2009-10	Raigoda	Balanga RF		20	Eco-Teak	32000	82%	OFSDP
2010-11	Raigoda	Balanga RF		10	Bamboo	4000	82%	OFSDP
2010-11	Raigoda	Balanga RF		10	NTFP	4000	65%	OFSDP

2010-11	Raigoda	Balanga RF		5	Bamboo	2000	80%	OFSDP
2010-11	Raigoda	Balanga RF		10	NTFP	4000	75%	OFSDP
2010-11	Raigoda	Balanga RF		15	NTFP	6000	78%	OFSDP
2010-11	Raigoda	Balanga RF		7	Bamboo	2800	75%	OFSDP
2010-11	Raigoda	Balanga RF		10	Misc Pln.	25000	70%	CAMPA
2011-12	Raigoda	Balanga RF		20	Eco-Teak	32000	82%	OFSDP
2012-13	Raigoda	Balanga RF		25	Eco-Teak	80000	80%	OFSDP
2012-13	Raigoda	Balanga RF		20	Bamboo	6660	75%	Stateplan
2013-14	Raigoda	Balanga RF		10	Bamboo	4000	70%	Stateplan
2013-14	Raigoda	Balanga RF		10	Bamboo	4000	75%	13th FC
	Total		**160**	**185**				
	Durgapur	Durgapur ARF	30	0				
2009-10	Durgapur	Sudagulaswar PRF	40	3	Eco-Teak	4800	48%	OFSDP
2009-10	Durgapur	Sudagulaswar PRF		1	Bamboo	400	57%	OFSDP
2009-10	Durgapur	Sudagulaswar PRF		5	NTFP	2000	55%	OFSDP
	Total		**40**	**9**				
2008-09	Durgapur	Para PRF	30	2	Eco-Teak	3200	82%	OFSDP
2008-09	Durgapur	Para PRF		2	F&F	5000	65%	OFSDP
2008-09	Durgapur	Para PRF		2	Bamboo	800	69%	OFSDP
2008-09	Durgapur	Para PRF		20	NTFP	8000	62%	OFSDP
2009-10	Durgapur	Para PRF		2	Eco-Teak	3200	78%	OFSDP
2009-10	Durgapur	Para PRF		1	F&F	2500	81%	OFSDP
2009-10	Durgapur	Para PRF		5	Eco-Teak	8000	75%	OFSDP
2009-10	Durgapur	Para PRF		1	F&F	2500	68%	OFSDP
2009-10	Durgapur	Para PRF		1	F&F	2500	65%	OFSDP
2010-11	Durgapur	Para PRF		12	NTFP	4800	63%	OFSDP
2010-11	Durgapur	Para PRF		2	Eco-Teak	3200	72%	OFSD

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2010-11	Durgapur	Para PRF		20	NTFP	8000	52%	OFSDP
2010-11	Durgapur	Para PRF		15	NTFP	6000	48%	OFSDP
	Total		**30**	**85**				
2010-11	Durgapur	Dandasingha Bhagatpur PRF	20	2	Eco-Teak	3200	84%	OFSDP
2010-11	Durgapur	Dandasingha Bhagatpur PRF		3	F&F	7500	72%	OFSDP
2010-11	Durgapur	Dandasingha Bhagatpur PRF		1	Bamboo	400	81%	OFSDP
	Total		**20**	**6**				
	G.Total		**1050**	**1025.50**				

Besides this during the plan period upto 2014-15 plantation programmes have been taken up within the working plan area in different Forest Blocks over **2861.7ha** under CAMPA, OFSDP, MGNREGS, NBM and State Plan Schemes.

Year wise scheme wise detail list of plantations raised during last plan period.

Year	Name of the Range	Name of the forest block, RF/PRF/DPF	Management Unit	Area covered	Type of Plantation	No of seedling planted	Percentage of survival	Under the Scheme	Remarks
1	2	3	4	5	6	7	8	9	10
2007-08	Kaniha	Badakathia R.F		50	Econimic	80000	70%	B Economic	
2008-09	Chhendipada	Chhendipada RF	CDP-IV	2	FF	5000	70%	OFSDP	Swapneswar VSS
	Chhendipada	Chhendipada RF	CDP-IV	12	NTFP	4800	50%	OFSDP	Swapneswar VSS
	Chhendipada	Chhendipada RF	CDP-IV	4	ECO	6400	75%	OFSDP	Maa Bimala VSS
	Chhendipada	Chhendipada RF	CDP-IV	4	FF	10000	70%	OFSDP	Maa Bimala VSS
	Chhendipada	Chhendipada RF	CDP-IV	1	Bamboo	400	65%	OFSDP	Maa Bimala VSS
	Chhendipada	Chhendipada RF	CDP-V	4	ECO	6400	70%	OFSDP	Banadurga VSS
	Chhendipada	Chhendipada RF	CDP-V	4	FF	10000	60%	OFSDP	Banadurga VSS
	Chhendipada	Chhendipada RF	CDP-V	1	Bamboo	400	65%	OFSDP	Banadurga VSS
	Chhendipada	Chhendipada RF	CDP-V	9	Bamboo	3600	20%	NBM	State Plan
	Chhendipada	Chhendipada RF	CDP-VI	4	ECO	6400	65%	OFSDP	Maa Hingula
	Chhendipada	Chhendipada RF	CDP-VI	4	FF	10000	50%	OFSDP	Maa Hingula
	Chhendipada	Chhendipada RF	CDP-VI	1	Bamboo	400	10%	OFSDP	Maa Hingula

	Chhendipada	Chhendipada RF	CDP-VI	4	ECO	6400	65%	OFSDP	Ramachandi VSS
	Chhendipada	Chhendipada RF	CDP-VI	4	FF	10000	55%	OFSDP	Ramachandi VSS
	Chhendipada	Chhendipada RF	CDP-VI	2	Bamboo	800	15%	OFSDP	Ramachandi VSS
	Chhendipada	Chhendipada RF	CDP-VI	11	Bamboo	4400	20%	NBM	State Plan
	Chhendipada	Dangapal PRF	MDP-VII	2	Eco	3200	25%	OFSDP	Vejidiha VSS
	Chhendipada	Dangapal PRF	MDP-VII	2	FF	5000	15%	OFSDP	Vejidiha VSS
	Chhendipada	Dangapal PRF	MDP-VII	2	Bamboo	800	12%	OFSDP	Vejidiha VSS
	Chhendipada	Dangapal PRF	MDP-VII	10	NTFP	4000	7%	OFSDP	Vejidiha VSS
	Chhendipada	Dangapal PRF	MDP-VII	2	ECO	3200	55%	OFSDP	Bhaliasar VSS
	Chhendipada	Dangapal PRF	MDP-VII	2	FF	5000	22%	OFSDP	Bhaliasar VSS
	Chhendipada	Dangapal PRF	MDP-VII	10	NTFP	4000	22%	OFSDP	Bhaliasar VSS
	Chhendipada	Kanloi PRF	DVN-I	4	ECO	6400	75%	OFSDP	Bhatapal VSS
	Chhendipada	Kanloi PRF	DVN-I	2	F&F	5000	60%	OFSDP	Bhatapal VSS
	Chhendipada	Kanloi PRF	DVN-I	2	Bamboo	800	3%	OFSDP	Bhatapal VSS
2008-09	Durgapur	Similipathar RF	SPT-IMP-IV	1	Bamboo	400	54%	OFSDP	Pitachari VSS
	Durgapur	Katada RF	KTD-IMP-VIII	2	Eco-Teak	3200	65%	OFSDP	Bhagirathipur VSS
	Durgapur	Devinagar PRF	DVN-V	2	Bamboo	800	74%	OFSDP	Kisinda VSS
	Durgapur	Devinagar PRF	DVN-IX	2	Bamboo	800	78%	OFSDP	Kisinda VSS
	Durgapur	Pathargarh PRF	PTG-I	1	Eco-Teak	1600	78%	OFSDP	Kanjara-II VSS
	Durgapur	Pathargarh PRF	PTG-I	1	Bamboo	400	62%	OFSDP	Kanjara-II VSS
	Durgapur	Pathargarh PRF	PTG-I	5	NTFP	2000	58%	OFSDP	Kanjara-II VSS
	Durgapur	Para PRF	PTG-IX	2	Eco-Teak	3200	82%	OFSDP	Patharpunji VSS
	Durgapur	Para PRF	PTG-IX	2	F&F	5000	65%	OFSDP	Patharpunji VSS
	Durgapur	Para PRF	PTG-IX	2	Bamboo	800	69%	OFSDP	Patharpunji VSS
	Durgapur	Para PRF	PTG-IX	20	NTFP	8000	62%	OFSDP	Patharpunji VSS
2008-09	Kaniha	Arakhadahi R.F	KNH-VI	6	Eco Teak	9600	55%	OFSDP	Bhojpur VSS
	Kaniha	Arakhadahi R.F	KNH-VI	6	F&F	15000	61%	OFSDP	Bhojpur VSS
	Kaniha	Arakhadahi R.F	KNH-VI	2	Bamboo	800	38%	OFSDP	Bhojpur VSS

	Kaniha	Dalak-Poipal Danda R.F	KNHV-III	5	Eco Teak	8000	90%	OFSDP	Talapada VSS
	Kaniha	Dalak-Poipal Danda R.F	KNHV-III	5	F&F	12500	85%	OFSDP	Talapada VSS
	Kaniha	Dalak-Poipal Danda R.F	KNHV-III	2	Bamboo	800	40%	OFSDP	Talapada VSS
	Kaniha	Saleimada R.F	RGL-III	2	Eco Teak	3200	73%	OFSDP	OFSDP Hatiadanda VSS
	Kaniha	Saleimada R.F	RGL-III	8	F&F	20000	68%	OFSDP	OFSDP Hatiadanda VSS
	Kaniha	Kiajhar R.F	KNHV-III	2	F&F	5000	92%	OFSDP	Hanumanpur VSS
2008-09	Purunagarh	Badadandasahi RF	PNG- VII	2	Eco Teak	3200	73%	OFSDP	Badadandasahi VSS
	Purunagarh	Badadandasahi RF	PNG- VII	1	Bamboo	400	75%	OFSDP	Badadandasahi VSS
	Purunagarh	Badadandasahi RF	PNG- VII	12.5	NTFP	5000	56%	OFSDP	Badadandasahi VSS
	Purunagarh	Chandanpur PRF	PNG- VI	2	Eco Teak	3200	82%	OFSDP	Saruali VSS
	Purunagarh	Chandanpur PRF	PNG- VI	1	Bamboo	400	76%	OFSDP	Saruali VSS
	Purunagarh	Chandanpur PRF	PNG- VI	2	F & F	5000	77%	OFSDP	Saruali VSS
	Purunagarh	Chandanpur PRF	PNG- VI	10	NTFP	4000	58%	OFSDP	Saruali VSS
	Purunagarh	Kalapat PRF	PNG- VIII	2	Eco Teak	3200	80%	OFSDP	Saradhapur VSS
	Purunagarh	Kalapat PRF	PNG- VIII	1	Bamboo	400	75%	OFSDP	Saradhapur VSS
	Purunagarh	Kalapat PRF	PNG- VIII	5	NTFP	2000	58%	OFSDP	Saradhapur VSS
	Purunagarh	Kalapat PRF	PNG- VIII	2	Eco Teak	3200	83%	OFSDP	Pathargarh VSS
	Purunagarh	Kalapat PRF	PNG- VIII	1	Bamboo	400	76%	OFSDP	Pathargarh VSS
	Purunagarh	Kalapat PRF	PNG- VIII	5	NTFP	2000	59%	OFSDP	Pathargarh VSS
	Purunagarh	Kalapat PRF	PNG- IX	2	Eco Teak	3200	83%	OFSDP	Gaudasahi VSS
	Purunagarh	Kalapat PRF	PNG- IX	1	Bamboo	400	75%	OFSDP	Gaudasahi VSS
	Purunagarh	Kalapat PRF	PNG- IX	10	NTFP	4000	57%	OFSDP	Gaudasahi VSS
	Purunagarh	Kalapat PRF	PNG- X	2	Eco Teak	3200	80%	OFSDP	Baniasahi VSS
	Purunagarh	Kalapat PRF	PNG- X	2	F & F	5000	75%	OFSDP	Baniasahi VSS
	Purunagarh	Kalapat PRF	PNG- X	1	Bamboo	400	76%	OFSDP	Baniasahi

									VSS
	Purunagarh	Kalapat PRF	PNG- X	15	NTFP	6000	60%	OFSDP	Baniasahi VSS
	Purunagarh	Kulasinga PRF	PNG-III	5	NTFP	2000	58%	OFSDP	Sudasahi VSS
	Purunagarh	Pokunda PRF	PNG-IV	2	Eco Teak	3200	84%	OFSDP	Pokunda Matiasahi VSS
	Purunagarh	Pokunda PRF	PNG-IV	2	F & F	5000	75%	OFSDP	Pokunda Matiasahi VSS
	Purunagarh	Pokunda PRF	PNG-IV	1	Bamboo	400	73%	OFSDP	Pokunda Matiasahi VSS
	Purunagarh	Pokunda PRF	PNG-IV	15	NTFP	6000	79%	OFSDP	Pokunda Matiasahi VSS
2008-09	Raigoda	Baragounia RF	PTG-VII	2	Eco-Teak	3200	75%	OFSDP	Baragounia VSS
	Raigoda	Baragounia RF	PTG-VII	2	F & F	2500	50%	OFSDP	Baragounia VSS
	Raigoda	Baragounia RF	PTG-VII	3	Bamboo	1200	45%	OFSDP	Baragounia VSS
	Raigoda	Baragounia RF	PTG-VII	8	NTFP	3200	45%	OFSDP	Baragounia VSS
	Raigoda	Nuakheta RF	NKT-IMP-III	3	Eco-Teak	4800	91%	OFSDP	Nuakheta VSS
	Raigoda	Nuakheta RF	NKT-IMP-III	3	F & F	7500	90%	OFSDP	Nuakheta VSS
	Raigoda	Nuakheta RF	NKT-IMP-III	2	Bamboo	800	92%	OFSDP	Nuakheta VSS
	Raigoda	Nuakheta RF	NKT-IMP-III	10	NTFP	4000	95%	OFSDP	Nuakheta VSS
	Raigoda	Balanga RF	BLG-IMP-III	4	Eco-Teak	6400	80%	OFSDP	Hidising VSS
	Raigoda	Balanga RF	BLG-IMP-III	2	F & F	5000	85%	OFSDP	Hidising VSS
2008-09	Talcher	Gopalprasad RF	DER-I	30	Misc Plantation	48000	72%	Non Plan	Industrial
2009-10	Chhendipada	Chhendipada RF	CDP-VII	3	Eco	4800	60%	OFSDP	Karadabahal VSS
	Chhendipada	Chhendipada RF	CDP-VII	1	BAMBOO	400	20%	OFSDP	Karadabahal VSS
	Chhendipada	Chhendipada RF	CDP-VII	1	NTFP	400	20%	OFSDP	Karadabahal VSS
	Chhendipada	Chhendipada RF	CDP-VII	4	FF	10000	60%	OFSDP	Karadabahal VSS
	Chhendipada	Dangapal PRF	MDP-VI	3	Eco	4800	62%	OFSDP	Khamar VSS
	Chhendipada	Dangapal PRF	MDP-VI	2	FF	5000	15%	OFSDP	Khamar VSS
	Chhendipada	Dangapal PRF	MDP-VI	1	BAMBOO	400	2%	OFSDP	Khamar VSS
	Chhendipada	Dangapal PRF	MDP-VI	1	NTFP	400	12%	OFSDP	Khamar VSS
	Chhendipada	Dangapal PRF	MDP-VII	3	Eco	4800	70%	OFSDP	Bamanali Sarapal VSS
	Chhendipada	Dangapal PRF	MDP-VII	4	F&F	10000	80%	OFSDP	Bamanali Sarapal VSS

Chhendipada	Dangapal PRF	MDP-VII	1	BAMBOO	400	15%	OFSDP	Bamanali Sarapal VSS
Chhendipada	Dangapal PRF	MDP-VII	4	NTFP	1600	60%	OFSDP	Bamanali Sarapal VSS
Chhendipada	Durgapur RF	DGP-I	4	Misc Plantation	6400	55%	CAMPA APO	
Chhendipada	Devinagar PRF	DVN-II	50	Teak	80000	60%	OFSDP	Non JFM Teak
Chhendipada	Devinagar PRF	DVN-IV	50	Teak	80000	62%	OFSDP	Non JFM Teak
Chhendipada	Kankurpal RF	MDP-IX	5	Eco	8000	80%	OFSDP	Santrabandha Mahisamardini VSS
Chhendipada	Kankurpal RF	MDP-IX	2	F&F	5000	80%	OFSDP	Santrabandha Mahisamardini VSS
Chhendipada	Kankurpal RF	MDP-IX	1	BAMBOO	400	20%	OFSDP	Santrabandha Mahisamardini VSS
Chhendipada	Kankurpal RF	MDP-IX	3	Eco	4800	55%	OFSDP	Santrabandha Bandhamunda VSS
Chhendipada	Kankurpal RF	MDP-IX	4	F&F	10000	60%	OFSDP	Santrabandha Bandhamunda VSS
Chhendipada	Kankurpal RF	MDP-IX	1	BAMBOO	400	20%	OFSDP	Santrabandha Bandhamunda VSS
Chhendipada	Marudhipa PRF	MDP-IV	2	Eco	3200	55%	OFSDP	Nuagaon VSS
Chhendipada	Marudhipa PRF	MDP-IV	2	F&F	5000	60%	OFSDP	Nuagaon VSS
Chhendipada	Marudhipa PRF	MDP-IV	1	BAMBOO	400	12%	OFSDP	Nuagaon VSS
Chhendipada	Marudhipa PRF	MDP-IV	2	NTFP	800	25%	OFSDP	Nuagaon VSS
Chhendipada	Nunmati PRF	MDP-V	2	Eco	3200	60%	OFSDP	Jaripal VSS
Chhendipada	Nunmati PRF	MDP-V	2	F&F	5000	65%	OFSDP	Jaripal VSS
Chhendipada	Nunmati PRF	MDP-V	1	BAMBOO	400	20%	OFSDP	Jaripal VSS
Chhendipada	Nunmati PRF	MDP-V	2	NTFP	800	60%	OFSDP	Jaripal VSS
Chhendipada	Nunmati PRF	MDP-V	3	Eco	4800	65%	OFSDP	Nuagaon Telisahi VSS
Chhendipada	Nunmati PRF	MDP-V	6	F&F	15000	65%	OFSDP	Nuagaon Telisahi VSS
Chhendipada	Nunmati PRF	MDP-V	1	BAMBOO	400	30%	OFSDP	Nuagaon Telisahi VSS
Chhendipada	Nunmati PRF	MDP-V	3	NTFP	1200	55%	OFSDP	Nuagaon Telisahi VSS
Chhendipada	Nunmati PRF	MDP-V	3	Eco	4800	60%	OFSDP	Nunmati VSS
Chhendipada	Nunmati PRF	MDP-V	6	F&F	15000	65%	OFSDP	Nunmati VSS
Chhendipada	Nunmati PRF	MDP-V	1	BAMBOO	400	30%	OFSDP	Nunmati VSS
Chhendipada	Nunmati PRF	MDP-V	3	NTFP	1200	55%	OFSDP	Nunmati VSS

	Chhendipada	Kanloi RF	KNL-IMP-X	3	Eco	4800	55%	OFSDP	Karnapal VSS
	Chhendipada	Kanloi RF	KNL-IMP-X	2	F&F	5000	65%	OFSDP	Karnapal VSS
	Chhendipada	Kanloi RF	KNL-IMP-X	1	BAMBOO	400	25%	OFSDP	Karnapal VSS
	Chhendipada	Kanloi RF	KNL-IMP-X	1	NTFP	400	35%	OFSDP	Karnapal VSS
2009-10	Durgapur	Tabada PRF	ANT-IMP-VI	30	Eco-Teak	48000	72%	OFSDP	Non -JFM Teak
	Durgapur	Similipathar RF	SPT-IMP-VIII	1	Bamboo	400	62%	OFSDP	Bakala VSS
	Durgapur	Devinagar PRF	DVN-V	1	Bamboo	400	45%	OFSDP	Kisinda VSS
	Durgapur	Devinagar PRF	DVN-VI	1	Bamboo	400	52%	OFSDP	Denuriajharan VSS
	Durgapur	Devinagar PRF	DVN-VIII	1	Bamboo	400	57%	OFSDP	Jamunali Handigoda VSS
	Durgapur	Devinagar PRF	DVN-IX	1	Bamboo	400	62%	OFSDP	Balikudia VSS
	Durgapur	Devinagar PRF	DVN-IX	1	Bamboo	400	71%	OFSDP	Palasabania VSS
	Durgapur	Para PRF	PTG-VIII	2	Eco-Teak	3200	78%	OFSDP	Para Khambeswari VSS
	Durgapur	Para PRF	PTG-VIII	1	F&F	2500	81%	OFSDP	Para Khambeswari VSS
	Durgapur	Para PRF	PTG-X	5	Eco-Teak	8000	75%	OFSDP	Para Padhanpat VSS
	Durgapur	Para PRF	PTG-X	1	F&F	2500	68%	OFSDP	Para Padhanpat VSS
	Durgapur	Para PRF	PTG-X	1	F&F	2500	65%	OFSDP	Para Banadurga VSS
	Durgapur	Sudagulaswar PRF	DVN-X	3	Eco-Teak	4800	48%	OFSDP	Balipatta VSS
	Durgapur	Sudagulaswar PRF	DVN-X	1	Bamboo	400	57%	OFSDP	Balipatta VSS
	Durgapur	Sudagulaswar PRF	DVN-X	5	NTFP	2000	55%	OFSDP	Balipatta VSS
2009-10	Kaniha	Nialu-Lodhajhari & Sapakata R.F	PLJ-IMP-X	2	Eco Teak	3200	85%	OFSDP	Attabira VSS
	Kaniha	Nialu-Lodhajhari & Sapakata R.F	PLJ-IMP-X	2	F&F	5000	85%	OFSDP	Attabira VSS
	Kaniha	Arakhadahi R.F	KNH-VI	50	Economic	80000	76%	OFSDP	Non- JFM Teak
	Kaniha	Badakathia R.F	KNH-IV	20	Misc	32000	70%	Industrial Plantation	

Kaniha	Dhankoili R.F	KNH-IX	1	Eco Teak	1600	82%	OFSDP	Badatribida VSS
Kaniha	Dhankoili R.F	KNH-IX	2	F&F	5000	75%	OFSDP	Badatribida VSS
Kaniha	Durgapur Danda R.F	KNHV-III	1	Eco Teak	1600	68%	OFSDP	Burubahal VSS
Kaniha	Durgapur Danda R.F	KNHV-III	2	F&F	5000	63%	OFSDP	Burubahal VSS
Kaniha	Durgapur Danda R.F	KNHV-III	1	Bamboo	400	35%	OFSDP	Burubahal VSS
Kaniha	Durgapur Danda R.F	KNHV-III	1	Eco Teak	1600	71%	OFSDP	Chintamanipur VSS
Kaniha	Durgapur Danda R.F	KNHV-III	2	F&F	5000	64%	OFSDP	Chintamanipur VSS
Kaniha	Durgapur Danda R.F	KNHV-III	1	Bamboo	400	33%	OFSDP	Chintamanipur VSS
Kaniha	Godigotha R.F	RGL-I	4	Eco Teak	6400	68%	OFSDP	Khalpal VSS
Kaniha	Godigotha R.F	RGL-I	1	F&F	12500	64%	OFSDP	Khalpal VSS
Kaniha	Godigotha R.F	RGL-I	5	Bamoo	400	35%	OFSDP	Khalpal VSS
Kaniha	Pattakhaman R.F	KNHV-II	1	Eco Teak	1600	63%	OFSDP	Banasingha VSS
Kaniha	Pattakhaman R.F	KNHV-II	2	F&F	5000	61%	OFSDP	Banasingha VSS
Kaniha	Pattakhaman R.F	KNHV-II	1	Bamboo	400	33%	OFSDP	Banasingha VSS
Kaniha	Pattakhaman R.F	KNHV-II	1	Eco Teak	1600	60%	OFSDP	Pattakhaman VSS
Kaniha	Pattakhaman R.F	KNHV-II	1	Bamboo	400	32%	OFSDP	Pattakhaman VSS
Kaniha	Pattakhaman R.F	KNHV-II	3	Eco Teak	4800	75%	OFSDP	Jharabereni VSS
Kaniha	Pattakhaman R.F	KNHV-II	4	F&F	10000	73%	OFSDP	Jharabereni VSS
Kaniha	Pattakhaman R.F	KNHV-II	1	Bamboo	400	38%	OFSDP	Jharabereni VSS
Kaniha	Pattakhaman R.F	KNHV-II	1	Eco Teak	1600	68%	OFSDP	Tolakabeda VSS
Kaniha	Pattakhaman R.F	KNHV-II	1	F&F	2500	60%	OFSDP	Tolakabeda VSS
Kaniha	Pattakhaman R.F	KNHV-II	1	Bamboo	400	34%	OFSDP	Tolakabeda VSS
Kaniha	Sadarkhol R.F	RGL-VII	1	Eco Teak	1600	52%	OFSDP	Kuluma VSS
Kaniha	Sadarkhol R.F	RGL-VII	2	F&F	5000	48%	OFSDP	Kuluma VSS
Kaniha	Sadarkhol R.F	RGL-VII	1	F&F	2500	52%	OFSDP	Katrapali VSS

	Kaniha	Sadarkhol R.F	RGL-VIII	1	Eco Teak	1600	61%	OFSDP	Nakatideul VSS
	Kaniha	Sadarkhol R.F	RGL-VIII	1	Eco Teak	1600	60%	OFSDP	Jhankadapasi VSS
	Kaniha	Tangiri R.F	RGL-II	1	Eco Teak	1600	50%	OFSDP	Palasabahali VSS
	Kaniha	Tangiri R.F	RGL-II	2	F&F	5000	48%	OFSDP	Palasabahali VSS
2009-10	Purunagarh	Nisha RF	CDP-VIII	10	Bamboo	4000	67%	State Plan	NBM
	Purunagarh	Pokunda PRF	PNG-IV	30	Eco Teak	48000	80%	OFSDP	NON JFM Teak
2009-10	Raigoda	Balanga RF	BLG-IMP-IV	5	F & F	12500	82%	OFSDP	Madhupur VSS
	Raigoda	Balanga RF	BLG-IMP-IV	2	Eco-Teak	3200	95%	OFSDP	Madhupur VSS
	Raigoda	Balanga RF	BLG-IMP-IV	15	NTFP	6000	75%	OFSDP	Madhupur VSS
	Raigoda	Balanga RF	BLG-IMP-IX	20	Eco-Teak	32000	82%	OFSDP	Non-JFM Teak
	Raigoda	Nuakheta II	NKT-IMP-II	10	Misc Pln.	25000	75%	CAMPA	APO 2009-10.
	Raigoda	Nuakheta RF	NKT-IMP-VIII	4	Bamboo	1600	65%	OFSDP	Purunagarh VSS
	Raigoda	Nuakheta RF	NKT-IMP-VIII	2	F & F	5000	70%	OFSDP	Purunagarh VSS
	Raigoda	Nuakheta RF	NKT-IMP-VIII	6	NTFP	2400	70%	OFSDP	Purunagarh VSS
	Raigoda	Nuakheta RF	NKT-IMP-IX	2	F & F	5000	80%	OFSDP	Nukhuripada VSS
	Raigoda	Nuakheta RF	NKT-IMP-IX	15	NTFP	6000	55%	OFSDP	Nukhuripada VSS
2009-10	Talcher	Gengutia RF	DER-I	10	Misc Plantation	16000	33%	Non Plan	Industrial
	Talcher	Gopalprasad RF	DER-I	20	Misc Plantation	32000	75%	Non Plan	Industrial
	Talcher	Mankadachua RF	RGL-IX	3	F & F	7500	63%	OFSDP	Biru Nuasahi VSS
	Talcher	Mankadachua RF	RGL-IX	1	Bamboo	400	65%	OFSDP	Biru Nuasahi VSS
	Talcher	Nuabhuin RF	DER-I	2	F & F	5000	55%	OFSDP	Malibandha VSS
	Talcher	Nuabhuin RF	DER-I	1	Misc Plantation	400	62%	OFSDP	Malibandha VSS
	Talcher	Nuabhuin RF	DER-I	30	Misc Plantation	48000	65%	Industrial Plantation	
	Talcher	Rabipur RF	DER-VI	2	F & F	5000	72%	OFSDP	Jadunathpur VSS
	Talcher	Rabipur RF	DER-VI	1	Bamboo	400	48%	OFSDP	Jadunathpur VSS
	Talcher	Rakas RF	DER-III	1.77	Misc Plantation	2832	72%	Comp. Affn.	Ananta Extn.

	Talcher	Sibarampur PRF	DER-VI	1	Bamboo	400	45%	OFSDP	Sibarampur VSS
	Talcher	Sibarampur PRF	DER-VI	25	Misc Plantation	40000	66%	Industrial Plantation	
				589.77		902832			
2010-11	Chhendipada	Bramhanbil RF	CDP-II	2	Economic Teak	3200	60%	OFSDP	Kosala Jharsuguda VSS
	Chhendipada	Chhendipada RF	CDP-IV	10	NTFP	4000	65%	OFSDP	Tentuloi Kodasahi VSS
	Chhendipada	Chhendipada RF	CDP-IV	4	FF	10000	68%	OFSDP	Swapneswar VSS
	Chhendipada	Chhendipada RF	CDP-IV	8	NTFP	3200	50%	OFSDP	Swapneswar VSS
	Chhendipada	Chhendipada RF	CDP-IV	4	FF	10000	35%	OFSDP	Maa Bimala VSS
	Chhendipada	Chhendipada RF	CDP-IV	6	NTFP	2400	45%	OFSDP	Maa Bimala VSS
	Chhendipada	Chhendipada RF	CDP-V	2	FF	5000	56%	OFSDP	Banadurga VSS
	Chhendipada	Chhendipada RF	CDP-V	3	NTFP	1200	45%	OFSDP	Banadurga VSS
	Chhendipada	Chhendipada RF	CDP-VI	4	NTFP	1600	58%	OFSDP	Ramachandi VSS
	Chhendipada	Chhendipada RF	CDP-VI	4	FF	10000	60%	OFSDP	Hingula VSS
	Chhendipada	Chhendipada RF	CDP-VI	6	NTFP	2400	45%	OFSDP	Hingula VSS
	Chhendipada	Chhendipada RF	CDP-VI	20	Misc	32000	65%	13th F.C	State Plan
	Chhendipada	Chhendipada RF	CDP-VII	4	FF	10000	68%	OFSDP	Karadabahal VSS
	Chhendipada	Chhendipada RF	CDP-VII	8	NTFP	3200	65%	OFSDP	Karadabahal VSS
	Chhendipada	Dangapal PRF	MDP-VI	5	NTFP	2000	70%	OFSDP	Dangapal VSS
	Chhendipada	Dangapal PRF	MDP-VI	5	Eco	8000	65%	OFSDP	Dangapal VSS
	Chhendipada	Dangapal PRF	MDP-VI	2	NTFP	800	55%	OFSDP	Khamar VSS
	Chhendipada	Dangapal PRF	MDP-VI	2	Eco	3200	45%	OFSDP	Khamar VSS
	Chhendipada	Dangapal PRF	MDP-VII	3	Eco	4800	55%	OFSDP	Bamanali Sarapal VSS
	Chhendipada	Dangapal PRF	MDP-VII	2	F&F	5000	56%	OFSDP	Bamanali Sarapal VSS
	Chhendipada	Dangapal PRF	MDP-VII	4	Bamboo	1600	58%	OFSDP	Bamanali Sarapal VSS
	Chhendipada	Dangapal PRF	MDP-VII	3	NTFP	1200	46%	OFSDP	Bamanali Sarapal VSS
	Chhendipada	Dangapal PRF	MDP-VII	5	Eco	8000	40%	OFSDP	Bhaliasar VSS
	Chhendipada	Dangapal PRF	MDP-VII	2	F&F	5000	45%	OFSDP	Bhaliasar VSS
	Chhendipada	Dangapal PRF	MDP-VII	5	Bamboo	2000	45%	OFSDP	Bhaliasar VSS
	Chhendipada	Dangapal PRF	MDP-VII	6	NTFP	2400	65%	OFSDP	Bhaliasar VSS

Chhendipada	Dangapal PRF	MDP-VII	4	Eco	6400	45%	OFSDP	Vejidiha VSS
Chhendipada	Dangapal PRF	MDP-VII	6	NTFP	2400	65%	OFSDP	Vejidiha VSS
Chhendipada	Durgapur RF	DGP-II	2	Eco	3200	65%	OFSDP	Durgapur Tangirisahi VSS
Chhendipada	Durgapur RF	DGP-II	5	NTFP	2000	55%	OFSDP	Durgapur Tangirisahi VSS
Chhendipada	Durgapur RF	DGP-V	2	Eco	3200	45%	OFSDP	Sudarsanpur VSS
Chhendipada	Durgapur RF	DGP-V	2	NTFP	800	75%	OFSDP	Sudarsanpur VSS
Chhendipada	Durgapur RF	DGP-V	10	Misc Plantation	3000	55%	Comp.Affn	Bhubaneswar OCP
Chhendipada	Durgapur RF	DGP-VI	8	Eco	10400	50%	OFSDP	Odakapa VSS
Chhendipada	Durgapur RF	DGP-VI	4	F&F	10000	58%	OFSDP	Odakapa VSS
Chhendipada	Durgapur RF	DGP-VI	6	NTFP	2400	65%	OFSDP	Odakapa VSS
Chhendipada	Durgapur RF	DGP-VII	50	Teak	80000	68%	OFSDP	Non JFM Teak
Chhendipada	Devinagar PRF	DVN-V	20	Bamboo	8000	45%	NBN	13th F.C
Chhendipada	Jeypur RF	CDP-I	4	Eco	6400	65%	OFSDP	Kosala Dehurisahi VSS
Chhendipada	Jeypur RF	CDP-I	2	F&F	5000	60%	OFSDP	Kosala Dehurisahi VSS
Chhendipada	Jeypur RF	CDP-I	5	NTFP	2000	65%	OFSDP	Kosala Dehurisahi VSS
Chhendipada	Jaltap RF	CDP-II	4	Eco	6400	18%	OFSDP	Jaltap VSS
Chhendipada	Jaltap RF	CDP-II	2	F&F	5000	15%	OFSDP	Jaltap VSS
Chhendipada	Jaltap RF	CDP-II	2	Bamboo	800	15%	OFSDP	Jaltap VSS
Chhendipada	Jaltap RF	CDP-II	5	NTFP	2000	18%	OFSDP	Jaltap VSS
Chhendipada	Jaltap RF	CDP-II	10	Eco	16000	35%	OFSDP	Takua VSS
Chhendipada	Jaltap RF	CDP-II	2	F&F	5000	56%	OFSDP	Takua VSS
Chhendipada	Jaltap RF	CDP-II	2	Bamboo	800	55%	OFSDP	Takua VSS
Chhendipada	Jaltap RF	CDP-II	16	NTFP	6400	60%	OFSDP	Takua VSS
Chhendipada	Kankurpal RF	MDP-IX	11	NTFP	4400	78%	OFSDP	S.Bandhamunda VSS
Chhendipada	Kankurpal RF	MDP-IX	2	F&F	5000	70%	OFSDP	S.Mahisamardini VSS
Chhendipada	Kankurpal RF	MDP-IX	9	NTFP	3600	55%	OFSDP	S.Mahisamardini VSS
Chhendipada	Kosala RF	CDP-VII	15	Eco	24000	75%	OFSDP	Kosala Kansanali VSS
Chhendipada	Kosala RF	CDP-VII	6	F&F	15000	55%	OFSDP	Kosala Kansanali VSS

	Chhendipada	Kosala RF	CDP-VII	5	Bamboo	2000	75%	OFSDP	Kosala Kansanali VSS
	Chhendipada	Kosala RF	CDP-VII	10	NTFP	4000	65%	OFSDP	Kosala Kansanali VSS
	Chhendipada	Marudhipa PRF	MDP-I	50	Teak	80000	68%	OFSDP	Non JFM Teak
	Chhendipada	Marudhipa PRF	MDP-II	50	Teak	80000	70%	OFSDP	Non JFM Teak
	Chhendipada	Marudhipa PRF	MDP-IV	2	NTFP	800	75%	OFSDP	Nuagaon VSS
	Chhendipada	Nunmati PRF	MDP-V	2	F&F	5000	70%	OFSDP	Nunmati VSS
	Chhendipada	Nunmati PRF	MDP-V	3	NTFP	1200	78%	OFSDP	Nunmati VSS
	Chhendipada	Nunmati PRF	MDP-V	2	NTFP	800	55%	OFSDP	Nuagaon Telisahi VSS
	Chhendipada	Nunmati PRF	MDP-V	2	NTFP	800	55%	OFSDP	Jaripal VSS
	Chhendipada	Kanloi RF	DVN-I	2	F&F	5000	75%	OFSDP	Bhatapal VSS
	Chhendipada	Kanloi RF	DVN-I	2	NTFP	800	65%	OFSDP	Bhatapal VSS
	Chhendipada	Kanloi RF	KNL-IMP-X	5	Eco	8000	55%	OFSDP	Karnapal VSS
	Chhendipada	Kanloi RF	KNL-IMP-X	2	F&F	5000	58%	OFSDP	Karnapal VSS
	Chhendipada	Kanloi RF	KNL-IMP-X	2	Bamboo	800	70%	OFSDP	Karnapal VSS
	Chhendipada	Kanloi RF	KNL-IMP-X	5	NTFP	2000	48%	OFSDP	Karnapal VSS
2010-11	Durgapur	Antulia Tabada RF	ANT-IMP-III	20	Teak	32000	85%	OFSDP	Non-JFM Teak
	Durgapur	Antulia Tabada RF	ANT-IMP-IV	5	Eco- Teak	8000	82%	OFSDP	Antulia VSS
	Durgapur	Antulia Tabada RF	ANT-IMP-IV	5	Bamboo	2000	72%	OFSDP	Antulia VSS
	Durgapur	Antulia Tabada RF	ANT-IMP-IV	5	NTFP	2000	67%	OFSDP	Antulia VSS
	Durgapur	Tabada PRF	ANT-IMP-VI	4	Eco-Teak	6400	78%	OFSDP	Tabada VSS
	Durgapur	Tabada PRF	ANT-IMP-VI	1	Bamboo	400	65%	OFSDP	Tabada VSS
	Durgapur	Tabada PRF	ANT-IMP-VI	5	NTFP	2000	63%	OFSDP	Tabada VSS
	Durgapur	Dandasingha Bhagatpur PRF	ANT-IMP-V	2	Eco-Teak	3200	84%	OFSDP	Bhagatpur VSS
	Durgapur	Dandasingha Bhagatpur PRF	ANT-IMP-V	3	F&F	7500	72%	OFSDP	Bhagatpur VSS
	Durgapur	Dandasingha Bhagatpur PRF	ANT-IMP-V	1	Bamboo	400	81%	OFSDP	Bhagatpur VSS

	Durgapur	Similipathar RF	SPT-IMP-VIII	5	Bamboo	2000	80%	OFSDP	Bakala VSS
	Durgapur	Similipathar RF	SPT-IMP-IX	2	Bamboo	800	78%	OFSDP	Laxmidharpur VSS
	Durgapur	Similipathar RF	SPT-IMP-IX	20	NTFP	8000	65%	OFSDP	Laxmidharpur VSS
	Durgapur	Similipathar RF	SPT-IMP-IX	30	Eco-Teak	48000	71%	CAMPA	Imp of Old Teak Plantation
	Durgapur	Devinagar PRF	DVN-VII	2	Bamboo	800	57%	OFSDP	Machhakuta VSS
	Durgapur	Devinagar PRF	DVN-VII	10	NTFP	4000	63%	OFSDP	Machhakuta VSS
	Durgapur	Devinagar PRF	DVN-VIII	2	NTFP	800	55%	OFSDP	Jamunali Handigoda VSS
	Durgapur	Pathargarh PRF	PTG-I	23	NTFP	9200	62%	OFSDP	Kanjara-II VSS
	Durgapur	Pathargarh PRF	PTG-I	20	Misc	50000	69%	CAMPA	CAMPA APO 2009-10
	Durgapur	Para PRF	PTG-VIII	12	NTFP	4800	63%	OFSDP	Para Khambeswari VSS
	Durgapur	Para PRF	PTG-X	2	Eco-Teak	3200	72%	OFSDP	Kumursingh VSS
	Durgapur	Para PRF	PTG-X	20	NTFP	8000	52%	OFSDP	Para Banadurga VSS
	Durgapur	Para PRF	PTG-X	15	NTFP	6000	48%	OFSDP	Para Padhanpat VSS
	Durgapur	Rodsinga PRF	PTG-VIII	5	Eco-Teak	8000	85%	OFSDP	Rodasingha VSS
	Durgapur	Rodsinga PRF	PTG-VIII	15	F&F	37500	68%	OFSDP	Rodasingha VSS
	Durgapur	Rodsinga PRF	PTG-VIII	4	Bamboo	1600	65%	OFSDP	Rodasingha VSS
	Durgapur	Rodsinga PRF	PTG-VIII	3	NTFP	1200	57%	OFSDP	Rodasingha VSS
	Durgapur	Similipathar RF	DVN-X	6	Bamboo	2400	52%	OFSDP	Hatianali VSS
2010-11	Kaniha	Nialu-Lodhajhari & Sapakata R.F	PLJ-IMP-X	20	NTFP	8000	72%	OFSDP	Attabira VSS
	Kaniha	Arakhadahi R.F	KNH-VI	50	Economic	80000	82%	OFSDP	Non- JFM Teak
	Kaniha	Arakhadahi R.F	KNH-VI	5	Bamboo	2000	34%	OFSDP	Bhojpur VSS
	Kaniha	Arakhadahi R.F	KNH-VI	25	NTFP	10000	38%	OFSDP	Bhojpur VSS

Kaniha	Badakathia R.F	KNH-I	2	Eco Teak	3200	70%	OFSDP	Harichandan pur VSS
Kaniha	Badakathia R.F	KNH-I	3	F&F	7500	72%	OFSDP	Harichandan pur VSS
Kaniha	Badakathia R.F	KNH-I	2	Bamboo	800	37%	OFSDP	Harichandan pur VSS
Kaniha	Badakathia R.F	KNH-I	10	NTFP	4000	38%	OFSDP	Harichandan pur VSS
Kaniha	Badakathia R.F	KNH-I	2	Eco Teak	3200	71%	OFSDP	Badatribida VSS
Kaniha	Badakathia R.F	KNH-I	5	F&F	12500	68%	OFSDP	Badatribida VSS
Kaniha	Badakathia R.F	KNH-I	20	NTFP	8000	40%	OFSDP	Badatribida VSS
Kaniha	Badakathia R.F	KNH-I	2	F&F	5000	76%	OFSDP	Ramachandi Sanatribida VSS
Kaniha	Badakathia R.F	KNH-I	10	NTFP	4000	46%	OFSDP	Ramachandi Sanatribida VSS
Kaniha	Badakathia R.F	KNH-II	4	F&F	10000	77%	OFSDP	Hingula , Sanatribida VSS
Kaniha	Badakathia R.F	KNH-II	10	NTFP	4000	45%	OFSDP	Hingula , Sanatribida VSS
Kaniha	Badakathia R.F	KNH-II	4	F&F	10000	78%	OFSDP	Mahasindhu VSS
Kaniha	Badakathia R.F	KNH-III	10	NTFP	4000	47%	OFSDP	Mahasindhu VSS
Kaniha	Badakathia R.F	KNH-III	2	Eco Teak	3200	72%	OFSDP	Maa Hingula, Kumunda VSS
Kaniha	Badakathia R.F	KNH-III	10	NTFP	4000	43%	OFSDP	Maa Hingula, Kumunda VSS
Kaniha	Badakathia R.F	KNH-III	2	Eco Teak	3200	73%	OFSDP	Jogeswar, Kumunda VSS
Kaniha	Badakathia R.F	KNH-III	2	F&F	5000	75%	OFSDP	Jogeswar, Kumunda VSS
Kaniha	Badakathia R.F	KNH-III	8	NTFP	3200	39%	OFSDP	Jogeswar, Kumunda VSS
Kaniha	Badakathia R.F	KNH-III	5	F&F	12500	70%	OFSDP	Mohanapada VSS
Kaniha	Badakathia R.F	KNH-III	15	NTFP	6000	42%	OFSDP	Mohanapada VSS

Kaniha	Badakathia R.F	KNH-IV	2	Eco Teak	3200	68%	OFSDP	Purunapani, Kumunda VSS
Kaniha	Badakathia R.F	KNH-IV	3	F&F	7500	74%	OFSDP	Purunapani, Kumunda VSS
Kaniha	Badakathia R.F	KNH-IV	15	NTFP	6000	41%	OFSDP	Purunapani, Kumunda VSS
Kaniha	Badakathia R.F	KNH-IV	2	Eco Teak	3200	68%	OFSDP	Maradaharih arpur VSS
Kaniha	Badakathia R.F	KNH-IV	2	F&F	5000	69%	OFSDP	Maradaharih arpur VSS
Kaniha	Badakathia R.F	KNH-IV	10	NTFP	4000	38%	OFSDP	Maradaharih arpur VSS
Kaniha	Badakathia R.F	KNH-IV	70	Misc	77000	72%	Industrial Plantation	
Kaniha	Biripal R.F	RGL-V	3	Eco Teak	4800	95%	OFSDP	Gengutia VSS
Kaniha	Biripal R.F	RGL-V	3	F&F	7500	83%	OFSDP	Gengutia VSS
Kaniha	Biripal R.F	RGL-V	5	Bamboo	2000	76%	OFSDP	Gengutia VSS
Kaniha	Biripal R.F	RGL-V	10	NTFP	4000	45%	OFSDP	Gengutia VSS
Kaniha	Biripal R.F	RGL-V	2	Eco Teak	3200	83%	OFSDP	Jharbeda VSS
Kaniha	Biripal R.F	RGL-V	4	F&F	10000	81%	OFSDP	Jharbeda VSS
Kaniha	Biripal R.F	RGL-V	5	Bamboo	2000	42%	OFSDP	Jharbeda VSS
Kaniha	Biripal R.F	RGL-V	10	NTFP	4000	48%	OFSDP	Jharbeda VSS
Kaniha	Biripal R.F	RGL-V	2	Eco Teak	3200	65%	OFSDP	Podagada Purunasahi VSS
Kaniha	Biripal R.F	RGL-V	3	F&F	7500	80%	OFSDP	Podagada Purunasahi VSS
Kaniha	Biripal R.F	RGL-V	15	NTFP	6000	52%	OFSDP	Podagada Purunasahi VSS
Kaniha	Biripal R.F	RGL-V	2	Eco Teak	3200	70%	OFSDP	Podagada Nuasahi VSS
Kaniha	Biripal R.F	RGL-V	4	F&F	10000	78%	OFSDP	Podagada Nuasahi VSS
Kaniha	Biripal R.F	RGL-V	20	NTFP	8000	48%	OFSDP	Podagada Nuasahi VSS
Kaniha	Durgapur Danda R.F	KNH-VIII	5	Bamboo	2000	35%	OFSDP	Chintamanip ur VSS
Kaniha	Durgapur Danda R.F	KNH-VIII	25	NTFP	10000	40%	OFSDP	Chintamanip ur VSS
Kaniha	Durgapur Danda R.F	KNH-VIII	20	NTFP	8000	39%	OFSDP	Burubahal VSS

	Kaniha	Dalak Poipal Danda R.F	KNH-X	40	NTFP	16000	42%	OFSDP	Talapada VSS
	Kaniha	Dalak Poipal Danda R.F	KNH-X	20	NTFP	8000	41%	OFSDP	Poipal VSS
	Kaniha	Godigotha R.F	RGL-I	15	NTFP	6000	45%	OFSDP	Khalpal VSS
	Kaniha	Pattakhaman R.F	KNH-VII	5	Bamboo	2000	36%	OFSDP	Tolakabeda VSS
	Kaniha	Pattakhaman R.F	KNH-VII	20	NTFP	8000	41%	OFSDP	Tolakabeda VSS
	Kaniha	Sadarkhol R.F	RGL-VII	30	NTFP	12000	38%	OFSDP	Olanda VSS
	Kaniha	Sadarkhol R.F	RGl-VII	5	Bamboo	2000	50%	OFSDP	Kuluma VSS
	Kaniha	Sadarkhol R.F	RGl-VII	20	NTFP	8000	43%	OFSDP	Kuluma VSS
	Kaniha	Sadarkhol R.F	RGl-VII	10	Bamboo	4000	38%	OFSDP	Balipasi VSS
	Kaniha	Sadarkhol R.F	RGl-VII	20	NTFP	8000	36%	OFSDP	Katrapali VSS
	Kaniha	Sadarkhol R.F	RGl-VII	10	Bamboo	4000	40%	OFSDP	Katrapali VSS
	Kaniha	Sachi R.F	RGL-VI	1	F&F	2500	65%	OFSDP	Kulabir VSS
	Kaniha	Sachi R.F	RGL-VI	5	NTFP	2000	41%	OFSDP	Kulabir VSS
	Kaniha	Santrabandha R.F	KNH-V	8	Eco Teak	12800	85%	OFSDP	Santrabandha VSS
	Kaniha	Santrabandha R.F	KNH-V	5	F&F	12500	75%	OFSDP	Santrabandha VSS
	Kaniha	Santrabandha R.F	KNH-V	25	NTFP	10000	51%	OFSDP	Santrabandha VSS
	Kaniha	Saradhapur R.F	KNH-III	3	Eco Teak	4800	75%	OFSDP	Saradhapur VSS
	Kaniha	Saradhapur R.F	KNH-III	4	F&F	10000	45%	OFSDP	Saradhapur VSS
	Kaniha	Saradhapur R.F	KNH-III	15	NTFP	6000	43%	OFSDP	Saradhapur VSS
	Kaniha	Saleimada	RGL-III	20	NTFP	8000	45%	OFSDP	Hatiadanda VSS
2010-11	Purunagarh	Badadandasahi RF	PNG- VII	30	Eco Teak	48000	79%	OFSDP	Non JFM Teak
	Purunagarh	Chandanpur PRF	PNG- VI	10	Eco Teak	16000	74%	OFSDP	Saruali VSS
	Purunagarh	Kalapat PRF	PNG- IX	3	Eco Teak	4800	81%	OFSDP	Gaudasahi VSS
	Purunagarh	Kalapat PRF	PNG- IX	4	Bamboo	1600	78%	OFSDP	Gaudasahi VSS
	Purunagarh	Kalapat PRF	PNG- VIII	4	Eco Teak	6400	84%	OFSDP	Saradhapur VSS
	Purunagarh	Kulasinga PRF	PNG-III	5	NTFP	2000	58%	OFSDP	Sudasahi VSS

Purunagarh	Kulasinga PRF	PNG-III	25	NTFP	10000	55%	OFSDP	Ramimunda Goudasahi VSS
Purunagarh	Kulasinga PRF	PNG-III	2	Eco Teak	3200	78%	OFSDP	Sasansahi VSS
Purunagarh	Kulasinga PRF	PNG-III	2	F & F	5000	58%	OFSDP	Sasansahi VSS
Purunagarh	Kulasinga PRF	PNG-III	3	Bamboo	1200	67%	OFSDP	Sasansahi VSS
Purunagarh	Kulasinga PRF	PNG-III	20	Eco Teak	32000	75%	CAMPA	Kulasinga
Purunagarh	Kurudu PRF	PNG-V	30	Eco Teak	48000	78%	OFSDP	Non JFM Teak
Purunagarh	Kaliakata RF	DGP-X	10	Eco Teak	16000	71%	CAMPA	
Purunagarh	Kumanda Talataila RF	CDP-VIII	2	Eco Teak	3200	75%	OFSDP	Kumanda VSS
Purunagarh	Kumanda Talataila RF	CDP-VIII	2	F & F	50000	71%	OFSDP	Kumanda VSS
Purunagarh	Kumanda Talataila RF	CDP-VIII	2	Bamboo	800	67%	OFSDP	Kumanda VSS
Purunagarh	Kumanda Talataila RF	CDP-VIII	2	NTFP	800	57%	OFSDP	Kumanda VSS
Purunagarh	Kuio RF	CDP-X	4	F & F	10000	73%	OFSDP	Kausitaila VSS
Purunagarh	Kuio RF	CDP-X	4	NTFP	1600	59%	OFSDP	Kausitaila VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	2	Eco Teak	3200	85%	OFSDP	Chandrabahal VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	6	F & F	15000	74%	OFSDP	Chandrabahal VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	2	Bamboo	800	72%	OFSDP	Chandrabahal VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	59%	OFSDP	Chandrabahal VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	Eco Teak	8000	85%	OFSDP	Sabalabhanga VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	15	F & F	37500	74%	OFSDP	Sabalabhanga VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	2	Bamboo	800	71%	OFSDP	Sabalabhanga VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	57%	OFSDP	Sabalabhanga VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	8000	54%	OFSDP	Saradhapur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	15	NTFP	37500	52%	OFSDP	Saradhapur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	2	NTFP	800	56%	OFSDP	Saradhapur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	53%	OFSDP	Saradhapur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	2	Eco Teak	3200	84%	OFSDP	Shyamsundarpur VSS

	Purunagarh	Mandaragiri Kalima RF	PNG-I	5	F & F	12500	76%	OFSDP	Shyamsundar pur VSS
	Purunagarh	Mandaragiri Kalima RF	PNG-I	2	Bamboo	800	71%	OFSDP	Shyamsundar pur VSS
	Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	56%	OFSDP	Shyamsundar pur VSS
	Purunagarh	Mandaragiri Kalima RF	PNG-I	5	F & F	12500	76%	OFSDP	Tumuni VSS
	Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	54%	OFSDP	Tumuni VSS
	Purunagarh	Nisha RF	CDP-VIII	20	Bamboo	8000	67%	State Plan	
	Purunagarh	Pokunda PRF	PNG-IV	10	NTFP	4000	51%	OFSDP	Pokunda Matiasahi VSS
	Purunagarh	Paranga RF	CDP-IX	25	F & F	62500	70%	13th FC	
	Purunagarh	Saharagoda RF	PNG-III	3	Eco Teak	4800	81%	OFSDP	Saharagoda VSS
	Purunagarh	Saharagoda RF	PNG-III	10	F & F	25000	75%	OFSDP	Saharagoda VSS
	Purunagarh	Saharagoda RF	PNG-III	2	Bamboo	800	71%	OFSDP	Saharagoda VSS
	Purunagarh	Saharagoda RF	PNG-III	10	NTFP	4000	54%	OFSDP	Saharagoda VSS
2010-11	Raigoda	Balanga RF	BLG-IMP-III	10	Bamboo	4000	82%	OFSDP	Hidising VSS
	Raigoda	Balanga RF	BLG-IMP-III	10	NTFP	4000	65%	OFSDP	Hidising VSS
	Raigoda	Balanga RF	BLG-IMP-IV	5	Bamboo	2000	80%	OFSDP	Madhupur VSS
	Raigoda	Balanga RF	BLG-IMP-IV	10	NTFP	4000	75%	OFSDP	Madhupur VSS
	Raigoda	Balanga RF	BLG-IMP-V	15	NTFP	6000	78%	OFSDP	Pokatunga Dehury Sahi
	Raigoda	Balanga RF	BLG-IMP-V	7	Bamboo	2800	75%	OFSDP	Pokatunga Dehury Sahi
	Raigoda	Nuakheta RF	NKT-IMP-IX	20	Bamboo	4000	68%	OFSDP	Nukhuripada VSS
	Raigoda	Balanga RF	BLG-IMP-IX	10	Misc Pln.	25000	70%	CAMPA	APO 2009-10
	Raigoda	Nuakheta RF	NKT-IMP-VI	10	Bamboo	4000	90%	OFSDP	Nuaheta II
	Raigoda	Nuakheta RF	NKT-IMP-VI	10	NTFP	4000	92%	OFSDP	Nuaheta II
	Raigoda	Talasira DPF	NKT-IMP-VI	30	Eco-Teak	48000	80%	OFSDP	Non-JFM Teak
	Raigoda	Nuakheta RF	NKT-IMP-VIII	20	Bamboo	8000	68%	OFSDP	Purunagarh VSS
2010-11	Talcher	Kandhaberen i PRF	DER-VII	20	Misc Plantation	32000	70%	Industrial	Amelioration of Talcher Mocro Climate
	Talcher	Mankadachu a RF	RGL-IX	8	Eco teak	12800	72%	OFSDP	Kandakhama n VSS

	Talcher	Mankadachua RF	RGL-IX	1	Bamboo	400	50%	OFSDP	Biru Nuasahi VSS
	Talcher	Rakas RF	DER-III	6.033	Misc Plantation	9652	65%	Comp. Affn.	Bhubaneswar OCP
	Talcher	Seepur RF	RGL-X	40	Eco teak	64000	75%	OFSDP	Non-JFM Teak
				2056.033					
2011-12	Chhendipada	Chhendipada RF	CDP-V	20	Misc	32000	80%	13th F.C	State Plan
	Chhendipada	Marudhipa PRF	MDP-III	50	Teak	80000	80%	OFSDP	Non JFM Teak
2011-12	Durgapur	Arisulia Sulia RF	DGP-IV	20	Misc	50000	69%	State Plan	13th FC
	Durgapur	Pathargarh PRF	PTG-IV	20	Eco-Teak	32000	65%	OFSDP	Non JFM Teak
	Durgapur	Antulia Tabada RF	ANT-IMP-V	20	Bamboo	8000	68%	State Plan	
2011-12	Kaniha	Badakathia R.F	KNH-II	20	Misc Plantation	32000	70%	13th FC	State Plan
	Kaniha	Tangiri R.F	RGL-II	4	Eco Teak	6400	80%	OFSDP	Barapada VSS
	Kaniha	Tangiri R.F	RGL-II	4	F&F	10000	80%	OFSDP	Barapada VSS
2011-12	Purunagarh	Badadandasahi RF	PNG- VII	10	Bamboo	4000	73%	NBM	13th FC
	Purunagarh	Kerjang PRF	PNG- II	25	Bamboo	10000	73%	State Plan	13th FC
2011-12	Raigoda	Kangulei PRF	PTG-VIII	20	Bamboo	8000	65%	Stateplan	
	Raigoda	Balanga RF	BLG-IMP-III	20	Eco-Teak	32000	82%	OFSDP	Non-JFM Teak
	Raigoda	Balanga PRF	BLG-IMP-V	20	Eco-Teak	32000	85%	OFSDP	Non-JFM Teak
2011-12	Talcher	Rakas RF	DER-III	2.401	Misc plantation	3841	45%	Comp. Affn.	Jagannathpur Extn.
	Talcher	Seepur RF	RGL-X	25	Eco teak	40000	72%	OFSDP	Non- JFM Teak
	Talcher	Silling RF	RGL -X	20	Misc Plantation	32000	65%	13th F.C	Block Plantation
				300.401					
2012-13	Chhendipada	Jeypur RF	CDP-I	10	Misc Plantation	11000	70%	NAP	Similisahi VSS
2012-13	Durgapur	Pathargarh PRF	PTG-III	5	Misc	12500	65%	NAP	Betar VSS
2012-13	Kaniha	Badakathia R.F	KNH-II	30	Misc Plantation	48000	85%	13th FC	State Plan

2012-13	Purunagarh	Pokunda PRF	PNG-IV	5	Eco Teak	8000	85%	FDA	Gurudhi VSS
	Purunagarh	Kurudu PRF	PNG-V	25	Eco Teak	40000	84%	OFSDP	Non JFM Teak
2012-13	Raigoda	Kangulei PRF	PTG-VIII	20	Bamboo	6660	65%	Stateplan	NBM
	Raigoda	Balanga RF	BLG-IMP-V	25	Eco-Teak	80000	80%	OFSDP	Non-JFM Teak
	Raigoda	Balanga RF	BLG-IMP-V	20	Bamboo	6660	75%	Stateplan	NBM
	Raigoda	Talisara DPF	NKT-IMP-VI	20	Bamboo	6660	80%	Stateplan	NBM
2012-13	Talcher	Baishnabaragudi R.F	DER-II	20	Misc Plantation	32000	69%	13 Th F.C	
				180					
2013-14	Chhendipada	Chhendipada RF	CDP-V	10	Teak	16000	90%	MGNREGS	
	Chhendipada	Chhendipada RF	CDP-VII	30	Teak	48000	86%	OFSDP	Non-JFm Teak
	Chhendipada	Nunmati PRF	MDP-V	50	Teak	10000	40%	MGNREGS	
2013-14	Kaniha	Arakhadahi R.F	KNH-VI	45	Economic	72000	81%	OFSDP	
	Kaniha	Tangiri R.F	RGL-I	10	Misc Plantation	16000	75%	MGNREGS	Biswalmunda Village
	Kaniha	Gohiradanda R.F	KNH-KNH-IV	10	Misc Plantation	16000	92%	Comp. Affn.	
2013-14	Purunagarh	Madhapur RF	PNG-VI	15	Eco Teak	24000	85%	13th FC	13th FC
	Purunagarh	Kurudu PRF	PNG-V	25	Eco Teak	40000	83%	OFSDP	Non JFM Teak
2013-14	Raigoda	Balanga RF	BLG-IMP-III	10	Bamboo	4000	70%	Stateplan	NBM
	Raigoda	Balanga RF	BLG-IMP-IV	10	Bamboo	4000	75%	13th FC	Stateplan
2013-14	Talcher	Kanteikolia RF	DER-VII	40	Misc Plantation	64000	62%	State Plan	Improvement of Wild life habitat
				255					
2014-15	Kaniha	Arakhadahi R.F	KNH-VI	10	Misc Plantation	16000	90%	MGNREGS	
2014-15	Purunagarh	Chandanpur PRF	PNG- VI	10	Bamboo	4000	79%	State Plan	13th FC
	Purunagarh	Madhapur RF	PNG-VI	10	Bamboo	4000	73%	State Plan	13th FC
	Purunagarh	Burti PRF	COMP-IV	10	Mis	16000	72%	MGNREGS	
2014-15	Raigoda	Nuakheta RF	NKT-IMP-VI	40	Bamboo	13320	75%	Stateplan	NBM
2014-15	Talcher	Kanheijena RF	DER-VIII	5	Misc Plantation	8000	68%	State Plan Elephnat Corridor	Improvement of W.L habitat
	Talcher	Rabipur RF	DER-V	10	Misc Plantation	11000	65%	NAP	FDA Nua Balangi VSS
				95					

	Total			**7267.90**					
Year	Name of the Range	Name of the forest block, RF/PRF/DPF	Management Unit	Area covered	Type of Plantation	No of seedling planted	Percentage of survival	Under the Scheme	Remarks
1	2	3	4	5	6	7	8	9	10
2007-08	Kaniha	Badakathia R.F		50	Econimic	80000	70%	B Economic	
	Chhendipada	Chhendipada RF	CDP-IV	2	FF	5000	70%	OFSDP	Swapneswar VSS
	Chhendipada	Chhendipada RF	CDP-IV	12	NTFP	4800	50%	OFSDP	Swapneswar VSS
	Chhendipada	Chhendipada RF	CDP-IV	4	ECO	6400	75%	OFSDP	Maa Bimala VSS
	Chhendipada	Chhendipada RF	CDP-IV	4	FF	10000	70%	OFSDP	Maa Bimala VSS
	Chhendipada	Chhendipada RF	CDP-IV	1	Bamboo	400	65%	OFSDP	Maa Bimala VSS
	Chhendipada	Chhendipada RF	CDP-V	4	ECO	6400	70%	OFSDP	Banadurga VSS
	Chhendipada	Chhendipada RF	CDP-V	4	FF	10000	60%	OFSDP	Banadurga VSS
	Chhendipada	Chhendipada RF	CDP-V	1	Bamboo	400	65%	OFSDP	Banadurga VSS
	Chhendipada	Chhendipada RF	CDP-V	9	Bamboo	3600	20%	NBM	State Plan
	Chhendipada	Chhendipada RF	CDP-VI	4	ECO	6400	65%	OFSDP	Maa Hingula
	Chhendipada	Chhendipada RF	CDP-VI	4	FF	10000	50%	OFSDP	Maa Hingula
	Chhendipada	Chhendipada RF	CDP-VI	1	Bamboo	400	10%	OFSDP	Maa Hingula
2008-09	Chhendipada	Chhendipada RF	CDP-VI	4	ECO	6400	65%	OFSDP	Ramachandi VSS
	Chhendipada	Chhendipada RF	CDP-VI	4	FF	10000	55%	OFSDP	Ramachandi VSS
	Chhendipada	Chhendipada RF	CDP-VI	2	Bamboo	800	15%	OFSDP	Ramachandi VSS
	Chhendipada	Chhendipada RF	CDP-VI	11	Bamboo	4400	20%	NBM	State Plan
	Chhendipada	Dangapal PRF	MDP-VII	2	Eco	3200	25%	OFSDP	Vejidiha VSS
	Chhendipada	Dangapal PRF	MDP-VII	2	FF	5000	15%	OFSDP	Vejidiha VSS
	Chhendipada	Dangapal PRF	MDP-VII	2	Bamboo	800	12%	OFSDP	Vejidiha VSS
	Chhendipada	Dangapal PRF	MDP-VII	10	NTFP	4000	7%	OFSDP	Vejidiha VSS
	Chhendipada	Dangapal PRF	MDP-VII	2	ECO	3200	55%	OFSDP	Bhaliasar VSS
	Chhendipada	Dangapal PRF	MDP-VII	2	FF	5000	22%	OFSDP	Bhaliasar VSS
	Chhendipada	Dangapal PRF	MDP-VII	10	NTFP	4000	22%	OFSDP	Bhaliasar VSS
	Chhendipada	Kanloi PRF	DVN-I	4	ECO	6400	75%	OFSDP	Bhatapal VSS
	Chhendipada	Kanloi PRF	DVN-I	2	F&F	5000	60%	OFSDP	Bhatapal VSS

	Chhendipada	Kanloi PRF	DVN-I	2	Bamboo	800	3%	OFSDP	Bhatapal VSS
2008-09	Durgapur	Similipathar RF	SPT-IMP-IV	1	Bamboo	400	54%	OFSDP	Pitachari VSS
	Durgapur	Katada RF	KTD-IMP-VIII	2	Eco-Teak	3200	65%	OFSDP	Bhagirathipur VSS
	Durgapur	Devinagar PRF	DVN-V	2	Bamboo	800	74%	OFSDP	Kisinda VSS
	Durgapur	Devinagar PRF	DVN-IX	2	Bamboo	800	78%	OFSDP	Kisinda VSS
	Durgapur	Pathargarh PRF	PTG-I	1	Eco-Teak	1600	78%	OFSDP	Kanjara-II VSS
	Durgapur	Pathargarh PRF	PTG-I	1	Bamboo	400	62%	OFSDP	Kanjara-II VSS
	Durgapur	Pathargarh PRF	PTG-I	5	NTFP	2000	58%	OFSDP	Kanjara-II VSS
	Durgapur	Para PRF	PTG-IX	2	Eco-Teak	3200	82%	OFSDP	Patharpunji VSS
	Durgapur	Para PRF	PTG-IX	2	F&F	5000	65%	OFSDP	Patharpunji VSS
	Durgapur	Para PRF	PTG-IX	2	Bamboo	800	69%	OFSDP	Patharpunji VSS
	Durgapur	Para PRF	PTG-IX	20	NTFP	8000	62%	OFSDP	Patharpunji VSS
2008-09	Kaniha	Arakhadahi R.F	KNH-VI	6	Eco Teak	9600	55%	OFSDP	Bhojpur VSS
	Kaniha	Arakhadahi R.F	KNH-VI	6	F&F	15000	61%	OFSDP	Bhojpur VSS
	Kaniha	Arakhadahi R.F	KNH-VI	2	Bamboo	800	38%	OFSDP	Bhojpur VSS
	Kaniha	Dalak-Poipal Danda R.F	KNHV-III	5	Eco Teak	8000	90%	OFSDP	Talapada VSS
	Kaniha	Dalak-Poipal Danda R.F	KNHV-III	5	F&F	12500	85%	OFSDP	Talapada VSS
	Kaniha	Dalak-Poipal Danda R.F	KNHV-III	2	Bamboo	800	40%	OFSDP	Talapada VSS
	Kaniha	Saleimada R.F	RGL-III	2	Eco Teak	3200	73%	OFSDP	OFSDP Hatiadanda VSS
	Kaniha	Saleimada R.F	RGL-III	8	F&F	20000	68%	OFSDP	OFSDP Hatiadanda VSS
	Kaniha	Kiajhar R.F	KNHV-III	2	F&F	5000	92%	OFSDP	Hanumanpur VSS
2008-09	Purunagarh	Badadandasahi RF	PNG- VII	2	Eco Teak	3200	73%	OFSDP	Badadandasahi VSS
	Purunagarh	Badadandasahi RF	PNG- VII	1	Bamboo	400	75%	OFSDP	Badadandasahi VSS
	Purunagarh	Badadandasahi RF	PNG- VII	12.5	NTFP	5000	56%	OFSDP	Badadandasahi VSS

	Purunagarh	Chandanpur PRF	PNG- VI	2	Eco Teak	3200	82%	OFSDP	Saruali VSS
	Purunagarh	Chandanpur PRF	PNG- VI	1	Bamboo	400	76%	OFSDP	Saruali VSS
	Purunagarh	Chandanpur PRF	PNG- VI	2	F & F	5000	77%	OFSDP	Saruali VSS
	Purunagarh	Chandanpur PRF	PNG- VI	10	NTFP	4000	58%	OFSDP	Saruali VSS
	Purunagarh	Kalapat PRF	PNG- VIII	2	Eco Teak	3200	80%	OFSDP	Saradhapur VSS
	Purunagarh	Kalapat PRF	PNG- VIII	1	Bamboo	400	75%	OFSDP	Saradhapur VSS
	Purunagarh	Kalapat PRF	PNG- VIII	5	NTFP	2000	58%	OFSDP	Saradhapur VSS
	Purunagarh	Kalapat PRF	PNG- VIII	2	Eco Teak	3200	83%	OFSDP	Pathargarh VSS
	Purunagarh	Kalapat PRF	PNG- VIII	1	Bamboo	400	76%	OFSDP	Pathargarh VSS
	Purunagarh	Kalapat PRF	PNG- VIII	5	NTFP	2000	59%	OFSDP	Pathargarh VSS
	Purunagarh	Kalapat PRF	PNG- IX	2	Eco Teak	3200	83%	OFSDP	Gaudasahi VSS
	Purunagarh	Kalapat PRF	PNG- IX	1	Bamboo	400	75%	OFSDP	Gaudasahi VSS
	Purunagarh	Kalapat PRF	PNG- IX	10	NTFP	4000	57%	OFSDP	Gaudasahi VSS
	Purunagarh	Kalapat PRF	PNG- X	2	Eco Teak	3200	80%	OFSDP	Baniasahi VSS
	Purunagarh	Kalapat PRF	PNG- X	2	F & F	5000	75%	OFSDP	Baniasahi VSS
	Purunagarh	Kalapat PRF	PNG- X	1	Bamboo	400	76%	OFSDP	Baniasahi VSS
	Purunagarh	Kalapat PRF	PNG- X	15	NTFP	6000	60%	OFSDP	Baniasahi VSS
	Purunagarh	Kulasinga PRF	PNG-III	5	NTFP	2000	58%	OFSDP	Sudasahi VSS
	Purunagarh	Pokunda PRF	PNG-IV	2	Eco Teak	3200	84%	OFSDP	Pokunda Matiasahi VSS
	Purunagarh	Pokunda PRF	PNG-IV	2	F & F	5000	75%	OFSDP	Pokunda Matiasahi VSS
	Purunagarh	Pokunda PRF	PNG-IV	1	Bamboo	400	73%	OFSDP	Pokunda Matiasahi VSS
	Purunagarh	Pokunda PRF	PNG-IV	15	NTFP	6000	79%	OFSDP	Pokunda Matiasahi VSS
2008 -09	Raigoda	Baragounia RF	PTG-VII	2	Eco-Teak	3200	75%	OFSDP	Baragounia VSS
	Raigoda	Baragounia RF	PTG-VII	2	F & F	2500	50%	OFSDP	Baragounia VSS
	Raigoda	Baragounia RF	PTG-VII	3	Bamboo	1200	45%	OFSDP	Baragounia VSS
	Raigoda	Baragounia RF	PTG-VII	8	NTFP	3200	45%	OFSDP	Baragounia VSS

	Raigoda	Nuakheta RF	NKT-IMP-III	3	Eco-Teak	4800	91%	OFSDP	Nuakheta VSS
	Raigoda	Nuakheta RF	NKT-IMP-III	3	F & F	7500	90%	OFSDP	Nuakheta VSS
	Raigoda	Nuakheta RF	NKT-IMP-III	2	Bamboo	800	92%	OFSDP	Nuakheta VSS
	Raigoda	Nuakheta RF	NKT-IMP-III	10	NTFP	4000	95%	OFSDP	Nuakheta VSS
	Raigoda	Balanga RF	BLG-IMP-III	4	Eco-Teak	6400	80%	OFSDP	Hidising VSS
	Raigoda	Balanga RF	BLG-IMP-III	2	F & F	5000	85%	OFSDP	Hidising VSS
2008-09	Talcher	Gopalprasad RF	DER-I	30	Misc Plantation	48000	72%	Non Plan	Industrial
2009-10	Chhendipada	Chhendipada RF	CDP-VII	3	Eco	4800	60%	OFSDP	Karadabahal VSS
	Chhendipada	Chhendipada RF	CDP-VII	1	BAMBOO	400	20%	OFSDP	Karadabahal VSS
	Chhendipada	Chhendipada RF	CDP-VII	1	NTFP	400	20%	OFSDP	Karadabahal VSS
	Chhendipada	Chhendipada RF	CDP-VII	4	FF	10000	60%	OFSDP	Karadabahal VSS
	Chhendipada	Dangapal PRF	MDP-VI	3	Eco	4800	62%	OFSDP	Khamar VSS
	Chhendipada	Dangapal PRF	MDP-VI	2	FF	5000	15%	OFSDP	Khamar VSS
	Chhendipada	Dangapal PRF	MDP-VI	1	BAMBOO	400	2%	OFSDP	Khamar VSS
	Chhendipada	Dangapal PRF	MDP-VI	1	NTFP	400	12%	OFSDP	Khamar VSS
	Chhendipada	Dangapal PRF	MDP-VII	3	Eco	4800	70%	OFSDP	Bamanali Sarapal VSS
	Chhendipada	Dangapal PRF	MDP-VII	4	F&F	10000	80%	OFSDP	Bamanali Sarapal VSS
	Chhendipada	Dangapal PRF	MDP-VII	1	BAMBOO	400	15%	OFSDP	Bamanali Sarapal VSS
	Chhendipada	Dangapal PRF	MDP-VII	4	NTFP	1600	60%	OFSDP	Bamanali Sarapal VSS
	Chhendipada	Durgapur RF	DGP-I	4	Misc Plantation	6400	55%	CAMPA APO	
	Chhendipada	Devinagar PRF	DVN-II	50	Teak	80000	60%	OFSDP	Non JFM Teak
	Chhendipada	Devinagar PRF	DVN-IV	50	Teak	80000	62%	OFSDP	Non JFM Teak
	Chhendipada	Kankurpal RF	MDP-IX	5	Eco	8000	80%	OFSDP	Santrabandha Mahisamardini VSS
	Chhendipada	Kankurpal RF	MDP-IX	2	F&F	5000	80%	OFSDP	Santrabandha Mahisamardini VSS
	Chhendipada	Kankurpal RF	MDP-IX	1	BAMBOO	400	20%	OFSDP	Santrabandha Mahisamardini VSS
	Chhendipada	Kankurpal RF	MDP-IX	3	Eco	4800	55%	OFSDP	Santrabandha Bandhamunda VSS
	Chhendipada	Kankurpal RF	MDP-IX	4	F&F	10000	60%	OFSDP	Santrabandha Bandhamunda VSS

	Chhendipada	Kankurpal RF	MDP-IX	1	BAMBOO	400	20%	OFSDP	Santrabandha Bandhamunda VSS
	Chhendipada	Marudhipa PRF	MDP-IV	2	Eco	3200	55%	OFSDP	Nuagaon VSS
	Chhendipada	Marudhipa PRF	MDP-IV	2	F&F	5000	60%	OFSDP	Nuagaon VSS
	Chhendipada	Marudhipa PRF	MDP-IV	1	BAMBOO	400	12%	OFSDP	Nuagaon VSS
	Chhendipada	Marudhipa PRF	MDP-IV	2	NTFP	800	25%	OFSDP	Nuagaon VSS
	Chhendipada	Nunmati PRF	MDP-V	2	Eco	3200	60%	OFSDP	Jaripal VSS
	Chhendipada	Nunmati PRF	MDP-V	2	F&F	5000	65%	OFSDP	Jaripal VSS
	Chhendipada	Nunmati PRF	MDP-V	1	BAMBOO	400	20%	OFSDP	Jaripal VSS
	Chhendipada	Nunmati PRF	MDP-V	2	NTFP	800	60%	OFSDP	Jaripal VSS
	Chhendipada	Nunmati PRF	MDP-V	3	Eco	4800	65%	OFSDP	Nuagaon Telisahi VSS
	Chhendipada	Nunmati PRF	MDP-V	6	F&F	15000	65%	OFSDP	Nuagaon Telisahi VSS
	Chhendipada	Nunmati PRF	MDP-V	1	BAMBOO	400	30%	OFSDP	Nuagaon Telisahi VSS
	Chhendipada	Nunmati PRF	MDP-V	3	NTFP	1200	55%	OFSDP	Nuagaon Telisahi VSS
	Chhendipada	Nunmati PRF	MDP-V	3	Eco	4800	60%	OFSDP	Nunmati VSS
	Chhendipada	Nunmati PRF	MDP-V	6	F&F	15000	65%	OFSDP	Nunmati VSS
	Chhendipada	Nunmati PRF	MDP-V	1	BAMBOO	400	30%	OFSDP	Nunmati VSS
	Chhendipada	Nunmati PRF	MDP-V	3	NTFP	1200	55%	OFSDP	Nunmati VSS
	Chhendipada	Kanloi RF	KNL-IMP-X	3	Eco	4800	55%	OFSDP	Karnapal VSS
	Chhendipada	Kanloi RF	KNL-IMP-X	2	F&F	5000	65%	OFSDP	Karnapal VSS
	Chhendipada	Kanloi RF	KNL-IMP-X	1	BAMBOO	400	25%	OFSDP	Karnapal VSS
	Chhendipada	Kanloi RF	KNL-IMP-X	1	NTFP	400	35%	OFSDP	Karnapal VSS
2009-10	Durgapur	Tabada PRF	ANT-IMP-VI	30	Eco-Teak	48000	72%	OFSDP	Non -JFM Teak
	Durgapur	Similipathar RF	SPT-IMP-VIII	1	Bamboo	400	62%	OFSDP	Bakala VSS
	Durgapur	Devinagar PRF	DVN-V	1	Bamboo	400	45%	OFSDP	Kisinda VSS
	Durgapur	Devinagar PRF	DVN-VI	1	Bamboo	400	52%	OFSDP	Denuriajharan VSS
	Durgapur	Devinagar PRF	DVN-VIII	1	Bamboo	400	57%	OFSDP	Jamunali Handigoda VSS
	Durgapur	Devinagar PRF	DVN-IX	1	Bamboo	400	62%	OFSDP	Balikudia VSS
	Durgapur	Devinagar PRF	DVN-IX	1	Bamboo	400	71%	OFSDP	Palasabania VSS

	Durgapur	Para PRF	PTG-VIII	2	Eco-Teak	3200	78%	OFSDP	Para Khambeswari VSS
	Durgapur	Para PRF	PTG-VIII	1	F&F	2500	81%	OFSDP	Para Khambeswari VSS
	Durgapur	Para PRF	PTG-X	5	Eco-Teak	8000	75%	OFSDP	Para Padhanpat VSS
	Durgapur	Para PRF	PTG-X	1	F&F	2500	68%	OFSDP	Para Padhanpat VSS
	Durgapur	Para PRF	PTG-X	1	F&F	2500	65%	OFSDP	Para Banadurga VSS
	Durgapur	Sudagulaswar PRF	DVN-X	3	Eco-Teak	4800	48%	OFSDP	Balipatta VSS
	Durgapur	Sudagulaswar PRF	DVN-X	1	Bamboo	400	57%	OFSDP	Balipatta VSS
	Durgapur	Sudagulaswar PRF	DVN-X	5	NTFP	2000	55%	OFSDP	Balipatta VSS
2009-10	Kaniha	Nialu-Lodhajhari & Sapakata R.F	PLJ-IMP-X	2	Eco Teak	3200	85%	OFSDP	Attabira VSS
	Kaniha	Nialu-Lodhajhari & Sapakata R.F	PLJ-IMP-X	2	F&F	5000	85%	OFSDP	Attabira VSS
	Kaniha	Arakhadahi R.F	KNH-VI	50	Economic	80000	76%	OFSDP	Non- JFM Teak
	Kaniha	Badakathia R.F	KNH-IV	20	Misc	32000	70%	Industrial Plantation	
	Kaniha	Dhankoili R.F	KNH-IX	1	Eco Teak	1600	82%	OFSDP	Badatribida VSS
	Kaniha	Dhankoili R.F	KNH-IX	2	F&F	5000	75%	OFSDP	Badatribida VSS
	Kaniha	Durgapur Danda R.F	KNHV-III	1	Eco Teak	1600	68%	OFSDP	Burubahal VSS
	Kaniha	Durgapur Danda R.F	KNHV-III	2	F&F	5000	63%	OFSDP	Burubahal VSS
	Kaniha	Durgapur Danda R.F	KNHV-III	1	Bamboo	400	35%	OFSDP	Burubahal VSS
	Kaniha	Durgapur Danda R.F	KNHV-III	1	Eco Teak	1600	71%	OFSDP	Chintamanipur VSS
	Kaniha	Durgapur Danda R.F	KNHV-III	2	F&F	5000	64%	OFSDP	Chintamanipur VSS
	Kaniha	Durgapur Danda R.F	KNHV-III	1	Bamboo	400	33%	OFSDP	Chintamanipur VSS
	Kaniha	Godigotha R.F	RGL-I	4	Eco Teak	6400	68%	OFSDP	Khalpal VSS
	Kaniha	Godigotha R.F	RGL-I	1	F&F	12500	64%	OFSDP	Khalpal VSS
	Kaniha	Godigotha	RGL-I	5	Bamoo	400	35%	OFSDP	Khalpal VSS

		R.F							
	Kaniha	Pattakhaman R.F	KNHV-II	1	Eco Teak	1600	63%	OFSDP	Banasingha VSS
	Kaniha	Pattakhaman R.F	KNHV-II	2	F&F	5000	61%	OFSDP	Banasingha VSS
	Kaniha	Pattakhaman R.F	KNHV-II	1	Bamboo	400	33%	OFSDP	Banasingha VSS
	Kaniha	Pattakhaman R.F	KNHV-II	1	Eco Teak	1600	60%	OFSDP	Pattakhaman VSS
	Kaniha	Pattakhaman R.F	KNHV-II	1	Bamboo	400	32%	OFSDP	Pattakhaman VSS
	Kaniha	Pattakhaman R.F	KNHV-II	3	Eco Teak	4800	75%	OFSDP	Jharabereni VSS
	Kaniha	Pattakhaman R.F	KNHV-II	4	F&F	10000	73%	OFSDP	Jharabereni VSS
	Kaniha	Pattakhaman R.F	KNHV-II	1	Bamboo	400	38%	OFSDP	Jharabereni VSS
	Kaniha	Pattakhaman R.F	KNHV-II	1	Eco Teak	1600	68%	OFSDP	Tolakabeda VSS
	Kaniha	Pattakhaman R.F	KNHV-II	1	F&F	2500	60%	OFSDP	Tolakabeda VSS
	Kaniha	Pattakhaman R.F	KNHV-II	1	Bamboo	400	34%	OFSDP	Tolakabeda VSS
	Kaniha	Sadarkhol R.F	RGL-VII	1	Eco Teak	1600	52%	OFSDP	Kuluma VSS
	Kaniha	Sadarkhol R.F	RGL-VII	2	F&F	5000	48%	OFSDP	Kuluma VSS
	Kaniha	Sadarkhol R.F	RGL-VII	1	F&F	2500	52%	OFSDP	Katrapali VSS
	Kaniha	Sadarkhol R.F	RGL-VIII	1	Eco Teak	1600	61%	OFSDP	Nakatideul VSS
	Kaniha	Sadarkhol R.F	RGL-VIII	1	Eco Teak	1600	60%	OFSDP	Jhankadapasi VSS
	Kaniha	Tangiri R.F	RGL-II	1	Eco Teak	1600	50%	OFSDP	Palasabahali VSS
	Kaniha	Tangiri R.F	RGL-II	2	F&F	5000	48%	OFSDP	Palasabahali VSS
2009 -10	Purunagarh	Nisha RF	CDP-VIII	10	Bamboo	4000	67%	State Plan	NBM
	Purunagarh	Pokunda PRF	PNG-IV	30	Eco Teak	48000	80%	OFSDP	NON JFM Teak
2009 -10	Raigoda	Balanga RF	BLG-IMP-IV	5	F & F	12500	82%	OFSDP	Madhupur VSS
	Raigoda	Balanga RF	BLG-IMP-IV	2	Eco-Teak	3200	95%	OFSDP	Madhupur VSS
	Raigoda	Balanga RF	BLG-IMP-IV	15	NTFP	6000	75%	OFSDP	Madhupur VSS
	Raigoda	Balanga RF	BLG-IMP-IX	20	Eco-Teak	32000	82%	OFSDP	Non-JFM Teak
	Raigoda	Nuakheta II	NKT-IMP-II	10	Misc Pln.	25000	75%	CAMPA	APO 2009-10.
	Raigoda	Nuakheta RF	NKT-IMP-VIII	4	Bamboo	1600	65%	OFSDP	Purunagarh VSS

	Raigoda	Nuakheta RF	NKT-IMP-VIII	2	F & F	5000	70%	OFSDP	Purunagarh VSS
	Raigoda	Nuakheta RF	NKT-IMP-VIII	6	NTFP	2400	70%	OFSDP	Purunagarh VSS
	Raigoda	Nuakheta RF	NKT-IMP-IX	2	F & F	5000	80%	OFSDP	Nukhuripada VSS
	Raigoda	Nuakheta RF	NKT-IMP-IX	15	NTFP	6000	55%	OFSDP	Nukhuripada VSS
2009-10	Talcher	Gengutia RF	DER-I	10	Misc Plantation	16000	33%	Non Plan	Industrial
	Talcher	Gopalprasad RF	DER-I	20	Misc Plantation	32000	75%	Non Plan	Industrial
	Talcher	Mankadachua RF	RGL-IX	3	F & F	7500	63%	OFSDP	Biru Nuasahi VSS
	Talcher	Mankadachua RF	RGL-IX	1	Bamboo	400	65%	OFSDP	Biru Nuasahi VSS
	Talcher	Nuabhuin RF	DER-I	2	F & F	5000	55%	OFSDP	Malibandha VSS
	Talcher	Nuabhuin RF	DER-I	1	Misc Plantation	400	62%	OFSDP	Malibandha VSS
	Talcher	Nuabhuin RF	DER-I	30	Misc Plantation	48000	65%	Industrial Plantation	
	Talcher	Rabipur RF	DER-VI	2	F & F	5000	72%	OFSDP	Jadunathpur VSS
	Talcher	Rabipur RF	DER-VI	1	Bamboo	400	48%	OFSDP	Jadunathpur VSS
	Talcher	Rakas RF	DER-III	1.77	Misc Plantation	2832	72%	Comp. Affn.	Ananta Extn.
	Talcher	Sibarampur PRF	DER-VI	1	Bamboo	400	45%	OFSDP	Sibarampur VSS
	Talcher	Sibarampur PRF	DER-VI	25	Misc Plantation	40000	66%	Industrial Plantation	
				589.77		902832			
2010-11	Chhendipada	Bramhanbil RF	CDP-II	2	Economic Teak	3200	60%	OFSDP	Kosala Jharsuguda VSS
	Chhendipada	Chhendipada RF	CDP-IV	10	NTFP	4000	65%	OFSDP	Tentuloi Kodasahi VSS
	Chhendipada	Chhendipada RF	CDP-IV	4	FF	10000	68%	OFSDP	Swapneswar VSS
	Chhendipada	Chhendipada RF	CDP-IV	8	NTFP	3200	50%	OFSDP	Swapneswar VSS
	Chhendipada	Chhendipada RF	CDP-IV	4	FF	10000	35%	OFSDP	Maa Bimala VSS
	Chhendipada	Chhendipada RF	CDP-IV	6	NTFP	2400	45%	OFSDP	Maa Bimala VSS
	Chhendipada	Chhendipada RF	CDP-V	2	FF	5000	56%	OFSDP	Banadurga VSS
	Chhendipada	Chhendipada RF	CDP-V	3	NTFP	1200	45%	OFSDP	Banadurga VSS
	Chhendipada	Chhendipada	CDP-VI	4	NTFP	1600	58%	OFSDP	Ramachandi

	RF							VSS
Chhendipada	Chhendipada RF	CDP-VI	4	FF	10000	60%	OFSDP	Hingula VSS
Chhendipada	Chhendipada RF	CDP-VI	6	NTFP	2400	45%	OFSDP	Hingula VSS
Chhendipada	Chhendipada RF	CDP-VI	20	Misc	32000	65%	13th F.C	State Plan
Chhendipada	Chhendipada RF	CDP-VII	4	FF	10000	68%	OFSDP	Karadabahal VSS
Chhendipada	Chhendipada RF	CDP-VII	8	NTFP	3200	65%	OFSDP	Karadabahal VSS
Chhendipada	Dangapal PRF	MDP-VI	5	NTFP	2000	70%	OFSDP	Dangapal VSS
Chhendipada	Dangapal PRF	MDP-VI	5	Eco	8000	65%	OFSDP	Dangapal VSS
Chhendipada	Dangapal PRF	MDP-VI	2	NTFP	800	55%	OFSDP	Khamar VSS
Chhendipada	Dangapal PRF	MDP-VI	2	Eco	3200	45%	OFSDP	Khamar VSS
Chhendipada	Dangapal PRF	MDP-VII	3	Eco	4800	55%	OFSDP	Bamanali Sarapal VSS
Chhendipada	Dangapal PRF	MDP-VII	2	F&F	5000	56%	OFSDP	Bamanali Sarapal VSS
Chhendipada	Dangapal PRF	MDP-VII	4	Bamboo	1600	58%	OFSDP	Bamanali Sarapal VSS
Chhendipada	Dangapal PRF	MDP-VII	3	NTFP	1200	46%	OFSDP	Bamanali Sarapal VSS
Chhendipada	Dangapal PRF	MDP-VII	5	Eco	8000	40%	OFSDP	Bhaliasar VSS
Chhendipada	Dangapal PRF	MDP-VII	2	F&F	5000	45%	OFSDP	Bhaliasar VSS
Chhendipada	Dangapal PRF	MDP-VII	5	Bamboo	2000	45%	OFSDP	Bhaliasar VSS
Chhendipada	Dangapal PRF	MDP-VII	6	NTFP	2400	65%	OFSDP	Bhaliasar VSS
Chhendipada	Dangapal PRF	MDP-VII	4	Eco	6400	45%	OFSDP	Vejidiha VSS
Chhendipada	Dangapal PRF	MDP-VII	6	NTFP	2400	65%	OFSDP	Vejidiha VSS
Chhendipada	Durgapur RF	DGP-II	2	Eco	3200	65%	OFSDP	Durgapur Tangirisahi VSS
Chhendipada	Durgapur RF	DGP-II	5	NTFP	2000	55%	OFSDP	Durgapur Tangirisahi VSS
Chhendipada	Durgapur RF	DGP-V	2	Eco	3200	45%	OFSDP	Sudarsanpur VSS
Chhendipada	Durgapur RF	DGP-V	2	NTFP	800	75%	OFSDP	Sudarsanpur VSS
Chhendipada	Durgapur RF	DGP-V	10	Misc Plantation	3000	55%	Comp.Affn	Bhubaneswar OCP
Chhendipada	Durgapur RF	DGP-VI	8	Eco	10400	50%	OFSDP	Odakapa VSS
Chhendipada	Durgapur RF	DGP-VI	4	F&F	10000	58%	OFSDP	Odakapa VSS
Chhendipada	Durgapur RF	DGP-VI	6	NTFP	2400	65%	OFSDP	Odakapa VSS
Chhendipada	Durgapur RF	DGP-VII	50	Teak	80000	68%	OFSDP	Non JFM Teak

Chhendipada	Devinagar PRF	DVN-V	20	Bamboo	8000	45%	NBN	13th F.C
Chhendipada	Jeypur RF	CDP-I	4	Eco	6400	65%	OFSDP	Kosala Dehurisahi VSS
Chhendipada	Jeypur RF	CDP-I	2	F&F	5000	60%	OFSDP	Kosala Dehurisahi VSS
Chhendipada	Jeypur RF	CDP-I	5	NTFP	2000	65%	OFSDP	Kosala Dehurisahi VSS
Chhendipada	Jaltap RF	CDP-II	4	Eco	6400	18%	OFSDP	Jaltap VSS
Chhendipada	Jaltap RF	CDP-II	2	F&F	5000	15%	OFSDP	Jaltap VSS
Chhendipada	Jaltap RF	CDP-II	2	Bamboo	800	15%	OFSDP	Jaltap VSS
Chhendipada	Jaltap RF	CDP-II	5	NTFP	2000	18%	OFSDP	Jaltap VSS
Chhendipada	Jaltap RF	CDP-II	10	Eco	16000	35%	OFSDP	Takua VSS
Chhendipada	Jaltap RF	CDP-II	2	F&F	5000	56%	OFSDP	Takua VSS
Chhendipada	Jaltap RF	CDP-II	2	Bamboo	800	55%	OFSDP	Takua VSS
Chhendipada	Jaltap RF	CDP-II	16	NTFP	6400	60%	OFSDP	Takua VSS
Chhendipada	Kankurpal RF	MDP-IX	11	NTFP	4400	78%	OFSDP	S.Bandhamunda VSS
Chhendipada	Kankurpal RF	MDP-IX	2	F&F	5000	70%	OFSDP	S.Mahisamardini VSS
Chhendipada	Kankurpal RF	MDP-IX	9	NTFP	3600	55%	OFSDP	S.Mahisamardini VSS
Chhendipada	Kosala RF	CDP-VII	15	Eco	24000	75%	OFSDP	Kosala Kansanali VSS
Chhendipada	Kosala RF	CDP-VII	6	F&F	15000	55%	OFSDP	Kosala Kansanali VSS
Chhendipada	Kosala RF	CDP-VII	5	Bamboo	2000	75%	OFSDP	Kosala Kansanali VSS
Chhendipada	Kosala RF	CDP-VII	10	NTFP	4000	65%	OFSDP	Kosala Kansanali VSS
Chhendipada	Marudhipa PRF	MDP-I	50	Teak	80000	68%	OFSDP	Non JFM Teak
Chhendipada	Marudhipa PRF	MDP-II	50	Teak	80000	70%	OFSDP	Non JFM Teak
Chhendipada	Marudhipa PRF	MDP-IV	2	NTFP	800	75%	OFSDP	Nuagaon VSS
Chhendipada	Nunmati PRF	MDP-V	2	F&F	5000	70%	OFSDP	Nunmati VSS
Chhendipada	Nunmati PRF	MDP-V	3	NTFP	1200	78%	OFSDP	Nunmati VSS
Chhendipada	Nunmati PRF	MDP-V	2	NTFP	800	55%	OFSDP	Nuagaon Telisahi VSS
Chhendipada	Nunmati PRF	MDP-V	2	NTFP	800	55%	OFSDP	Jaripal VSS
Chhendipada	Kanloi RF	DVN-I	2	F&F	5000	75%	OFSDP	Bhatapal VSS
Chhendipada	Kanloi RF	DVN-I	2	NTFP	800	65%	OFSDP	Bhatapal VSS
Chhendipada	Kanloi RF	KNL-IMP-X	5	Eco	8000	55%	OFSDP	Karnapal VSS

	Chhendipada	Kanloi RF	KNL-IMP-X	2	F&F	5000	58%	OFSDP	Karnapal VSS
	Chhendipada	Kanloi RF	KNL-IMP-X	2	Bamboo	800	70%	OFSDP	Karnapal VSS
	Chhendipada	Kanloi RF	KNL-IMP-X	5	NTFP	2000	48%	OFSDP	Karnapal VSS
2010-11	Durgapur	Antulia Tabada RF	ANT-IMP-III	20	Teak	32000	85%	OFSDP	Non-JFM Teak
	Durgapur	Antulia Tabada RF	ANT-IMP-IV	5	Eco- Teak	8000	82%	OFSDP	Antulia VSS
	Durgapur	Antulia Tabada RF	ANT-IMP-IV	5	Bamboo	2000	72%	OFSDP	Antulia VSS
	Durgapur	Antulia Tabada RF	ANT-IMP-IV	5	NTFP	2000	67%	OFSDP	Antulia VSS
	Durgapur	Tabada PRF	ANT-IMP-VI	4	Eco-Teak	6400	78%	OFSDP	Tabada VSS
	Durgapur	Tabada PRF	ANT-IMP-VI	1	Bamboo	400	65%	OFSDP	Tabada VSS
	Durgapur	Tabada PRF	ANT-IMP-VI	5	NTFP	2000	63%	OFSDP	Tabada VSS
	Durgapur	Dandasingha Bhagatpur PRF	ANT-IMP-V	2	Eco-Teak	3200	84%	OFSDP	Bhagatpur VSS
	Durgapur	Dandasingha Bhagatpur PRF	ANT-IMP-V	3	F&F	7500	72%	OFSDP	Bhagatpur VSS
	Durgapur	Dandasingha Bhagatpur PRF	ANT-IMP-V	1	Bamboo	400	81%	OFSDP	Bhagatpur VSS
	Durgapur	Similipathar RF	SPT-IMP-VIII	5	Bamboo	2000	80%	OFSDP	Bakala VSS
	Durgapur	Similipathar RF	SPT-IMP-IX	2	Bamboo	800	78%	OFSDP	Laxmidharpur VSS
	Durgapur	Similipathar RF	SPT-IMP-IX	20	NTFP	8000	65%	OFSDP	Laxmidharpur VSS
	Durgapur	Similipathar RF	SPT-IMP-IX	30	Eco-Teak	48000	71%	CAMPA	Imp of Old Teak Plantation
	Durgapur	Devinagar PRF	DVN-VII	2	Bamboo	800	57%	OFSDP	Machhakuta VSS
	Durgapur	Devinagar PRF	DVN-VII	10	NTFP	4000	63%	OFSDP	Machhakuta VSS
	Durgapur	Devinagar PRF	DVN-VIII	2	NTFP	800	55%	OFSDP	Jamunali Handigoda VSS
	Durgapur	Pathargarh PRF	PTG-I	23	NTFP	9200	62%	OFSDP	Kanjara-II VSS
	Durgapur	Pathargarh PRF	PTG-I	20	Misc	50000	69%	CAMPA	CAMPA APO 2009-10

	Durgapur	Para PRF	PTG-VIII	12	NTFP	4800	63%	OFSDP	Para Khambeswari VSS
	Durgapur	Para PRF	PTG-X	2	Eco-Teak	3200	72%	OFSDP	Kumursingh VSS
	Durgapur	Para PRF	PTG-X	20	NTFP	8000	52%	OFSDP	Para Banadurga VSS
	Durgapur	Para PRF	PTG-X	15	NTFP	6000	48%	OFSDP	Para Padhanpat VSS
	Durgapur	Rodsinga PRF	PTG-VIII	5	Eco-Teak	8000	85%	OFSDP	Rodasingha VSS
	Durgapur	Rodsinga PRF	PTG-VIII	15	F&F	37500	68%	OFSDP	Rodasingha VSS
	Durgapur	Rodsinga PRF	PTG-VIII	4	Bamboo	1600	65%	OFSDP	Rodasingha VSS
	Durgapur	Rodsinga PRF	PTG-VIII	3	NTFP	1200	57%	OFSDP	Rodasingha VSS
	Durgapur	Similipathar RF	DVN-X	6	Bamboo	2400	52%	OFSDP	Hatianali VSS
2010-11	Kaniha	Nialu-Lodhajhari & Sapakata R.F	PLJ-IMP-X	20	NTFP	8000	72%	OFSDP	Attabira VSS
	Kaniha	Arakhadahi R.F	KNH-VI	50	Economic	80000	82%	OFSDP	Non- JFM Teak
	Kaniha	Arakhadahi R.F	KNH-VI	5	Bamboo	2000	34%	OFSDP	Bhojpur VSS
	Kaniha	Arakhadahi R.F	KNH-VI	25	NTFP	10000	38%	OFSDP	Bhojpur VSS
	Kaniha	Badakathia R.F	KNH-I	2	Eco Teak	3200	70%	OFSDP	Harichandan pur VSS
	Kaniha	Badakathia R.F	KNH-I	3	F&F	7500	72%	OFSDP	Harichandan pur VSS
	Kaniha	Badakathia R.F	KNH-I	2	Bamboo	800	37%	OFSDP	Harichandan pur VSS
	Kaniha	Badakathia R.F	KNH-I	10	NTFP	4000	38%	OFSDP	Harichandan pur VSS
	Kaniha	Badakathia R.F	KNH-I	2	Eco Teak	3200	71%	OFSDP	Badatribida VSS
	Kaniha	Badakathia R.F	KNH-I	5	F&F	12500	68%	OFSDP	Badatribida VSS
	Kaniha	Badakathia R.F	KNH-I	20	NTFP	8000	40%	OFSDP	Badatribida VSS
	Kaniha	Badakathia R.F	KNH-I	2	F&F	5000	76%	OFSDP	Ramachandi Sanatribida VSS
	Kaniha	Badakathia R.F	KNH-I	10	NTFP	4000	46%	OFSDP	Ramachandi Sanatribida VSS

Kaniha	Badakathia R.F	KNH-II	4	F&F	10000	77%	OFSDP	Hingula , Sanatribida VSS
Kaniha	Badakathia R.F	KNH-II	10	NTFP	4000	45%	OFSDP	Hingula , Sanatribida VSS
Kaniha	Badakathia R.F	KNH-II	4	F&F	10000	78%	OFSDP	Mahasindhu VSS
Kaniha	Badakathia R.F	KNH-III	10	NTFP	4000	47%	OFSDP	Mahasindhu VSS
Kaniha	Badakathia R.F	KNH-III	2	Eco Teak	3200	72%	OFSDP	Maa Hingula, Kumunda VSS
Kaniha	Badakathia R.F	KNH-III	10	NTFP	4000	43%	OFSDP	Maa Hingula, Kumunda VSS
Kaniha	Badakathia R.F	KNH-III	2	Eco Teak	3200	73%	OFSDP	Jogeswar, Kumunda VSS
Kaniha	Badakathia R.F	KNH-III	2	F&F	5000	75%	OFSDP	Jogeswar, Kumunda VSS
Kaniha	Badakathia R.F	KNH-III	8	NTFP	3200	39%	OFSDP	Jogeswar, Kumunda VSS
Kaniha	Badakathia R.F	KNH-III	5	F&F	12500	70%	OFSDP	Mohanapada VSS
Kaniha	Badakathia R.F	KNH-III	15	NTFP	6000	42%	OFSDP	Mohanapada VSS
Kaniha	Badakathia R.F	KNH-IV	2	Eco Teak	3200	68%	OFSDP	Purunapani, Kumunda VSS
Kaniha	Badakathia R.F	KNH-IV	3	F&F	7500	74%	OFSDP	Purunapani, Kumunda VSS
Kaniha	Badakathia R.F	KNH-IV	15	NTFP	6000	41%	OFSDP	Purunapani, Kumunda VSS
Kaniha	Badakathia R.F	KNH-IV	2	Eco Teak	3200	68%	OFSDP	Maradaharih arpur VSS
Kaniha	Badakathia R.F	KNH-IV	2	F&F	5000	69%	OFSDP	Maradaharih arpur VSS
Kaniha	Badakathia R.F	KNH-IV	10	NTFP	4000	38%	OFSDP	Maradaharih arpur VSS
Kaniha	Badakathia R.F	KNH-IV	70	Misc	77000	72%	Industrial Plantation	
Kaniha	Biripal R.F	RGL-V	3	Eco Teak	4800	95%	OFSDP	Gengutia VSS
Kaniha	Biripal R.F	RGL-V	3	F&F	7500	83%	OFSDP	Gengutia VSS
Kaniha	Biripal R.F	RGL-V	5	Bamboo	2000	76%	OFSDP	Gengutia VSS

Kaniha	Biripal R.F	RGL-V	10	NTFP	4000	45%	OFSDP	Gengutia VSS
Kaniha	Biripal R.F	RGL-V	2	Eco Teak	3200	83%	OFSDP	Jharbeda VSS
Kaniha	Biripal R.F	RGL-V	4	F&F	10000	81%	OFSDP	Jharbeda VSS
Kaniha	Biripal R.F	RGL-V	5	Bamboo	2000	42%	OFSDP	Jharbeda VSS
Kaniha	Biripal R.F	RGL-V	10	NTFP	4000	48%	OFSDP	Jharbeda VSS
Kaniha	Biripal R.F	RGL-V	2	Eco Teak	3200	65%	OFSDP	Podagada Purunasahi VSS
Kaniha	Biripal R.F	RGL-V	3	F&F	7500	80%	OFSDP	Podagada Purunasahi VSS
Kaniha	Biripal R.F	RGL-V	15	NTFP	6000	52%	OFSDP	Podagada Purunasahi VSS
Kaniha	Biripal R.F	RGL-V	2	Eco Teak	3200	70%	OFSDP	Podagada Nuasahi VSS
Kaniha	Biripal R.F	RGL-V	4	F&F	10000	78%	OFSDP	Podagada Nuasahi VSS
Kaniha	Biripal R.F	RGL-V	20	NTFP	8000	48%	OFSDP	Podagada Nuasahi VSS
Kaniha	Durgapur Danda R.F	KNH-VIII	5	Bamboo	2000	35%	OFSDP	Chintamanipur VSS
Kaniha	Durgapur Danda R.F	KNH-VIII	25	NTFP	10000	40%	OFSDP	Chintamanipur VSS
Kaniha	Durgapur Danda R.F	KNH-VIII	20	NTFP	8000	39%	OFSDP	Burubahal VSS
Kaniha	Dalak Poipal Danda R.F	KNH-X	40	NTFP	16000	42%	OFSDP	Talapada VSS
Kaniha	Dalak Poipal Danda R.F	KNH-X	20	NTFP	8000	41%	OFSDP	Poipal VSS
Kaniha	Godigotha R.F	RGL-I	15	NTFP	6000	45%	OFSDP	Khalpal VSS
Kaniha	Pattakhaman R.F	KNH-VII	5	Bamboo	2000	36%	OFSDP	Tolakabeda VSS
Kaniha	Pattakhaman R.F	KNH-VII	20	NTFP	8000	41%	OFSDP	Tolakabeda VSS
Kaniha	Sadarkhol R.F	RGL-VII	30	NTFP	12000	38%	OFSDP	Olanda VSS
Kaniha	Sadarkhol R.F	RGl-VII	5	Bamboo	2000	50%	OFSDP	Kuluma VSS
Kaniha	Sadarkhol R.F	RGl-VII	20	NTFP	8000	43%	OFSDP	Kuluma VSS
Kaniha	Sadarkhol R.F	RGl-VII	10	Bamboo	4000	38%	OFSDP	Balipasi VSS
Kaniha	Sadarkhol R.F	RGl-VII	20	NTFP	8000	36%	OFSDP	Katrapali VSS
Kaniha	Sadarkhol R.F	RGl-VII	10	Bamboo	4000	40%	OFSDP	Katrapali VSS
Kaniha	Sachi R.F	RGL-VI	1	F&F	2500	65%	OFSDP	Kulabir VSS

	Kaniha	Sachi R.F	RGL-VI	5	NTFP	2000	41%	OFSDP	Kulabir VSS
	Kaniha	Santrabandha R.F	KNH-V	8	Eco Teak	12800	85%	OFSDP	Santrabandha VSS
	Kaniha	Santrabandha R.F	KNH-V	5	F&F	12500	75%	OFSDP	Santrabandha VSS
	Kaniha	Santrabandha R.F	KNH-V	25	NTFP	10000	51%	OFSDP	Santrabandha VSS
	Kaniha	Saradhapur R.F	KNH-III	3	Eco Teak	4800	75%	OFSDP	Saradhapur VSS
	Kaniha	Saradhapur R.F	KNH-III	4	F&F	10000	45%	OFSDP	Saradhapur VSS
	Kaniha	Saradhapur R.F	KNH-III	15	NTFP	6000	43%	OFSDP	Saradhapur VSS
	Kaniha	Saleimada	RGL-III	20	NTFP	8000	45%	OFSDP	Hatiadanda VSS
2010 -11	Purunagarh	Badadandasahi RF	PNG- VII	30	Eco Teak	48000	79%	OFSDP	Non JFM Teak
	Purunagarh	Chandanpur PRF	PNG- VI	10	Eco Teak	16000	74%	OFSDP	Saruali VSS
	Purunagarh	Kalapat PRF	PNG- IX	3	Eco Teak	4800	81%	OFSDP	Gaudasahi VSS
	Purunagarh	Kalapat PRF	PNG- IX	4	Bamboo	1600	78%	OFSDP	Gaudasahi VSS
	Purunagarh	Kalapat PRF	PNG- VIII	4	Eco Teak	6400	84%	OFSDP	Saradhapur VSS
	Purunagarh	Kulasinga PRF	PNG-III	5	NTFP	2000	58%	OFSDP	Sudasahi VSS
	Purunagarh	Kulasinga PRF	PNG-III	25	NTFP	10000	55%	OFSDP	Ramimunda Goudasahi VSS
	Purunagarh	Kulasinga PRF	PNG-III	2	Eco Teak	3200	78%	OFSDP	Sasansahi VSS
	Purunagarh	Kulasinga PRF	PNG-III	2	F & F	5000	58%	OFSDP	Sasansahi VSS
	Purunagarh	Kulasinga PRF	PNG-III	3	Bamboo	1200	67%	OFSDP	Sasansahi VSS
	Purunagarh	Kulasinga PRF	PNG-III	20	Eco Teak	32000	75%	CAMPA	Kulasinga
	Purunagarh	Kurudu PRF	PNG-V	30	Eco Teak	48000	78%	OFSDP	Non JFM Teak
	Purunagarh	Kaliakata RF	DGP-X	10	Eco Teak	16000	71%	CAMPA	
	Purunagarh	Kumanda Talataila RF	CDP-VIII	2	Eco Teak	3200	75%	OFSDP	Kumanda VSS
	Purunagarh	Kumanda Talataila RF	CDP-VIII	2	F & F	50000	71%	OFSDP	Kumanda VSS
	Purunagarh	Kumanda Talataila RF	CDP-VIII	2	Bamboo	800	67%	OFSDP	Kumanda VSS

Purunagarh	Kumanda Talataila RF	CDP-VIII	2	NTFP	800	57%	OFSDP	Kumanda VSS
Purunagarh	Kuio RF	CDP-X	4	F & F	10000	73%	OFSDP	Kausitaila VSS
Purunagarh	Kuio RF	CDP-X	4	NTFP	1600	59%	OFSDP	Kausitaila VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	2	Eco Teak	3200	85%	OFSDP	Chandrabahal VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	6	F & F	15000	74%	OFSDP	Chandrabahal VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	2	Bamboo	800	72%	OFSDP	Chandrabahal VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	59%	OFSDP	Chandrabahal VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	Eco Teak	8000	85%	OFSDP	Sabalabhanga VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	15	F & F	37500	74%	OFSDP	Sabalabhanga VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	2	Bamboo	800	71%	OFSDP	Sabalabhanga VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	57%	OFSDP	Sabalabhanga VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	8000	54%	OFSDP	Saradhapur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	15	NTFP	37500	52%	OFSDP	Saradhapur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	2	NTFP	800	56%	OFSDP	Saradhapur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	53%	OFSDP	Saradhapur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	2	Eco Teak	3200	84%	OFSDP	Shyamsundarpur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	F & F	12500	76%	OFSDP	Shyamsundarpur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	2	Bamboo	800	71%	OFSDP	Shyamsundarpur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	56%	OFSDP	Shyamsundarpur VSS

	Purunagarh	Mandaragiri Kalima RF	PNG-I	5	F & F	12500	76%	OFSDP	Tumuni VSS
	Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	54%	OFSDP	Tumuni VSS
	Purunagarh	Nisha RF	CDP-VIII	20	Bamboo	8000	67%	State Plan	
	Purunagarh	Pokunda PRF	PNG-IV	10	NTFP	4000	51%	OFSDP	Pokunda Matiasahi VSS
	Purunagarh	Paranga RF	CDP-IX	25	F & F	62500	70%	13th FC	
	Purunagarh	Saharagoda RF	PNG-III	3	Eco Teak	4800	81%	OFSDP	Saharagoda VSS
	Purunagarh	Saharagoda RF	PNG-III	10	F & F	25000	75%	OFSDP	Saharagoda VSS
	Purunagarh	Saharagoda RF	PNG-III	2	Bamboo	800	71%	OFSDP	Saharagoda VSS
	Purunagarh	Saharagoda RF	PNG-III	10	NTFP	4000	54%	OFSDP	Saharagoda VSS
2010 -11	Raigoda	Balanga RF	BLG-IMP-III	10	Bamboo	4000	82%	OFSDP	Hidising VSS
	Raigoda	Balanga RF	BLG-IMP-III	10	NTFP	4000	65%	OFSDP	Hidising VSS
	Raigoda	Balanga RF	BLG-IMP-IV	5	Bamboo	2000	80%	OFSDP	Madhupur VSS
	Raigoda	Balanga RF	BLG-IMP-IV	10	NTFP	4000	75%	OFSDP	Madhupur VSS
	Raigoda	Balanga RF	BLG-IMP-V	15	NTFP	6000	78%	OFSDP	Pokatunga Dehury Sahi
	Raigoda	Balanga RF	BLG-IMP-V	7	Bamboo	2800	75%	OFSDP	Pokatunga Dehury Sahi
	Raigoda	Nuakheta RF	NKT-IMP-IX	20	Bamboo	4000	68%	OFSDP	Nukhuripada VSS
	Raigoda	Balanga RF	BLG-IMP-IX	10	Misc Pln.	25000	70%	CAMPA	APO 2009-10
	Raigoda	Nuakheta RF	NKT-IMP-VI	10	Bamboo	4000	90%	OFSDP	Nuaheta II
	Raigoda	Nuakheta RF	NKT-IMP-VI	10	NTFP	4000	92%	OFSDP	Nuaheta II
	Raigoda	Talasira DPF	NKT-IMP-VI	30	Eco-Teak	48000	80%	OFSDP	Non-JFM Teak
	Raigoda	Nuakheta RF	NKT-IMP-VIII	20	Bamboo	8000	68%	OFSDP	Purunagarh VSS
2010 -11	Talcher	Kandhaberen i PRF	DER-VII	20	Misc Plantation	32000	70%	Industrial	Amelioration of Talcher Mocro Climate
	Talcher	Mankadachu a RF	RGL-IX	8	Eco teak	12800	72%	OFSDP	Kandakhama n VSS
	Talcher	Mankadachu a RF	RGL-IX	1	Bamboo	400	50%	OFSDP	Biru Nuasahi VSS
	Talcher	Rakas RF	DER-III	6.033	Misc Plantation	9652	65%	Comp. Affn.	Bhubaneswar OCP
	Talcher	Seepur RF	RGL-X	40	Eco teak	64000	75%	OFSDP	Non-JFM Teak
				2056.033					

2011 -12	Chhendipada	Chhendipada RF	CDP-V	20	Misc	32000	80%	13th F.C	State Plan
	Chhendipada	Marudhipa PRF	MDP-III	50	Teak	80000	80%	OFSDP	Non JFM Teak
2011 -12	Durgapur	Arisulia Sulia RF	DGP-IV	20	Misc	50000	69%	State Plan	13th FC
	Durgapur	Pathargarh PRF	PTG-IV	20	Eco-Teak	32000	65%	OFSDP	Non JFM Teak
	Durgapur	Antulia Tabada RF	ANT-IMP-V	20	Bamboo	8000	68%	State Plan	
2011 -12	Kaniha	Badakathia R.F	KNH-II	20	Misc Plantation	32000	70%	13th FC	State Plan
	Kaniha	Tangiri R.F	RGL-II	4	Eco Teak	6400	80%	OFSDP	Barapada VSS
	Kaniha	Tangiri R.F	RGL-II	4	F&F	10000	80%	OFSDP	Barapada VSS
2011 -12	Purunagarh	Badadandasa hi RF	PNG- VII	10	Bamboo	4000	73%	NBM	13th FC
	Purunagarh	Kerjang PRF	PNG- II	25	Bamboo	10000	73%	State Plan	13th FC
2011 -12	Raigoda	Kangulei PRF	PTG-VIII	20	Bamboo	8000	65%	Stateplan	
	Raigoda	Balanga RF	BLG-IMP-III	20	Eco-Teak	32000	82%	OFSDP	Non-JFM Teak
	Raigoda	Balanga PRF	BLG-IMP-V	20	Eco-Teak	32000	85%	OFSDP	Non-JFM Teak
2011 -12	Talcher	Rakas RF	DER-III	2.401	Misc plantation	3841	45%	Comp. Affn.	Jagannathpur Extn.
	Talcher	Seepur RF	RGL-X	25	Eco teak	40000	72%	OFSDP	Non- JFM Teak
	Talcher	Silling RF	RGL -X	20	Misc Plantation	32000	65%	13th F.C	Block Plantation
				300.401					
2012 -13	Chhendipada	Jeypur RF	CDP-I	10	Misc Plantation	11000	70%	NAP	Similisahi VSS
2012 -13	Durgapur	Pathargarh PRF	PTG-III	5	Misc	12500	65%	NAP	Betar VSS
2012 -13	Kaniha	Badakathia R.F	KNH-II	30	Misc Plantation	48000	85%	13th FC	State Plan
2012 -13	Purunagarh	Pokunda PRF	PNG-IV	5	Eco Teak	8000	85%	FDA	Gurudhi VSS
	Purunagarh	Kurudu PRF	PNG-V	25	Eco Teak	40000	84%	OFSDP	Non JFM Teak
2012 -13	Raigoda	Kangulei PRF	PTG-VIII	20	Bamboo	6660	65%	Stateplan	NBM
	Raigoda	Balanga RF	BLG-IMP-V	25	Eco-Teak	80000	80%	OFSDP	Non-JFM Teak
	Raigoda	Balanga RF	BLG-IMP-V	20	Bamboo	6660	75%	Stateplan	NBM
	Raigoda	Talisara DPF	NKT-	20	Bamboo	6660	80%	Stateplan	NBM

			IMP-VI						
2012 -13	Talcher	Baishnabaragudi R.F	DER-II	20	Misc Plantation	32000	69%	13 Th F.C	
				180					
2013 -14	Chhendipada	Chhendipada RF	CDP-V	10	Teak	16000	90%	MGNREGS	
	Chhendipada	Chhendipada RF	CDP-VII	30	Teak	48000	86%	OFSDP	Non-JFm Teak
	Chhendipada	Nunmati PRF	MDP-V	50	Teak	10000	40%	MGNREGS	
2013 -14	Kaniha	Arakhadahi R.F	KNH-VI	45	Economic	72000	81%	OFSDP	
	Kaniha	Tangiri R.F	RGL-I	10	Misc Plantation	16000	75%	MGNREGS	Biswalmunda Village
	Kaniha	Gohiradanda R.F	KNH-KNH-IV	10	Misc Plantation	16000	92%	Comp. Affn.	
2013 -14	Purunagarh	Madhapur RF	PNG-VI	15	Eco Teak	24000	85%	13th FC	13th FC
	Purunagarh	Kurudu PRF	PNG-V	25	Eco Teak	40000	83%	OFSDP	Non JFM Teak
2013 -14	Raigoda	Balanga RF	BLG-IMP-III	10	Bamboo	4000	70%	Stateplan	NBM
	Raigoda	Balanga RF	BLG-IMP-IV	10	Bamboo	4000	75%	13th FC	Stateplan
2013 -14	Talcher	Kanteikolia RF	DER-VII	40	Misc Plantation	64000	62%	State Plan	Improvement of Wild life habitat
				255					
2014 -15	Kaniha	Arakhadahi R.F	KNH-VI	10	Misc Plantation	16000	90%	MGNREGS	
2014 -15	Purunagarh	Chandanpur PRF	PNG- VI	10	Bamboo	4000	79%	State Plan	13th FC
	Purunagarh	Madhapur RF	PNG-VI	10	Bamboo	4000	73%	State Plan	13th FC
	Purunagarh	Burti PRF	COMP-IV	10	Mis	16000	72%	MGNREGS	
2014 -15	Raigoda	Nuakheta RF	NKT-IMP-VI	40	Bamboo	13320	75%	Stateplan	NBM
2014 -15	Talcher	Kanheijena RF	DER-VIII	5	Misc Plantation	8000	68%	State Plan Elephnat Corridor	Improvement of W.L habitat
	Talcher	Rabipur RF	DER-V	10	Misc Plantation	11000	65%	NAP	FDA Nua Balangi VSS
				95					
	Total			**7267.908**					

Year	Name of the Scheme	Name of the Range	Name of the Site	AR in Ha	ANR with Gap Plt. (In Ha)	Total (In Ha)	Avenue Plt (in RKM)	UTP in lakh	Seedlings Planted (in Lakh)
1	2	3	4	5	6	7	8	9	10
2015-16	State Plan- Avenue	Kaniha	Badatribeda to Sardhapur			0.000	10		0.025

2015-16		Kaniha	Rengali to Khinda			0.000	10		0.025
2015-16	MGNREGS	Bantala	Madhupur to Bantala Chhak			0	2.6		0.007
2015-16		Bantala	Bantala Chhak to Kumurusinga			0	3		0.008
2015-16		Bantala	Beda Chhak to Ekarbandha			0	2.6		0.007
2015-16		Bantala	Sarangapur to Nuapada			0	2		0.005
2015-16		Bantala	Angul to Mahidharpur			0	5		0.013
2015-16		Chhendipada	Bhatapal to Kanloi			0	6		0.015
2015-16		Angul	Purunagarh to Karatpata			0	8		0.020
2015-16		Angul	Madhapur Chhak to Pokutunga			0	2		0.005
2015-16		Angul	Paranga BahalaSahi the Mukundapasi			0	5		0.013
2015-16		Talcher	Dharampur to Kankili			0	5		0.013
2015-16		Talcher	NH-53 to Lingirakata Chainpal Road			0	5		0.013
2015-16		Kaniha	Poipal to Talapada			0	10		0.025
			Total	**0**	**0**	**0**	**76.2**	**0**	**0.1905**
2016-17	**NBM-**Bamboo Plantation Forest Land	Jarapada	Tabada PRF	30	0	30	0	0	0.0999
2016-17	State-Plan Urban Plantation	Angul	Angul Town	0	0	0	0	0.1000	0.1000
2016-17		Talcher	Talcher Town	0	0	0	0	0.1500	0.1500
2016-17		Kaniha	Kaniha Town	0	0	0	0	0.2000	0.2000
			Total	**0**	**0**	**0**	**0**	**0.4500**	**0.4500**
2016-17	**CAMPA-APO-2015-16-**ANR	Bantala	Balanga Comptt-03	0	100	100	0	0	0.2000
2016-17		Bantala	Balanga Comptt-04	0	100	100	0	0	0.2000
2016-17		Jarapada	Antulia Tabada RF Comptt No 4	0	225	225	0	0	0.4500
2016-17		Jarapada	Roadsingha PRF	0	275	275	0	0	0.5500
2016-17		Jarapada	Devinagar PRF ANR with gap Plantation	0	100	100	0	0	0.2000
2016-17		Jarapada	Dandasingha Bhagatpur PRF ANR	0	100	100	0	0	0.2000
2016-17		Jarapada	Para PRF ANR	0	50	50	0	0	0.1000
2016-17		Chhendipada	Durgapur RF	0	100	100	0	0	0.2000
2016-17		Chhendipada	Chhendipada RF	0	100	100	0	0	0.2000
2016-17		Chhendipada	Jaypur RF	0	120	120	0	0	0.2400
2016-17		Chhendipada	Dangapal PRF	0	100	100	0	0	0.2000
2016-17		Chhendipada	Nunmati PRF	0	100	100	0	0	0.2000

2016-17		Chhendipada	Marudhipa PRF	0	110	110	0	0	0.2200
2016-17		Angul	Nisha RF	0	100	100	0	0	0.2000
2016-17		Angul	Mallibranhani RF	0	50	50	0	0	0.1000
2016-17		Talcher	Rabipur RF	0	200	200	0	0	0.4000
2016-17		Talcher	Ganthigadia DRF	0	50	50	0	0	0.1000
2016-17		Kaniha	Khajuria RF	0	100	100	0	0	0.2000
2016-17		Kaniha	Dhankoili RF	0	120	120	0	0	0.2400
			Total	**0**	**2200**	**2200**	**0**	**0**	**4.4000**
	Compensatory Afforestation								
2016-17	Talcher Medical College-**CA-RDF**	Talcher	Dera PRF	0	17	17	0	0	0.03400
2016-17	Approach Road Jindal-**AR-CA-4.86ha**	Angul	Jucab Khata No 999 Kisam Pahad	4.86	0	4.86	0	0	0.07776
2016-17	Angul Poling Station Transmission line-SZ	Bantala	Basala	0.702	0	0.702	0	0	0.01122
2016-17		Jarapada	Antulia Tabada RF Comptt No 3 & 4	1.935	0	1.935	0	0	0.03150
2016-17		Angul	Angul Poling station to Jharsuguda Poling station	1.284	0	1.284	0	0	0.02054
2016-17		Bantala	Lokeipasi	6.42	24.09	30.51	0	0	0.01284
2016-17		Jarapada	Antulia Tabada RF Comptt No 3 & 4	0	15.78	15.78	0	0	0.04818
	Total			**10.34**	**39.87**	**50.21**	**0**	**0**	**0.12428**
	Total-Compensatory Afforestation			**15.2**	**56.87**	**72.07**	**0**	**0**	**0.23604**
2016-17	**CAMPA Intrest Money**-Sacred Groves	Bantala	Labangi	0	0	0	0	0	0.0010
2016-17		Bantala	Karabira	0	0	0	0	0	0.0010
2016-17		Bantala	Baghuapat	0	0	0	0	0	0.0010
2016-17		Bantala	Saruali	0	0	0	0	0	0.0010
2016-17		Jarapada	Balliapata(Kundheswar)	0	0	0	0	0	0.0010
2016-17		Jarapada	Dahimal(Girigobardhan)	0	0	0	0	0	0.0010
2016-17		Jarapada	Jeranga(Budhipahad)	0	0	0	0	0	0.0010
2016-17		Jarapada	Roadsingha(Bankimunda Pitha	0	0	0	0	0	0.0010
2016-17		Chhendipada	Badaberana(Badaberena Kanda)	0	0	0	0	0	0.0010
2016-17		Chhendipada	Languli (Languli Nuakhai Pitha)	0	0	0	0	0	0.0010
2016-17		Chhendipada	Banardhiha (Tarini Pitha)	0	0	0	0	0	0.0010
2016-17		Chhendipada	Chankundapal	0	0	0	0	0	0.0010
2016-17		Angul	Karadasingha	0	0	0	0	0	0.0010
2016-17		Angul	Pabala (Budhi Thakurani)	0	0	0	0	0	0.0010

2016-17		Angul	Kulsar (Budha Thakurani)	0	0	0	0	0	0.0010
2016-17		Angul	Gurdhi (Maa Budhi Thakurani Pitha)	0	0	0	0	0	0.0010
2016-17		Kaniha	Atabira Mundasahi	0	0	0	0	0	0.0010
2016-17		Kaniha	Phuljhari Munda sahi(Hata Desoli Jahera)	0	0	0	0	0	0.0010
2016-17		Kaniha	Phuljhari Munda sahi(Meru Pitha)	0	0	0	0	0	0.0010
2016-17		Kaniha	Hanumanpur Maniasahi	0	0	0	0	0	0.0010
			Total	**0**	**0**	**0**	**0**	**0**	**0.02000**
2016-17	Corporate Social Respnsibility (CSR) funded by the OMC Ltd.	Talcher	Gaham VF	15	0	15	0	0	0.2400
2016-17	OMBADC	Chhendipada	Chhotatentuloi	0.72	0	0.72	0	0	0.0115
2016-17		Chhendipada	Dahibara	3	0	3	0	0	0.0480
2016-17		Chhendipada	Gohirpasi	0.7	0	0.7	0	0	0.0112
2016-17		Chhendipada	Languli Jungle	2.86	0	2.86	0	0	0.0458
2016-17		Chhendipada	Chhendipada	0.62	0	0.62	0	0	0.0099
2016-17		Chhendipada	Mamuriasahi	1.1	0	1.1	0	0	0.0176
2016-17		Angul	Kumunda Revenue area	3	0	3	0	0	0.0480
2016-17		Angul	Paratara	4	0	4	0	0	0.0640
2016-17		Talcher	Danara VF	15	0	15	0	0	0.2400
2016-17		Kaniha	Banasingha	1.25	0	1.25	0	0	0.0200
2016-17		Kaniha	Bhuinpur	5	0	5	0	0	0.0800
2016-17		Kaniha	Badagunduri	13.75	0	13.75	0	0	0.2200
2016-17		Chhendipada	Gohirapasi	0	0	0	0.7	0	0.0018
2016-17		Chhendipada	Languli Jungle	0	0	0	1.3	0	0.0033
2016-17		Angul	Ranigotha Village	0	0	0	3	0	0.0075
2016-17		Angul	Ranigotha Village	0	0	0	4	0	0.0100
2016-17		Talcher	Bhajanipur to Koilnagar	0	0	0	3	0	0.0075
2016-17		Talcher	Danara to Natidi Danara to Kalammchhuin & lokeipasi	0	0	0	6	0	0.0150
2016-17		Kaniha	Adweitaprasad	0	0	0	6	0	0.0150
2016-17		Kaniha	Goilanda	0	0	0	3	0	0.0075
2016-17		Kaniha	Gundurinali	0	0	0	3	0	0.0075
2016-17		Kaniha	Jamunia	0	0	0	3	0	0.0075
2016-17		Kaniha	Jarada	0	0	0	8.26	0	0.0207

2016-17		Kaniha	Malapasi	0	0	0	3	0	0.0075
2016-17		Kaniha	Banasingha	0	0	0	5	0	0.0125
2016-17		Kaniha	Bhuinpur	0	0	0	5	0	0.0125
2016-17		Kaniha	Jaipur	0	0	0	3	0	0.0075
2016-17		Kaniha	Kaniha	0	0	0	3	0	0.0075
2016-17		Kaniha	Kansamunda	0	0	0	6	0	0.0150
2016-17		Kaniha	Masunihata	0	0	0	3	0	0.0075
2016-17		Kaniha	pttakhaman	0	0	0	4	0	0.0100
2016-17		Kaniha	Pathrmunda	0	0	0	3	0	0.0075
2016-17		Kaniha	Srathipal	0	0	0	0.34	0	0.0009
2016-17		Kaniha	Takua	0	0	0	3	0	0.0075
2016-17		Kaniha	Tolakabeda	0	0	0	1.4	0	0.0035
				51	**0**	**51**	**81**	**0**	**1.0185**
2016-17	Shree Jagannath Bana Prakalpa (OEMF)	Bantala	Talasira K.F.	0	15	15	0	0	0.0600
2016-17		Bantala	Nuakheta RF	0	15	15	0	0	0.0600
2016-17		Talcher	Ganthigadia DPF	0	20	20	0	0	0.0800
			Total	**0**	**50**	**50**	**0**	**0**	**0.200**
2016-17	MGNRGES	Bantala	Bedasasan Chhota Jungle & Gochara)	10	0	10	0	0	0.1600
2016-17		Jarapada	Nuapada VF	10	0	10	0	0	0.1600
2016-17		Chhendipada	Sandhapal VF	10	0	10	0	0	0.1600
2016-17		Talcher	Saradhapur VF	5	0	5	0	0	0.0800
2016-17		Kaniha	Rameswar Hill	10	0	10	0	0	0.1600
2016-17		Bantala	Kantamegha VF	0	30	30	0	0	0.0600
2016-17		Jarapada	Devinagar PRF	0	50	50	0	0	0.1000
2016-17		Chhendipada	Jaypur RF	0	50	50	0	0	0.1000
2016-17		Chhendipada	Kainchapada Reveue Forest	0	50	50	0	0	0.1000
2016-17		Angul	Burti PRF	0	50	50	0	0	0.1000
2016-17		Angul	Karamanga Sahi Reveune Forest	0	50	50	0	0	0.1000
2016-17		Angul	Paranga RF	0	30	30	0	0	0.0600
2016-17		Talcher	Sradhapur VF	0	50	50	0	0	0.1000
2016-17		Talcher	Biru VF	0	40	40	0	0	0.0800
2016-17		Talcher	Dhobapal VF	0	35	35	0	0	0.0700
2016-17		Kaniha	Goilanda	0	25	25	0	0	0.0500

2016-17		Kaniha	Bahaliabeda	0	15	15	0	0	0.0300
2016-17		Kaniha	Jharaberini KF	0	38	38	0	0	0.0760
2016-17		Jarapada	Jarapada to Chhelipada Road	0	0	0	5	0	0.0125
2016-17		Chhendipada	Golagagadia to Khaman	0	0	0	6	0	0.0150
2016-17		Talcher	Balanda to Samal PWD Road	0	0	0	5	0	0.0125
2016-17		Talcher	Lingirakata to Talakalunhundi	0	0	0	5	0	0.0125
2016-17		Kaniha	Kumanda to Kosala	0	0	0	10	0	0.0250
			Total	**45**	**513**	**558**	**31**	**0**	**1.8235**
2016-17	MGNREGS Convergence Plan	Angul	Kerjenga PRF	20	0	20	0	0	0.08000
2016-17		Kaniha	Rengali Police Station to Rengali Market	0	0	0	20	0	0.05000
			Total	**20**	**0**	**20**	**20**	**0**	**0.13000**
	Total-2016-17			**176**	**2820**	**2996**	**132**	**0.4500**	**8.6179**
2017-18	District Mineral Foundation-Urban Plantation	Angul	Derang Damsite (Peri Urban)	0	0	0	0	0.0500	0.0500
2017-18		Talcher	Municipality area (Nizigarh Town)	0	0	0	0	0.0500	0.0500
2017-18		Kaniha	Bijigoal	0	0	0	0	0.0500	0.0500
	Total			**0**	**0**	**0**	**0**	**0.1500**	**0.1500**
2017-18	Corporate Sector-MCL-Urban Plantation	Angul	Derang Damsite	0	0	0	0	0.0500	0.0500
2017-18		Talcher	Gurujang Mouza	0	0	0	0	0.0800	0.0800
2017-18		Talcher	Rodhasara Mouza	0	0	0	0	0.0700	0.0700
	Total			**0**	**0**	**0**	**0**	**0.2000**	**0.2000**
	CAMPA-Compansatory Afforestation								
2017-18	Construction of Railway line from Kaniha OCP Talcher to Angul Railway Station by M/s MCL ltd.	Talcher	Seepur RF	0	`2.48	2.48	0	0	0.00496
2017-18	Constuction of Talcher Bimalagarh New BG Raillink by East cost Railway	Talcher	Kauchiakhola RF	0	48.5	48.5	0	0	0.097
2017-18	Railway siding Utkal coal ltd.	Angul	Kumand Talataila	0	0	0	0	0	0.001
	Total CAMPA-Compansatory Afforestation			**0**	**50.98**	**50.98**	**0**	**0**	**0.10296**
2017-18	**Forest Deposit** - Avenue Plantation	Bantala	Angul to Mahidharpur	0	0	0	3	0	0.0075
2017-18	OMBADC	Chhendipada	Dahibar Revenue	5	0	5	0	0	0.0800

2017-18	State-Plan-Tribal Sacred Groves	Bantala	Hidising	0	0	0	0	0	0.0010
2017-18		Bantala	Kantamegha	0	0	0	0	0	0.0010
2017-18		Bantala	Nuagaon	0	0	0	0	0	0.0010
2017-18		Jarapada	Maa Patakhanda Pitha	0	0	0	0	0	0.0010
2017-18		Jarapada	Banadurga Pitha Tentulei Jharipani	0	0	0	0	0	0.0010
2017-18		Jarapada	Pitabali -Pitha Bhaurabani-Kodasahi	0	0	0	0	0	0.0010
2017-18		Jarapada	Maa Grameswari Pidha-Dangadhar Sahi	0	0	0	0	0	0.0010
2017-18		Jarapada	Maa maheswari Pidha-Tentuloi	0	0	0	0	0	0.0010
2017-18		Jarapada	Maa Budhi thakurani Pidha-Bakata	0	0	0	0	0	0.0010
2017-18		Chhendipada	Bhaliasar	0	0	0	0	0	0.0010
2017-18		Chhendipada	Similipal	0	0	0	0	0	0.0010
2017-18		Chhendipada	Jaltap	0	0	0	0	0	0.0010
2017-18		Angul	Krushnachakragarh Brahmani Devi-Pidha)	0	0	0	0	0	0.0010
2017-18		Angul	Karatapata (Maa Budhithakurani Pidha)	0	0	0	0	0	0.0010
2017-18		Angul	Hinisirida (Maa grameswari Pidha)	0	0	0	0	0	0.0010
2017-18		Angul	Manikajodi(maa Dalki Thakurani pidha)	0	0	0	0	0	0.0010
2017-18		Kaniha	Arakhadahi HO(Munda) Tribe	0	0	0	0	0	0.0010
2017-18		Kaniha	Balarampur (Mundasahi)	0	0	0	0	0	0.0010
2017-18		Kaniha	Kaliadama Kohla(munda)	0	0	0	0	0	0.0010
2017-18		Kaniha	Kaliadama Chilantipasi (Munda)	0	0	0	0	0	0.0010
2017-18		Kaniha	Kenduberini Sahara(Munda)	0	0	0	0	0	0.0010
	Total			**0**	**0**	**0**	**0**	**0**	**0.0210**
2017-18	MGNREGS	Chhendipada	Chhendipada RF	7	0	7	0	0	0.11200
2017-18		Bantala	Balanga RF	0	50	50	0	0	0.10000
2017-18		Jarapada	Katada RF	0	50	50	0	0	0.10000
2017-18		Chhendipada	Kainchhapada Rev Forest	0	50	50	0	0	0.10000
2017-18		Angul	Pokunda PRF	0	30	30	0	0	0.06000
2017-18		Angul	Kurudu PRF	0	50	50	0	0	0.10000
2017-18		Talcher	Jhulakhuntia VF	0	30	30	0	0	0.06000
2017-18		Kaniha	Saradkhola RF	0	25	25	0	0	0.05000
2017-18		Talcher	NH-149 to Mohuliapasi PMGSY Road	0	0	0	5	0	0.01250

2017-18	**MGNREGS** (Convergence)	Angul	Burti PRF	20	0	20	0	0	0.08000
			Total	**27**	**285**	**312**	**5**	**0**	**0.77450**
	Total-2017-18			**32**	**336**	**368**	**8**	**0**	**1.33596**
2018-19	Corporate Sector MCL	Angul	Derjanga Dam Site	0	0	0	0	0.10000	0.10000
2018-19		Talcher	Dera	0	0	0	0	0.10000	0.10000
2018-19		Kaniha	Telesingha	0	0	0	0	0.05000	0.05000
2018-19		Kaniha	Kamarei	0	0	0	0	0.15000	0.15000
			Total					**0.40000**	**0.40000**
2018-19	**NBM**-Bamboo Plantation Forest Land	Bantala	Bolanga RF	20	0	20	0	0	0.0666
2018-19	CAMPA- APO-2016-17 (W.P.P & P)	Bantala	Balanga RF Comptt.1	0	100	100	0	0	0.20000
2018-19		Bantala	Balanga RF Comptt. 8 & 9	0	100	100	0	0	0.20000
2018-19		Jarpada	Katada RF Comptt No. 1	0	100	100	0	0	0.20000
2018-19		Jarpada	Katada RF Comptt No. 7	0	100	100	0	0	0.20000
2018-19		Jarpada	Roadsingha PRF	0	50	50	0	0	0.10000
2018-19		Jarpada	Similipathar RF 2& 3	0	50	50	0	0	0.10000
2018-19		Chhendipada	Bramhanabill RF	0	50	50	0	0	0.10000
2018-19		Chhendipada	Chhendipada RF	0	50	50	0	0	0.10000
2018-19		Chhendipada	Dangapal PF	0	50	50	0	0	0.10000
2018-19		Chhendipada	Durgapur RF	0	150	150	0	0	0.30000
2018-19		Angul	Nisha RF	0	70	70	0	0	0.14000
2018-19		Angul	Kulasingha PRF	0	64	64	0	0	0.12800
2018-19		Angul	Buruti PRF	0	16	16	0	0	0.03200
2018-19		Talcher	Rabipur RF	0	200	200	0	0	0.40000
2018-19		Talcher	Sibarampur PRF	0	100	100	0	0	0.20000
2018-19		Kaniha	Santrabandha KF	0	35	35	0	0	0.07000
2018-19		Kaniha	Khajuria RF	0	55	55	0	0	0.11000
2018-19		Kaniha	Budia RF	0	60	60	0	0	0.12000
2018-19		Kaniha	Sadarkhola RF	0	100	100	0	0	0.20000
			Total	**0**	**1500**	**1500**	**0**	**0**	**3.00000**

2018-19	**Compansatory Affroestation-** Diversion of 12.63 ha of Forest land for laying of slury pipe line for disposal of ash from captive Power Plant (CPP) of NALCO to	Talcher	Pathuria-Petchira, RF	0	26	26	0	0	0.05200
2018-19	**Compansatory Affroestation-** Diversion ofof 6.682ha forest land for Coal transportation to Coal washery by M/S Jindal Steel Power Ltd.	Bantala	Nukhuripada (Plot No. 4/1256(P)	6.682	0	6.682	0	0	0.10691
			Total Compansatory Affroestation	**6.682**	**26**	**32.68**	**0**	**0**	**0.15891**
2018-19	CAMPA-Wildlife-Site Specific Conservation Plan	Angul	Madhapur RF	0	45.25	45.25	0	0	0.09050
2018-19		Kaniha	Dhankoile RF	0	20	20	0	0	0.04000
			Total -CAMPA-Wildlife-Site Specific Conservation Plan	**0**	**65.25**	**65.25**	**0**	**0**	**0.1305**
2018-19	MGNREGS	Chhendipada	Bamanali VF	10	0	10	0	0	0.160
2018-19		Kaniha	Badakathia RF	15	0	15	0	0	0.240
2018-19		Angul	Kulasinga PRF	0	50	50	0	0	0.100
2018-19		Talcher	Seepur	0	30	30	0	0	0.060
2018-19		Kaniha	Birabhuin, KF	0	10	10	0	0	0.020
2018-19		Kaniha	Nilapasi, KF	0	20	20	0	0	0.040
2018-19		Chhendipada	Kankurpal to Badaberena	0	0	0	6	0	0.015
2018-19		Chhendipada	Kudapal to Sandhapal	0	0	0	6	0	0.015
2018-19		Talcher	Gounighasa to Saradhapur	0	0	0	5	0	0.013
2018-19		Kaniha	Barihapur to Saradhapur	0	0	0	6	0	0.015
2018-19		Kaniha	Nalam to Poipal	0	0	0	4	0	0.010
2018-19		Kaniha	Suleipal to Arkil	0	0	0	10	0	0.025
			Total	**25**	**110**	**135**	**37**	**0**	**0.7125**
	Total-2018-19			**52**	**1701**	**1753**	**37**	**0**	**4.4685**
2019-20	CAMPA APO 2019-20- (W.P.P & P)-Bamboo Plantation	Jarapada	Arisulia Sulia RF	30	0	30	0	0	0.1200
2019-20		Angul	Krushnachakra PRF	20	0	20	0	0	0.0800
2019-20		Kaniha	Badakathia RF	20	0	20	0	0	0.0800

	Total			**70**	**0**	**70**	**0**		**0.2800**
2019-20	CAMPA APO 2019-20- (W.P.P & P)-ANR Plantation	Jarpada	Antulia Tabada RF	0	50	50	0	0	0.1000
2019-20		Jarpada	Debinagar PRF	0	50	50	0	0	0.1000
2019-20		Chhendpada	Chhendipada RF	0	100	100	0	0	0.2000
2019-20		Angul	Kalapat PRF	0	50	50	0	0	0.1000
2019-20		Angul	Kurudu PRF, Comptt-1	0	50	50	0	0	0.1000
2019-20		Talcher	Kanheijena RF	0	100	100	0	0	0.2000
2019-20		Kaniha	Arakhadahi KF	0	50	50	0	0	0.1000
2019-20		Kaniha	Lodharjhari RF	0	50	50	0	0	0.1000
	Total			**0**	**500**	**500**	**0**	**0**	**1.0000**
2019-20	**Compensatory Afforestation-** Diversion of 1.23 ha Forest land for Railway siding by M/S Global Coal Mining Pvt. Land	Kaniha	Khindo Plot No. 542 of Khata No. 276	1.23	0	1.23	0	0	0.0197
2019-20	**Compensatory Afforestation-** Hingula OCP of M/S MCL Ltd.	Jarpada	Pathargarh RF	0	200	200	0	0	0.4000
2019-20		Chhendipada	Durgapur RF	0	200	200	0	0	0.4000
2019-20		Talcher	Kanheijena RF	0	100	100	0	0	0.2000
2019-20		Kaniha	Nialu-Sapkata-Lodhajhari RF	0	272	272	0	0	0.5440
2019-20		Kaniha	Dhankuli RF	0	110	110	0	0	0.2200
	Total			**0**	**882**	**882**	**0**		**1.7640**
2019-20	**Compensatory Afforestation-** Diversion of 240.672 ha including Forest Land 2.776a SZ within the total MI area of 690.00 ha for Ananta Extension OCP (Phase-III) of M/S MCL Ltd. **1.5SZ**	Talcher	Kachiakhola RF	0	4.2	4.2	0	0	0.0084
	Total			**1.23**	**886.2**	**887.4**	**0**		**1.79208**
2019-20	Urban Plantation under DMF	Chhendipada	Chhendipada	0	0	0	0	0.10000	0.10000
2019-20		Chhendipada	Chhendipada	0	0	0	0	0.06000	0.06000
2019-20		Talcher	Dera	0	0	0	0	0.10000	0.10000
2019-20		Kaniha	Bizigoal	0	0	0	0	0.05000	0.05000
	Total	**Total**		**0**	**0**	**0**	**0**	**0.3100**	**0.3100**
2019-20	Green Mohanadi Mission	Kaniha	Bijigol	0	0	0	0	0.0300	0.0300
2019-20		Kaniha	Karadei	0	0	0	0	0.0900	0.0900

2019-20		Kaniha	Tolakabeda	0	0	0	0	0.0200	0.0200
2019-20		Kaniha	Poipal	0	0	0	0	0.0600	0.0600
	Total	**Total**		**0**	**0**	**0**	**0**	**0.2000**	**0.2000**
2019-20	Plan for Convergence of MGNREGS	Talcher	Sibarampur Temple to Ekdal	0	0	0	5	0	0.01250
2019-20		Talcher	Sibarampur to Kandhaberini	0	0	0	5	0	0.01250
2019-20		Kaniha	Gengutia to Arkil	0	0	0	10	0	0.02500
	Total	**Total**		**0**	**0**	**0**	**20**	**0**	**0.05000**
2019-20	MGNREGS	Bantala	Nuakheta RF Compt No. 2	0	50	50	0	0	0.10000
2019-20		Jarpada	Devinagar PRF	0	25	25	0	0	0.05000
2019-20		Jarpada	Katada RF	0	25	25	0	0	0.05000
2019-20		Chhendipada	Durgapur RF Comptt.No. 4	0	50	50	0	0	0.10000
2019-20		Angul	Kalapata PRF	0	50	50	0	0	0.10000
2019-20		Talcher	Seepur V.F	0	50	50	0	0	0.10000
2019-20		Kaniha	Bhaliabeda, K.F	0	50	50	0	0	0.10000
	Total	**Total**		**0**	**300**	**300**	**0**	**0**	**0.60000**
2019-20	MGNREGS	Bantala	Nuakheta to New Raigoda	0	0	0	3	0	0.00750
2019-20		Bantala	Basala to Inkarbandha	0	0	0	5	0	0.01250
2019-20		Bantala	Mahidharpur to Banarpal	0	0	0	2	0	0.00500
2019-20		Jarapada	Badmul to Badamul Bara	0	0	0	2	0	0.00500
2019-20		Jarapada	Kumbhira Nala to Dhaurakhaman	0	0	0	5	0	0.01250
2019-20		Chhendipada	Dugapur to Raijharan	0	0	0	5	0	0.01250
2019-20		Chhendipada	Similipal to Bagadia	0	0	0	5	0	0.01250
2019-20		Angul	Paranga to Kanteikulia	0	0	0	5	0	0.01250
2019-20		Angul	Manikjodi to Kulsar	0	0	0	5	0	0.01250
		Total		**0**	**0**	**0**	**37**	**0**	**0.09250**
		Total MGNREGS		**0**	**300**	**300**	**57**	**0**	**0.74250**
		Total		**1.23**	**1686.20**	**5417**	**57**	**0.51000**	**4.04458**

2020-21	Urban Plantation	Angul	Derjanga Dam site	0	0	0	0	0.1	0.1
2020-21		Talcher	Kankili	0	0	0	0	0.07	0.07
2020-21		Talcher	Sareilo	0	0	0	0	0.06	0.06
2020-21		Talcher	Gopalprasad	0	0	0	0	0.12	0.12
2020-21		Kaniha	Chitalpur(Mugurubania Sahi)	0	0	0	0	0.21	0.21
		Total		**0**	**0**	**0**	**0**	**0.56**	**0.56**
2020-21	AR Plantation (1600 Plants)	Chhendipada	Marudhipa PRF	10	0	10	0	0	0.16
2020-21		Kaniha	Olanda (Rameswar)	10	0	10	0	0	0.16
		Total		**20**	**0**	**20**	**0**	**0**	**0.32**
2020-21	ANR Plantation (200 Plants)	Chhendipada	Kankurpal RF	0	50	50	0	0	0.1
2020-21		Kaniha	Balarampur	0	50	50	0	0	0.1
		Total		**0**	**100**	**100**	**0**	**0**	**0.2**
2020-21	ANR Plantation (400 Plants)	Chhendipada	Marudhipa PRF	0	50	50	0	0	0.2
2020-21		Kaniha	Suajhari	0	50	50	0	0	0.2
		Total		**0**	**100**	**100**	**0**	**0**	**0.4**
2020-21	Avenue Plantation(250Plants)	Kaniha	Jharabereni to Hanumanpur	0	0	0	8	0	0.02
2020-21	Urban Plantation	Chhendipada	Chhendipada Revenue Forest	0	0	0	0	0.16	0.16
		Total		**20**	**200**	**220**	**8**	**0.16**	**1.1**
2020-21	ANR Plantation (200 Plants)	Jarapada	Para PRF	0	100	100	0	0	0.2
2020-21		Jarapada	Katada RF Compt-1	0	50	50	0	0	0.1
2020-21		Jarapada	Silimipathar RF Compt-3	0	50	50	0	0	0.1
2020-21		Chhendipada	Bramhanbil RF	0	100	100	0	0	0.2
2020-21		Angul	Durgapur RF	0	50	50	0	0	0.1
2020-21		Angul	Kurudu PRF Compt-1	0	50	50	0	0	0.1
2020-21		Talcher	Kanheijena RF	0	50	50	0	0	0.1
2020-21		Talcher	Langalkhol RF	0	50	50	0	0	0.1
2020-21		Kaniha	Badakathia RF	0	50	50	0	0	0.1
2020-21		Kaniha	Biripal RF	0	50	50	0	0	0.1
		Total		**0**	**600**	**600**	**0**	**0**	**1.2**

2020-21	Bamboo Plantation(400Plants)	Bantala	Balanga RF Compt No-4	20	0	20	0	0	0.08
2020-21		Jarapada	Machhakuta KF	10	0	10	0	0	0.04
		Total		**30**	**0**	**30**	**0**	**0**	**0.12**
2020-21	Tall Tree Plantation	Angul	Malibramhani RF	0	0	0	0	0	0.011
2020-21	Bharatpur OCP	Talcher	Kanheijena RF	0	100	100	0	0	0.2
2020-21	Site specific Consevation Plan-Utkal D.Coal Mines of MMC Ltd	Chhendipada	Durgapur RF - 8	0	50	50	0	0	0.1
2020-21	Estt. Of MPTA Intergrated Steel Plant Bad-kejjenf by JSP Ltd	Angul	Kerjeng PRF	15	0	15	0	0	0.06
		Total		**15**	**150**	**0**	**0**	**0**	**0.36**
2020-21	Avenue Plantation(250Plants)	Bantala	Karatapata to pampasar	0	0	0	6	0	0.015
2020-21		Bantala	Beda to Chatiagaji	0	0	0	4	0	0.01
		Total		**0**	**0**	**0**	**10**	**0**	**0.025**
2020-21	AR Plantation (1600 Plants)	Bantala	Talamul KF	10	0	10	0	0	0.16
2020-21		Chhendipada	Durgapur RF-1	10	0	10	0	0	0.16
2020-21		Angul	Paranga RF	10	0	10	0	0	0.16
		Total		**30**	**0**	**30**	**0**	**0**	**0.48**
2020-21	ANR Plantation (200 Plants)	Bantala	Bhubanpur VF	0	50	50	0	0	0.1
2020-21		Jarapada	Antulia Tabada RF	0	20	20	0	0	0.04
2020-21		Jarapada	Katada RF Compt-4	0	30	30	0	0	0.06
2020-21		Chhendipada	Badaberena VF	0	50	50	0	0	0.1
2020-21		Angul	Kalapat PRF	0	20	20	0	0	0.04
		Total		**0**	**170**	**170**	**0**	**0**	**0.34**
2020-21	Avenue Plantation(250Plants)	Jarapada	Dangadhar Sahi to Bali Sahi	0	0	0	2	0	0.005
2020-21		Jarapada	Gandakhola Sahi	0	0	0	2	0	0.005
2020-21		Jarapada	Katada Koda Sahi to Railway	0	0	0	2	0	0.005
2020-21		Jarapada	Badmul to Dahimal	0	0	0	2	0	0.005
2020-21		Jarapada	Jereng to Sauria Sahi	0	0	0	2	0	0.005
2020-21		Chhendipada	Golagadia to Jianlipasi Road	0	0	0	5	0	0.0125

2020-21		Chhendipada	Durgapur to Durgapur Forest	0	0	0	5	0	0.0125
2020-21		Angul	Khairasahi to Guranga village PWD Road	0	0	0	3	0	0.0075
2020-21		Angul	Champatimunda to Balipasi Road of Matiasahi PWD Road	0	0	0	7	0	0.0175
2020-21		Talcher	Tolakalundia to Thermal Road	0	0	0	5	0	0.0125
2020-21		Talcher	Bauligarh to Bauli Bridge	0	0	0	5	0	0.0125
2020-21		Kaniha	Hanumanpur to Bajrakote Road	0	0	0	10	0	0.025
		Total		**0**	**0**	**0**	**50**	**0**	**0.125**
		G.Total		**30**	**170**	**200**	**60**	**0**	**0.97**

Besides this, a lot of new schemes have been introduced by both state Govt. and central plans to increase the forest covers of the state. Special projects have been implemented to take up massive plantation programmes to raise the green cover and to face the natural calamities occurring frequently in our state and also to improve the environment.

Special importance also has been given on plantation activities in and outside working plan area. Plantations have been taken up under various schemes like CAMPA, Bald hill, MGNREGS, NBM, and Compensatory Afforestation in this Division. Under MGNREGS scheme a lot of Avenue Plantation has raised on road and canal bank side and also block plantation raised on existing vacant place of Revenue and Forest land.

Urban Plantations has been raised in Talcher, Kaniha andAngul urban area.

Further huge quantities of quality seedlings have been distributed freely to public under 13th FC grant and Agro Forestry scheme to involve the people in tree plantations in private land and conservation of environment to increase tree cover in their locality.

Agro forestry programmes have also been taken up in this division under which grass cultivation have been done to supplement food for cattle and reduce biotic interference on adjoining forest. Besides this farmers are provided technical and financial support to raise Bamboo Plantation in their own land and under NBM Scheme.

Altogether 3886.704ha of area have been taken up for regeneration during the current plan period which is over all success of this Division.

11.2.14.19Observation/ Analysis of past management

The result of the implementation of activities in this working circle during the current plan period is very much effective and achievement is appreciable. Because of appropriate treatments in different working circle natural regeneration has improved both in rehabilitation working circle as well as in improvement working circle. The soil moisture reign in the forest areas has increased which is evident from better health status of the growing stock in the forest area under the outgoing working plan. There is appreciable increase in regeneration of bamboo forest there by augmenting the needs of the rural artesian providing livelihood support to the poorest of the poor. This has paved the way to sustainable forest management which will provide more NTFP product their by help the rural poor of the forest fringe villages in improving their livelihood status from more earning.

The wildlife population of the area has increased which is evident from the latest elephant census where 74 nos. of elephants have been observed during the census period from 26.05.2015 to 28.05.2015. So also other animal population since to have increase which is evident from the latest sign survey under taken in the various forest area of this division.

As such there is overall growth in the density status of the forests which is evident from the satellite imagery where there is increasing 35 sqkm of forest area in Angul Forest Division. Where Angul Forest Division is the prime contributor of this success.

11.2.14.20Suggestion for future plan

1. **As per discussion by the committee held on 26.11.2015 the plantation working circle to be kept in independent working circle.**
2. It is suggested to continue this working circle in future plan with maintenance of old plantations. The exact area for further plantation and gap plantations under this working circle may be fixed after identification for suitable areas during field exercise.
3. The plantation raised in revenue land under CAMPA, Bald hill, 13th F.C and MGNREGS Scheme outside the working plan area should be handed over to the nearest village after forming the VSS. The consolidation work is to be carried out for processing the notification for Reserve Forest under Section-21 of Odisha Forest Act, 1972.
4. Similarly, Avenue Plantations raised on road sides and canal embankments should be handed over to the Gram Panchayats for the better protection.
5. The appropriate Silviculture operation is to be implemented in all the plantations. The old plantations are to be maintain silviculturally and are to be harvested in V.S.S areas after preparing the micro-plan of that area.
6. Effective steps should be taken for more urban plantation in industrial belt, mining area and municipal areas to arrest environmental pollution and to maintain ecological balance.
7. 4526.871ha plantation which has been raised in the past plan is to be identified, demarcated and care must be taken.
8. Present stock position is to be assessed.
9. Fresh site specific action plan is to be prepared & approved
10. 4121.926ha of area over which plantation was taken up during the current plan period is now proposed for tending operation & to include in protection overlapping Working circle in future plan. So far restocking over 3738.091ha old plantation, 4121.926ha of plantation of current plan period & 97.813ha of old teak plantation which ear marked for harvesting may be included in plantation working circle in future plan. All the notified VF having area 694ha and 1PF having area 4.86ha have been included in future plan for new plantation/ creation. Altogether 8656.69ha is proposed for plantation working circle in future plan.

11.2.14.21Harvest of old teak plantation.

As per prescription in current working plan harvesting of old teak plantation of 70 years & more age should be done on the basis of exploitable girth by preparing site specific scheme over an area of 97.813ha.

The schedule for harvesting of individual old teak plantation area to an extent of more than 4ha are furnished in table 3.8 and that of less than 4ha which will be managed in respective working plan for harvesting **in table 11.10.**

Table No.11.10 Harvestable Teak Plantations (Individual plantations of 4 ha. and more)

Range	Year of harvesting	Year of plantation	Block/ Comptt.	Area in ha.	Coupe No.
1	2	3	4	5	6
Durgapur	2007-08	1936 1937	Antulia-Tabada-1 Antulia-Tabada Comptt.1	4.45 10.12	I
	2008-09	1938	Antulia-Tabada Comptt.- 10	5.26	II
	2009-10	1939	Antulia-Tabada Comptt.-10	7.68	III
	2010-11	1940	Antulia-Tabada Comptt.- 10	8.90	IV
	2011-12	-	-	-	-
	2012-13	-	-	-	-
	2013-14	1943	Antulia-Tabada Comptt.- 3	7.28	V
	2014-15	-	-	-	-
	2015-16	-	-	-	-
	2016-17	-	-	-	-
			Total:-	43.69	

Table No. 11.11 HARVESTABLE TEAK PLANTATIONS

(Individual plantations of less than 4 ha. area).

Range	Year of harvesting	Year of plantation	Block/ Comptt.	Area in ha.	Coupe No.
1	2	3	4	5	6
Durgapur	2007-08	1933	Antulia-Tabada- 3	1.21	
		1934	-do- - 3	1.82	
		1934	-do- - 5	3.44	I
		1935	-do-1	1.42	
		1934	Similipathar- 5	1.15	
		1935	-do- - 7	2.00	
		1937	-do- - 7	2.10	

	2008-09 to 2010-11	-	-	-	-
	2011-12	1941 1941	Antulia-Tabada- 3 Antulia-Tabada- 10	2.43 2.02	II
	2012-13	1942 1942	-do- - 3 -do- - 4	1.21 2.42	III
	2013-14	1943	-do- - 4	0.60	IV
	2014-15	1944	-do- - 5	0.40	V
	2015-16	-	-	-	-
	2016-17	1946	-do- - 3	0.60	
		1946	-do- - 3	2.63	VI
		1946	-do- - 1	2.03	
		1946	-do- - 3	0.40	
			Total:-	27.88	
Raigoda	2007-08	1919	Bolanga- 13	0.809	
		1923	-do- - 13	0.930	I
		1924	-do- - 13	0.815	I
		1929	-do- - 13	1.012	I
		1932	-do- - 13	1.416	I
		1933	-do- - 13	1.012	I
		1933	-do- - 10	0.404	I
		1934	-do- - 10	0.607	I
		1934	-do- - 13	0.809	I
		1935	-do- - 10	0.404	I
		1935	-do- - 13	1.618	I
		1936	-do- - 13	2.024	I
		1937	-do- - 13	2.024	I
		1937	-do- - 10	2.023	I
	2008-09	-	-	-	I
	2009-10	1939	-do- - 10	2.428	I

		1939	Nuakheta- 5	0.840	II
	2010-11	1940	Bolang- 10	2.225	III
	2011-12	1941	-do- - 10	2.023	IV
	2012-13 to 2016-17	-	-	-	-
			Total:-	23.423	
Purunagarh	2007-08 to 2009-10	-	-	-	
	2010-11	1940	Krishnachakra- 3 & 4	2.02	I
	2011-12	1941	-do- - 4	0.40	II
	2012-13	1942	-do- - 4	0.40	III
	2013-14 to 2016-17	-	-	-	-
			Total:-	2.82	
			G. Total:-	54.123	

11.2.14.22Achievement.

No harvesting of old teak plantation as per prescription laid down in current working plan has been achieved due to severe cyclonic storm occurred during the year 2013-14& 2014-15 like Phyilin & HudHud, by which maximum harvestable trees had been uprooted, broken and damaged.

11.2.14.23Suggestion for future plan.

In the future plan the total area allotted to plantation overlapping circle is 8413.575ha & the old teak plantation over an area of 97.813ha.

1. Demarcation of annual harvestable coupe area.
2. Marking shall be done as per marking rule on certification of DFO/ACF
3. Handover to OFDC as per rule provided
4. Execution of felling of marked tree.
5. Subsidiary silvicultural operation shall be taken up.

11.2.14.24The Bamboo (Overlapping Working Circle).

This working circle covers the potentially rich bamboo areas of the division where bamboo occurs either gregariously or in scattered manner. This Working Circle will overlap with the Improvement and Rehabilitation Working Circle. The bamboo forests of this division are degraded due to frequent fire, heavy grazing and illicit felling. Though gregarious flowering has not been reported, sporadic flowering is noticed almost every year in many forest blocks. The total area allotted to this Working Circle is 11263.724 ha, approximately 28.4% of the total forest area covered in the plan.

11.2.14.25Special objectives

The special objectives of management in respect of this working circle were within the scope of general objectives of management. These are as follows: -

1. To ensure regular silvicultural operations to prevent deterioration of the growing stock.
2. To ensure maximum yield on sustainable basis scientific bamboo cutting rules are to be adopted.
3. To meet the bona fide requirements of bamboo artisans, local people and bamboo based industry.
4. To rehabilitate the exhausted bamboo bearing areas through appropriate measures like silvicultural operation, soil working, plantation etc.
5. To generate employment for the local poor people.

11.2.14.26Area Allotted.

The forest blocks which have good stock with bamboo & good regeneration were included in bamboo overlapping working circle. Total area allotted to this overlapping working circle is 11263.724ha. Range wise & block wise details of area allotted to this circle are as under **(table 11.12).**

Table 11.12 Range & block wise area allotted to Bamboo(Overlapping)Working Circle.

Name of the Range	Name of the Felling series	Name of the Forest Block	Comptt. No.	Area(G.I.S) in ha.	Area of the Felling Series in ha.
Raigoda	Bolanga	Bolanga RF	1 to 10 & 13	3097.126	3270.172
		Bolanga PRF	-	53.522	
		Talasira DPF	-	49.564	
		Labangi DPF	-	69.96	
	Talamul	Nuakheta RF	1 to 4	1342.869	1342.869
	Taras	Nuakheta RF	5 to 9	1574.981	1574.981
Purunagarh	Burti	Burti PRF	1 to 4	1933.208	1933.208
Durgapur	Katada	Katada RF	1 to 7	3142.494	3142.494
		Total:-			11263.724

11.2.14.27Achievement.

The Bamboo Forest of this division are confined to few forest blocks of Raigoda Range, Purunagarh Range & Durgapur Range. To rehabilitate and improve the existing clumps, silvicultural operation has been taken up over an area of 9433.40ha. during the plan period from 2007-08 to2014-15 .The details of year wise operation taken up is given in **Table no- 11.13**

Table no- 11.13

Year	Name of the Range	Name of the forest block, RF/PRF/DPF	Bamboo coupe No.	Area covered (In Ha)	Amount spent	No of Clumps Treated	Under Scheme
1	2	3	4	5	6	7	8
2007-08	Durgapur	Katada RF	B	265.00	80000	3324	OBDA
2007-08	Raigoda	Balanag RF	B	130.00	40000.00	2000	Non-plan DW Bamboo
2008-09	Durgapur	Katada RF	C	75.00	40000	2550	Non Plan DW Bamboo
2008-09	Raigoda	Balanga RF	C	130.00	40000.00	2000	Non-plan DW Bamboo
	Raigoda	Balanga RF	C	230.00	58353.00	3690	OBDA
	Raigoda	Nuakheta RF	C	150.00	41647.00	2675	OBDA
2009-10	Durgapur	Katada RF	D	101.00	54000	3540	State Plan 13th FC
2009-10	Purunagarh	Butri PRF, Compt No. 3	D	96.00	49900	3262	13th FC
2009-10	Raigoda	Nuakheta RF	D	235.00	127230.00	7887	13 th FC
	Raigoda	Balanga RF & Talisara DPF	D	334.00	250010.00	16265	13th FC
2010-11	Durgapur	Katada RF	A	250.00	225000	4900	CAMPA APO-2010-11
2010-11	Purunagarh	Butri PRF, Compt No. 1	A	100.00	54000	3468	13th FC
2010-11	Purunagarh	Butri PRF, Compt No. 4	A	43.00	50000	3260	13th FC
2010-11	Raigoda	Nuakheta RF	A	100.00	59000.00	3253	13th FC
	Raigoda	Nuakheta RF	A	100.00	54272.00	3272	13th FC

	Raigoda	Nuakheta RF	A	160.55	115500.00	7000	CAMPA
	Raigoda	Balanga RF	A	100.00	53708.00	3300	13th FC
	Raigoda	Balanga RF	A	100.00	64000.00	2200	13th FC
	Raigoda	Balanga RF	A	260.67	136035.00	8245	CAMPA
	Raigoda	Labangi DPF	A	117.00	63180.00	3828	CAMPA
2011-12	Durgapur	Katada RF	B	137.00	97300	4865	CAMPA APO-2011-12
2011-12	Purunagarh	Butri PRF, Compt No. 1	B	200.00	180000	10152	CAMPA
2011-12	Raigoda	Balanga RF	B	200.00	108000.00	6466	13th FC
	Raigoda	Balanga RF	B	150.00	81000.00	4937	13th FC
	Raigoda	Balanga RF	B	380.40	330240.00	18642	CAMPA
	Raigoda	Nuakheta RF	B	543.45	350242.00	24309	CAMPA
2012-13	Durgapur	Katada RF	C	365.00	114000	5700	CAMPA APO - 2012-13
2012-13	Purunagarh	Butri PRF, Compt No. 2	C	236.00	354000	14307	CAMPA
2012-13	Raigoda	Balanga RF	C	100.00	31500.00	1910	Non-plan DW Bamboo
	Raigoda	Balanga RF	C	250.00	135000.00	8160	13th FC
	Raigoda	Nuakheta RF	C	335.03	302263.00	14364	CAMPA
2013-14	Durgapur	Katada RF	D	255.00	173640	8682	CAMPA APO - 2013-14
2013-14	Purunagarh	Burti PRF, Compt No. 4	D	400.00	600000	14535	CAMPA
2013-14	Raigoda	Talisara DPF	D	49.00	73500.00	2649	CAMPA
	Raigoda	Balanga RF	D	364.60	546000.00	19696	CAMPA
	Raigoda	Nuakheta RF	D	558.70	838500.00	31192	CAMPA
2014-15	Durgapur	Katada RF	A	400.00	188060	9403	CAMPA APO - 2013-14
2014-15	Raigoda	Nuakheta RF	A	307.00	460500.00	32235	CAMPA
	Raigoda	Nuakheta RF	A	380.00	570000.00	39900	CAMPA
	Raigoda	Balanga RF	A	295.00	442500.00	30975	CAMPA
	Raigoda	Balanga RF	A	450.00	675000.00	47250	CAMPA
	Total			**9433.40**	**8307080**	**440248**	

The felling of culms as per prescription has not been done as no culms is commercially viable.

11.2.14.28Result.

5. Due to silvicultural operation new culms have been regenerated in most of bamboo clumps.
6. There is a considerable increase in the yield of bamboo which supports the livelihood of forest dependants and artisans.
7. Assigned VSS get benefits due to bamboo and better protection is observed.

11.2.14.29 Suggestion for future plan.

Area proposed for future plan is 11235.444 ha

2. Protection of bamboo crop from karadi collection, illicit felling, grazing & forest fire is to be ensured.
3. Extensive silvicultural operation works are to be taken up to enrich the stock by improving the clumps for sustained yield. In all bamboo coupes detail enumeration is needed to assess the availability of commercially viable clumps.
4. All clumps worked under silvicultural operation should be numbered & same should be recorded in a register with age of individual culms. Special attention is to be given to the degraded sites having very less bamboo clumps.
5. All the Bamboo coupes are to be re allotted in future plan.
6. The bamboo clumps falling within compartments of Nuakheta RF will be treated as per the guidelines issued by RCCF Angul for being a part of Satkosia Tiger Landscape

11.2.14.30The wild life (Over lapping Working Circle).

This working circle is also an overlapping working circle. During the plan period it was prescribed to give maximum emphasis to improve the wild life habitats through protection and by providing shelter, food & water.

11.2.14.31 Area& allotted

All the forest blocks included in the Plan have been allotted to this Overlapping Working Circle. The circle covers the entire geographical area of the Division as far as protection of the wildlife is concerned. The forest blocks which need emphasis on wildlife management are furnished in **Table No. 2.14.** Improvement on the conservation, habitat management and protection of wildlife is to be ensured. The total operational area of this working circle is 42263.355 ha.

Table No. 11.14 Distribution of area in Wildlife (Overlapping) Working Circle

Sl. No.	Name of Range	Name of Forest Block	G.I.S. Area in ha.
1	Purunagarh	Gurunga RF	59.007
		Bhogapal RF	184.560
		Naudapur-Berhampur RF	40.975
		Madhapur RF	221.793
		Krushnachakra PRF	2489.598
		Kurudu PRF	712.221
		Pokunda PRF	271.416
		Kulasinga PRF	641.715
		Chandanpur PRF	446.364
		Kalapat PRF	1214.713
		Burti PRF	3135.584
		Sorispal-Hinsar PRF	763.359
		Sub Total	**10181.305**
2	Raigoda	Nuakheta RF	2917.85
		Bolong RF	3097.126
		Baragunia RF	70.634
		Bolong PRF	53.522
		Talsira DPF	49.564
		Labangi DPF	69.960
		Sub Total	**6258.656**
3	Durgapur	Antulia-Tabada RF	2259.800
		Katada RF	3142.494
		Dandasingha-Bhagatpur PRF	221.380
		Tabada PRF	210.582
		Rodsingha PRF	143.939
		Pathargarh PRF	1633.067

		Para PRF	1052.774
		Sub Total	**14922.692**
4	Chhendipada	Sunarijharan PRF	450.817
5	Talcher	Bulajhar RF	1948.152
		Mankadachua RF	402.188
		Siling RF	106.47
		Seepur RF	242.085
		Kanheijena RF	1393.382
		Langalkhol RF	125.123
		Sub Total	**4217.4**
6	Kaniha	Budhia RF	116.725
		Sachi RF	97.130
		Khajuria RF	136.076
		Bandhuli RF	65.361
		Silakhani RF	933.211
		Poipaldanda RF	645.413
		Dhenkoili RF	694.667
		Kaijhar RF	277.085
		Gumpha RF	37.359
		Durgapurdanda RF	227.963
		Tangiri RF	265.847
		Nialu-Lodhajhari-Sapkata RF	1225.276
		Patkhamna RF	438.412
		Arakhadihi RF	679.496
		Pedi RF	392.464
		Sub Total	**6232.485**
		Grand Total	**42263.355**

11.2.14.32Special objective of Management

In order to achieve the special objective of management for this over lapping Working Circle, special Site Specific management methods are adopted by following several circulars and guidelines issued by the Principal Chief Conservator of Forest (Wildlife) and Chief Wildlife Warden on various issues of wildlife management like tacking elephant depredation, rescue of wild animals etc., these guidelines will be followed for management of wildlife.

The special objectives of Management set for this Working Circle are within the scope of general objective of management. These includes:-

6. To conserve, protect and improve wildlife habitat with special emphasis on the proposed corridors.
7. To protect wildlife in general and endangered species in particular.
8. To create mass awareness among the locals regarding the necessity to conserve and develop important wild life habitat for the purpose of eco-tourism.
9. To conserve and develop important wildlife habitat for the purpose of eco-tourism.
10. To increase bio-diversity and wildlife population.
11. To prevent wildlife related crimes.

11.2.14.33Achievement

The result of the implementation of activities in this working circle during the current plan period is very much effective and achievement is appreciable. Because of appropriate treatments in different working circle natural regeneration has improved both in rehabilitation working circle as well as in improvement working circle. The soil moisture reign in the forest areas has increased which is evident from better health status of the growing stock in the forest area under the outgoing working plan. There is appreciable increase in regeneration of bamboo forest there by augmenting the needs of the rural artesian providing livelihood support to the poorest of the poor. This has paved the way to sustainable forest management which will provide more NTFP product their by help the rural poor of the forest fringe villages in improving their livelihood status from more earning.

The wildlife population of the area has increased which is evident from the latest elephant census where 74 nos. of elephants have been observed during the census period from 26.05.2015 to 28.05.2015. So also other animal population also seen to have increased which is evident from the latest sign survey under taken in the various forest area of this division.

As such, there is overall growth in the density status of the forests which is evident from the satellite imagery where there is increas 35 sqkms of forest area in Angul Forest Division. Where Angul Forest Division is the prime contributor of this success.

i. For wild life management & protection, elephant squads have been deployed at vulnerable elephant movement area. The list of protection squad under various schemes deployed at vulnerable points is given below in **Table no. 11.15.**

Table no. 11.15.

Sl.No	Name of the Range	Station of protection squad	Name of the Scheme	No of person engaged
1	Chhendipada	Chhendipada	State Plan Divisional Level Elephant Squad	05
2	Chhendipada	Chhendipada	CAMPA Wild Life protection squad	05
3	Chhendipada	Kosala	CAMPA Wild Life protection squad	05
4	Chhendipada	Chhendipada	CAMPA Wild Life side specific Elephant squad	03
5	Bantala	Labangi	CAMPA Wild Life protection squad	05
6	Durgapur	Antulia	State Plan IPCEA	15
7	Durgapur	Dahimal	State Plan IPCEA	05
8	Purunagarh	Karatapatta	State Plan IPCEA	05
9	Purunagarh	Pokunda	State Plan IPCEA	05
10	Kaniha	Kaniha	CAMPA Wild Life Anti depredation squad	10
11	Talcher	Kandhabereni	State Plan Divisional Level Elephant Squad	05
		Pabitranagar	CAMPA Wild Life Anti depredation squad	10

ii. Solar fencing has been provided in depredation area to reduce man- animal conflict. The details of solar fencing is in Table no. 11.16**.**

Year	Name of Scheme	Range	Location	Area		Amount Spent
				Specification	Rkm	
2005-06	Compensatory Afforestation Habitat Improvement of	Talcher	Bulajhar RF (Baruan NH-23 to Dholgandia Village)	5 Strand	12.00	600000

	surrounding Area of Bhubaneswari OCP	Talcher	Bulajhar RF (Tumugula to Baruan NH-23)	5 Strand	8.00	400000
	Total				**20.00**	**1000000**
2007-08	8782-Forest Deposit, Rengali Irrigation Project	Talcher	Seepur RF (Ludhunimunda to Gangadharpur village)	5 Strand	9.68	504000
		Chhendipada	Durgapur RF (Korada to Nandichora Village)	5 Strand	10.20	531000
	Total				**19.88**	**1035000**
2008-09	2406- Forest & Wildlife (Central Plan) Elephant Management Project	Raigoda	Nuakhera RF & Balanga RF (Nuakheta Ghodadina to Kantamegha via Saruali & Bhubanpur village)	5 Strand	14.50	750000
2009-10	2406- Forest & Wildlife (State Plan) Elephant Management Project	Chhendipada	Jaltap village around Kankurupal RF	5 Strand	4.65	500000
	2406- Forest & Wildlife (Central Plan) Elephant Management Project	Chhendipada	Brahmanbil RF towards Santrabandha village	5 Strand	8.45	916000
		Raigoda	Balanga RF (Kantamegha & Talgarh village)	5 Strand	10.00	1084000
	Total				**23.10**	**2500000**
2013-14	CAMPA APO-2011-12 Wildlife Management Site Specific Conservation Plan	Purunagarh	Bhogpal RF(Kusumpat to Bhogpal RF via Hinsaloi, Pabala, Karadsingha village	3 Strand	3.33	500000
	OFSDP	Purunagarh	Chandanpur RF to Kulasingha RF (Chandanapur to Ranimunda)	3 Strand	10.00	1500000

		Raigoda	Balanga RF 2 & 3 (Hidsingh village)	3 Strand	7.50	1125000
		Talcher	Kandhaberini to Rabipur RF	3 Strand	10.00	1500000
	Total				**30.83**	**4625000**
2014-15	CAMPA APO-2012-13 Wildlife Management Site Specific Conservation Plan	Chhendipada	Jeypur RF(Sandhpal Village)	3 Strand	3.33	500000
Grand Total					**111.65**	**10410000**

iii. Water bodies have been created in the forest blocks to improve water regime for the wild life which is in Table no. 11.17.

Name of the Division	Year wise (2010-11 to 2014-15)	Name of the Scheme (Furnish Scheme wise)	Location	No. of water Bodies Created	No. of Water Bodies renovated	Amount utilized
1	2	3	4	5	6	7
Angul	2009-10	State-Plan- Wildlife	Rasanda	1		300000
		State-Plan- Wildlife	Lembutaila	1		300000
		State-Plan- Wildlife	Ranipark	1		701516
		Total		**3**		**1301516**
	2010-11	State-Plan- Wildlife	Badakathia	1		4.0000
			Jaltap	1		4.0000
			Lembutaila		1	0.8750
		Central-Plan-Wildlife	Nialu-Lodhajhri	1		3.0000
		CAMPA-APO-2009-10 (Wild lIfe)	Purunapani		1	1.0000
			Dangerbeda		1	1.0000
		Industrial Area Plantation-Dev of Ranipark	Ranipark, Talcher	1		7.3497
		Total		**4**	**3**	**21.2247**
	2011-12	Central Plan- Wildlife	Kuio	1		3.0000
		State-Plan- Wild life	Buruti	1		4.0000
			Seepur		1	0.2500
		CAMPA-APO-2011-12 (Wild lIfe)	Buruti	1		6.0000

		Total		**3**	**1**	**13.2500**
	2012-13	State-Plan- Wild life	Kanteikolia	1		2.0000
			Kanheijena	1		2.0000
			Bulajhar	1		2.0000
			Mantukhol (Kanheijena)		1	0.2500
			Bulajhar		1	0.2500
			Dangerbeda		1	0.2500
			Kanteikulia		3	0.7500
		CAMPA-APO-2011-12	Jaltap	1		1.5000
			Paranga	1		1.5000
			Kulasingha	1		1.5000
			Patakhaman	1		1.5000
		CAMPA-APO-2011-12 (Wild lIfe)	Chhendipada	1		5.0000
		Total		**8**	**6**	**18.5000**
	2013-14	State-Plan- Wildlife	Sibrampur	1		2.5000
			Seepur		1	0.5000
			Kanheijena		1	0.5000
			Tulasighai		1	0.5000
		Central Plan	Rabipur	1		2.5000
		CAMPA APO 2012-13	Bolanga (Labangi Village)	1		2.5000
			Nuakheta	2		5.0000
			Chandanpur	1		2.5000
Angul			Krushnachakra	1		2.5000
			Rabipur	1		2.5000
			Kandhal	1		2.5000
			Seepur	1		2.5000
			Santrabandha	1		2.5000
			Gadagotha	1		2.5000
		OFSDP	Kulasingha	1		2.5000
			Burti	2		5.0000
			Krushnachakra	2		5.0000
			Kurudu	1		2.5000
			Langalkhol	1		2.5000
			Mankadchua	1		2.5000
			Rabipur	1		2.5000
			Balanga	1		2.5000
		Total		**22**	**3**	**56.5000**
	2014-15	CAMPA-APO-2012-13 (Wild LIfe)	Katada	2		2.5000
			Antulia-Tabada	2		2.5000

			Durgapur	2		5.0000
		CAMPA-APO-2012-13 (Wild Life- Site Specific Conservation Plan)	Chhendipada	1		5.0000
		CAMPA APO 2013-14	Nuakheta RF-4	1		2.5000
			Nuakheta RF-6	1		2.5000
			Bolanga RF-13	1		2.5000
			Bolanga RF-4	1		2.5000
			Antulia-7	1		2.5000
			Katada	1		2.5000
			Para	1		2.5000
			Kankurupal RF	2		5.0000
			Chhendipada RF	2		5.0000
			Mandergiri-I	1		2.5000
			Mandergiri-II	1		2.5000
			Bhogpal RF	1		2.5000
			Madhupur RF	1		2.5000
			Kanheijena RF	1		2.5000
			Sibrampur PRF	1		2.5000
			Kanteikulia RF	1		2.5000
			Mankadchua RF	1		2.5000
			Seepur RF	1		2.5000
Angul			Bulajhar RF	1		2.5000
			Phuljhari RF-I	1		2.5000
			Khajuria RF	1		2.5000
			Santribeda RF	1		2.5000
			Sardhapur RF	1		2.5000
			Budhia RF	1		2.5000
			Lodhajhri RF	1		2.5000
			Badakathia RF	1		2.5000
		CAMPA-APO-2013-14 (Wild LIfe)	Marudhip RF	1		2.5000
			Krushnachakra PRF	1		2.5000
			Burti PRF	1		2.5000
			Rabipur RF	1		2.5000
		CAMPA-APO-2013-14 (Wild Life- Site Specific Conservation Plan)	Durgapur RF	1		5.0000
		Total		**40**	**0**	**100.000**
				77	**13**	**209.4747**

iv. Improvement of elephant corridor through plantation to provide food & tree cover. The list of such activities is in Table no. 11.18.

Name of the Range	Name of the RF	Area in Ha	Year	Under the scheme
Talcher	Mankadachua RF	50	2006-07	Wild life Management
Talcher	Bulajhara RF	50	2006-07	Wild life Management
Talcher	Kanehijena RF	5	2014-15	Wild life Management
Talcher	Kanteikulia RF	5	2014-15	Wild life Management

v. Compassionate grant have been paid for human kill, human injury, cattle kill, house damage and crop damage to reduce man- animal conflict is as above mentined.

vi. Awareness has been created among the people to reduce man- animal conflict

vii. Regular monitoring & coordination meeting with Energy department for rectification of leaned pole & sagging of conductor. Joint raids have been conducted with energy deptt. Staff to reduce illegal hooking. This has resulted in minimizing electrocution death of wildlife specifically wild elephants.

viii. To save the wildlife, intensive prevention and control of fire programmes are taken up through creation of fire lines, engagement of Fire fighting squad, Para Forest Staffs. In recent years Elephant Squad, elephant trackers, Anti-depredation squads are engaged to protect the elephants and other wild animals. To protect the animals from railway accidents, a number of signboards reflecting the movement of elephant has been displayed near the railway tracks of elephant movement area of Talcher and Durgapur Range. The list of squads engaged during the plan period is given in **Table 3.12.**

ix. To restock the degraded and open forest area plantation activities have been taken up through block plantation and RDF under different schemes which would develop wildlife habitats

x. Elephant census has been conducted by direct count method in all the forests of Angul Division during 2015.

xi. Half yearly sign survey for Tiger and its co-predators as well as herbivores was conducted during May 2015 covering areas of Bantala, Durgapur and Purunagarh Ranges falling within the Satkosia Tiger Landscape. This survey indicated presence of good number of Sloth bears, apart from Chattels, Giant squirrel etc

11.2.14.34Method of Execution

The method of treatment is depending on habitat of wildlife and status of fauna in a particular area. There are several instruction and guidelines issued by the Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden, Odisha in various issues on wildlife to tackle the elephant depredation and rescue of animals etc.

The plantation has been carried out in Rehabilitation Working Circle area and also plantation overlapping Working Circle area to improve the forest cover and availability of food to herbivores. The planting of fruit bearing plants and fodder species are taken in various forest blocks. Necessary steps have been taken to improve the availability of foods in forests.

1. **Habitat improvement**

The existing elephant habitat needs improvement in food, water and tree cover. To overcome the situation stapes have been taken with maximum plantation activities in degraded forest blocks.

2. **Improving the tree cover**

The wild animals require sufficient tree cover and vegetative cover to protect them from various adverse conditions. The management intervention aimed at to enhancing the forest cover with suitable plantation activities with indigenous species and effective soil moisture conservation activities. The aim and objectives of rehabilitation working circle and plantation overlapping working circle to improve forest cover.

3. **Improving availability of food**

The availability of food in particular wildlife habitats is very essential with respect to quality and quantity food produced in that locality. The herbivorous depend upon the plant materials like leaves, barks, flowers, fruits of various species. Similarly, the deer, monkey, languor, Ratel & Hare feed on wild fruits of plants like Ficuss pecies, Amla, Zyziphos species, Kendu, Bahada, Bel etc. Availability of grass and fodder is very important for herbivores.

4. **Water availability**

The forest block are having more wildlife concentration is given more importance. Special care is taken to make availability of water hole. Generally nallah & streams are dry up during summers in most of the forest blocks to overcome the bottlenecks ponds & water holes has been created for availability of water. During the plan period 77 nos. of water bodies are created in different forest blocks of the division & 13nos of water bodies have been renovated.

11.2.14.35Results

1. Man and animal conflict has been reduced.
2. Driving of wild animals particularly Wild elephants from the vicinity of humanhabitation and crop fields have been done successfully.
3. There is increase in consciousness of frontline forest staff in wildlife management.
4. Population of wild life like Barking deer, spotted deer, Sloth bear, Hyena, Wild boar, elephant, Fox and leopard is increasing.

11.2.14.36Suggestion for future plan

Area proposed for future plan is 69332.293ha

1. All the forest blocks, included in the plan is to be allotted to wild life over lapping working circle. Over an area of 69332.293ha.
2. Special attention should be given to forest areas (Nuakheta RF, and part of Balanga RF) in proximity to protected areas (**proposed Satkosia Tiger Reserve**) which also serve as extended habitats for many rare and endangered species. The maintenance and restoration of grasslands, wetlands, wildlife corridors and water points must be identified. Threats, such as habitat loss and/or fragmentation; illegal trade; road and rail networks; etc. should be identified and appropriate corrective measures should be suggested for implementation. Similarly, areas of man animal conflict deserve special attention for amelioration.
3. The 59 nos. of forest blocks of this division having wild animals are proposed to be managed under this working circle. In future plan the total area is to be included is 69332.293ha. Special emphasis is to be given for habitat improvement like plantation of appropriate fodder & fruit bearing species, creation of meadows, salt licks, game tanks, water bodies. The water bodies inside the forest are contaminated and muddy due to interference of local cattle. Sufficient number of water bodies of at least three meter depth should be created for availability of clean water.Sufficient members of protection squads to be deployed for protection of the forest and wild life.
4. Fire protection measures is to be carried out by creating new fire lines, maintenance of old fire lines, deployment of sufficient numbers of fire protection squads along with fire fighting equipments.
5. Fragment elephant corridors to be revived by raising plantation by fodder species, signage to be displayed in elephant passage area to avoid man-animal conflict.
6. Awareness meeting is to be conducted in forest fringe villages to know the behavior and attitude of animals.
7. Rescue equipments like cage, nets, tranquilization gun etc. to be purchased to add new the situation instantly.
8. Elephant proof barrier to be constructed to restrict the movements into human habitation in order to avoid man-animal conflict.
9. Cattle immunization programmes at regular interval should be taken up in the forest fringe villages to prevent infection of wild animals.
10. Surveillance of poachers and smugglers should be kept and prompt action to be taken in case of casualty of wild animals.
11. Special protection measure to be taken for Satkosia Tiger Reserve:-

The Regional Chief Conservator of Forests-cum-Field Director, Satkosia Tiger Reserve, Angul has given guidelines for management practices in forest areas outside the Sanctuary and core area in Satkosia Tiger Reserve vide his Memo No.1681 dt.27.04.2015 with copy to Principal Chief Conservator of Forests, Odisha vide his next memo of even date. Further proposal has been submitted by Regional Chief Conservator of Forests-cum-Field Director, Satkosia Tiger Reserve, Angul regarding rationalization of the boundary of Satkosia Gorge Wild Life Sanctuary vide his Memo No.2348 dt.19.06.2015 wherein 48.03685 Sq.Km. area of Angul Forest Division has been proposed to be included in Satkosia Tiger Reserve. This comprises of entire Nuakheta R.F and part of Balanga RF of Raigoda Range.

11.2.14.37The NTFP overlapping working circle

3.6.1 This working circle is also an overlapping circle covering almost the entire plan area. As NTFP is the strength of poorer section of the society, the objective of this working circle is to educate them for proper collection, processing and marketing. Value addition through convergence will increase the income of the section. The total area under this overlapping working circle works out to be 69332.293 hectares

11.2.14.38Area allotted

All the forest blocks included in the Plan have been allotted to this overlapping working circle. The total area included in this working circle is 69332.293 ha. Since thisworking circle overlaps the entire plan area, the details of area allotment to this circle has not been furnished separately.

11.2.14.39Special objective of management

The Special objectives of management of this working circle are as follows:-

1. To regulate and optimize extraction and utilization of various NTFPs in conformity with Government policy with a view to promote sustainable management of forest.
2. To enhance the value of forest by way of developing new NTFPs, creating additional opportunities for further value addition in the existing NTFPs and strengthening the marketing.
3. To develop and extend skills to the local people including the Tribal's for sustainable collection, extraction and utilization of various NTFPs.
4. To develop biologically rich forests through in-situ as well as ex-situ conservation of NTFP plants/trees by adopting suitable silvicultural measures.
5. To create alternate employment / income generation by developing cottage industries by using the locally available NTFP items as input / raw materials.

11.2.14.40Achievement

i. NTFP species have been planted in VSS treatment area over an area of 1118.5 ha by the financial assistance of OFSDP which is in **Table no 11.20.**

Table no 11.20.

Name of the Range	Name of the forest block, RF/PRF/DPF	Management Unit	Area covered	Type of Plantation	No of seedling planted	Percentage of survival	Under the Scheme	Remarks
1	2	3	4	5	6	7	8	9
Chhendipada	Chhendipada RF	CDP-IV	12	NTFP	4800	50%	OFSDP	Swapneswar VSS
Chhendipada	Dangapal PRF	MDP-VII	10	NTFP	4000	7%	OFSDP	Vejidiha VSS
Chhendipada	Dangapal PRF	MDP-VII	10	NTFP	4000	22%	OFSDP	Bhaliasar VSS
Durgapur	Pathargarh PRF	PTG-I	5	NTFP	2000	58%	OFSDP	Kanjara-II VSS
Durgapur	Para PRF	PTG-IX	20	NTFP	8000	62%	OFSDP	Patharpunji VSS
Purunagarh	Badadandasahi RF	PNG- VII	12.5	NTFP	5000	56%	OFSDP	Badadandasahi VSS
Purunagarh	Chandanpur PRF	PNG- VI	10	NTFP	4000	58%	OFSDP	Saruali VSS
Purunagarh	Kalapat PRF	PNG- VIII	5	NTFP	2000	58%	OFSDP	Saradhapur VSS
Purunagarh	Kalapat PRF	PNG- VIII	5	NTFP	2000	59%	OFSDP	Pathargarh VSS
Purunagarh	Kalapat PRF	PNG- IX	10	NTFP	4000	57%	OFSDP	Gaudasahi VSS
Purunagarh	Kalapat PRF	PNG- X	15	NTFP	6000	60%	OFSDP	Baniasahi VSS
Purunagarh	Kulasinga PRF	PNG-III	5	NTFP	2000	58%	OFSDP	Sudasahi VSS
Purunagarh	Pokunda PRF	PNG-IV	15	NTFP	6000	79%	OFSDP	Pokunda Matiasahi VSS
Raigoda	Baragounia RF	PTG-VII	8	NTFP	3200	45%	OFSDP	Baragounia VSS
Raigoda	Nuakheta RF	NKT-IMP-III	10	NTFP	4000	95%	OFSDP	Nuakheta VSS
Chhendipada	Chhendipada RF	CDP-VII	1	NTFP	400	20%	OFSDP	Karadabahal VSS
Chhendipada	Dangapal PRF	MDP-VI	1	NTFP	400	12%	OFSDP	Khamar VSS
Chhendipada	Dangapal PRF	MDP-VII	4	NTFP	1600	60%	OFSDP	Bamanali Sarapal VSS
Chhendipada	Marudhipa PRF	MDP-IV	2	NTFP	800	25%	OFSDP	Nuagaon VSS
Chhendipada	Nunmati PRF	MDP-V	2	NTFP	800	60%	OFSDP	Jaripal VSS

Chhendipada	Nunmati PRF	MDP-V	3	NTFP	1200	55%	OFSDP	Nuagaon Telisahi VSS
Chhendipada	Nunmati PRF	MDP-V	3	NTFP	1200	55%	OFSDP	Nunmati VSS
Chhendipada	Kanloi RF	KNL-IMP-X	1	NTFP	400	35%	OFSDP	Karnapal VSS
Durgapur	Sudagulaswar PRF	DVN-X	5	NTFP	2000	55%	OFSDP	Balipatta VSS
Raigoda	Balanga RF	BLG-IMP-IV	15	NTFP	6000	75%	OFSDP	Madhupur VSS
Raigoda	Nuakheta RF	NKT-IMP-VIII	6	NTFP	2400	70%	OFSDP	Purunagarh VSS
Raigoda	Nuakheta RF	NKT-IMP-IX	15	NTFP	6000	55%	OFSDP	Nukhuripada VSS
Chhendipada	Chhendipada RF	CDP-IV	10	NTFP	4000	65%	OFSDP	Tentuloi Kodasahi VSS
Chhendipada	Chhendipada RF	CDP-IV	8	NTFP	3200	50%	OFSDP	Swapneswar VSS
Chhendipada	Chhendipada RF	CDP-IV	6	NTFP	2400	45%	OFSDP	Maa Bimala VSS
Chhendipada	Chhendipada RF	CDP-V	3	NTFP	1200	45%	OFSDP	Banadurga VSS
Chhendipada	Chhendipada RF	CDP-VI	4	NTFP	1600	58%	OFSDP	Ramachandi VSS
Chhendipada	Chhendipada RF	CDP-VI	6	NTFP	2400	45%	OFSDP	Hingula VSS
Chhendipada	Chhendipada RF	CDP-VII	8	NTFP	3200	65%	OFSDP	Karadabahal VSS
Chhendipada	Dangapal PRF	MDP-VI	5	NTFP	2000	70%	OFSDP	Dangapal VSS
Chhendipada	Dangapal PRF	MDP-VI	2	NTFP	800	55%	OFSDP	Khamar VSS
Chhendipada	Dangapal PRF	MDP-VII	3	NTFP	1200	46%	OFSDP	Bamanali Sarapal VSS
Chhendipada	Dangapal PRF	MDP-VII	6	NTFP	2400	65%	OFSDP	Bhaliasar VSS
Chhendipada	Dangapal PRF	MDP-VII	6	NTFP	2400	65%	OFSDP	Vejidiha VSS
Chhendipada	Durgapur RF	DGP-II	5	NTFP	2000	55%	OFSDP	Durgapur Tangirisahi VSS
Chhendipada	Durgapur RF	DGP-V	2	NTFP	800	75%	OFSDP	Sudarsanpur VSS
Chhendipada	Durgapur RF	DGP-VI	6	NTFP	2400	65%	OFSDP	Odakapa

								VSS
Chhendipada	Jeypur RF	CDP-I	5	NTFP	2000	65%	OFSDP	Kosala Dehurisahi VSS
Chhendipada	Jaltap RF	CDP-II	5	NTFP	2000	18%	OFSDP	Jaltap VSS
Chhendipada	Jaltap RF	CDP-II	16	NTFP	6400	60%	OFSDP	Takua VSS
Chhendipada	Kankurpal RF	MDP-IX	11	NTFP	4400	78%	OFSDP	S.Bandhamunda VSS
Chhendipada	Kankurpal RF	MDP-IX	9	NTFP	3600	55%	OFSDP	S.Mahisamardini VSS
Chhendipada	Kosala RF	CDP-VII	10	NTFP	4000	65%	OFSDP	Kosala Kansanali VSS
Chhendipada	Marudhipa PRF	MDP-IV	2	NTFP	800	75%	OFSDP	Nuagaon VSS
Chhendipada	Nunmati PRF	MDP-V	3	NTFP	1200	78%	OFSDP	Nunmati VSS
Chhendipada	Nunmati PRF	MDP-V	2	NTFP	800	55%	OFSDP	Nuagaon Telisahi VSS
Chhendipada	Nunmati PRF	MDP-V	2	NTFP	800	55%	OFSDP	Jaripal VSS
Chhendipada	Kanloi RF	DVN-I	2	NTFP	800	65%	OFSDP	Bhatapal VSS
Chhendipada	Kanloi RF	KNL-IMP-X	5	NTFP	2000	48%	OFSDP	Karnapal VSS
Durgapur	Antulia Tabada RF	ANT-IMP-IV	5	NTFP	2000	67%	OFSDP	Antulia VSS
Durgapur	Tabada PRF	ANT-IMP-VI	5	NTFP	2000	63%	OFSDP	Tabada VSS
Durgapur	Similipathar RF	SPT-IMP-IX	20	NTFP	8000	65%	OFSDP	Laxmidharpur VSS
Durgapur	Devinagar PRF	DVN-VII	10	NTFP	4000	63%	OFSDP	Machhakuta VSS
Durgapur	Devinagar PRF	DVN-VIII	2	NTFP	800	55%	OFSDP	Jamunali Handigoda VSS
Durgapur	Pathargarh PRF	PTG-I	23	NTFP	9200	62%	OFSDP	Kanjara-II VSS
Durgapur	Para PRF	PTG-VIII	12	NTFP	4800	63%	OFSDP	Para Khambeswari VSS
Durgapur	Para PRF	PTG-X	20	NTFP	8000	52%	OFSDP	Para Banadurga VSS
Durgapur	Para PRF	PTG-X	15	NTFP	6000	48%	OFSDP	Para Padhanpat VSS
Durgapur	Rodsinga PRF	PTG-VIII	3	NTFP	1200	57%	OFSDP	Rodasingha

								VSS
Kaniha	Nialu-Lodhajhari & Sapakata R.F	PLJ-IMP-X	20	NTFP	8000	72%	OFSDP	Attabira VSS
Kaniha	Arakhadahi R.F	KNH-VI	25	NTFP	10000	38%	OFSDP	Bhojpur VSS
Kaniha	Badakathia R.F	KNH-I	10	NTFP	4000	38%	OFSDP	Harichandanpur VSS
Kaniha	Badakathia R.F	KNH-I	20	NTFP	8000	40%	OFSDP	Badatribida VSS
Kaniha	Badakathia R.F	KNH-I	10	NTFP	4000	46%	OFSDP	Ramachandi Sanatribida VSS
Kaniha	Badakathia R.F	KNH-II	10	NTFP	4000	45%	OFSDP	Hingula , Sanatribida VSS
Kaniha	Badakathia R.F	KNH-III	10	NTFP	4000	47%	OFSDP	Mahasindhu VSS
Kaniha	Badakathia R.F	KNH-III	10	NTFP	4000	43%	OFSDP	Maa Hingula, Kumunda VSS
Kaniha	Badakathia R.F	KNH-III	8	NTFP	3200	39%	OFSDP	Jogeswar, Kumunda VSS
Kaniha	Badakathia R.F	KNH-III	15	NTFP	6000	42%	OFSDP	Mohanapada VSS
Kaniha	Badakathia R.F	KNH-IV	15	NTFP	6000	41%	OFSDP	Purunapani, Kumunda VSS
Kaniha	Badakathia R.F	KNH-IV	10	NTFP	4000	38%	OFSDP	Maradaharihharpur VSS
Kaniha	Biripal R.F	RGL-V	10	NTFP	4000	45%	OFSDP	Gengutia VSS
Kaniha	Biripal R.F	RGL-V	10	NTFP	4000	48%	OFSDP	Jharbeda VSS
Kaniha	Biripal R.F	RGL-V	15	NTFP	6000	52%	OFSDP	Podagada Purunasahi VSS
Kaniha	Biripal R.F	RGL-V	20	NTFP	8000	48%	OFSDP	Podagada Nuasahi VSS
Kaniha	Durgapur Danda R.F	KNH-VIII	25	NTFP	10000	40%	OFSDP	Chintamanipur VSS
Kaniha	Durgapur Danda R.F	KNH-VIII	20	NTFP	8000	39%	OFSDP	Burubahal VSS
Kaniha	Dalak Poipal	KNH-X	40	NTFP	16000	42%	OFSDP	Talapada

	Danda R.F							VSS
Kaniha	Dalak Poipal Danda R.F	KNH-X	20	NTFP	8000	41%	OFSDP	Poipal VSS
Kaniha	Godigotha R.F	RGL-I	15	NTFP	6000	45%	OFSDP	Khalpal VSS
Kaniha	Pattakhaman R.F	KNH-VII	20	NTFP	8000	41%	OFSDP	Tolakabeda VSS
Kaniha	Sadarkhol R.F	RGL-VII	30	NTFP	12000	38%	OFSDP	Olanda VSS
Kaniha	Sadarkhol R.F	RGl-VII	20	NTFP	8000	43%	OFSDP	Kuluma VSS
Kaniha	Sadarkhol R.F	RGl-VII	20	NTFP	8000	36%	OFSDP	Katrapali VSS
Kaniha	Sachi R.F	RGL-VI	5	NTFP	2000	41%	OFSDP	Kulabir VSS
Kaniha	Santrabandha R.F	KNH-V	25	NTFP	10000	51%	OFSDP	Santrabandha VSS
Kaniha	Saradhapur R.F	KNH-III	15	NTFP	6000	43%	OFSDP	Saradhapur VSS
Kaniha	Saleimada	RGL-III	20	NTFP	8000	45%	OFSDP	Hatiadanda VSS
Purunagarh	Kulasinga PRF	PNG-III	5	NTFP	2000	58%	OFSDP	Sudasahi VSS
Purunagarh	Kulasinga PRF	PNG-III	25	NTFP	10000	55%	OFSDP	Ramimunda Goudasahi VSS
Purunagarh	Kumanda Talataila RF	CDP-VIII	2	NTFP	800	57%	OFSDP	Kumanda VSS
Purunagarh	Kuio RF	CDP-X	4	NTFP	1600	59%	OFSDP	Kausitaila VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	59%	OFSDP	Chandrabahal VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	57%	OFSDP	Sabalabhanga VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	8000	54%	OFSDP	Saradhapur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	15	NTFP	37500	52%	OFSDP	Saradhapur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	2	NTFP	800	56%	OFSDP	Saradhapur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	53%	OFSDP	Saradhapur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	56%	OFSDP	Shyamsundarpur VSS
Purunagarh	Mandaragiri Kalima RF	PNG-I	5	NTFP	2000	54%	OFSDP	Tumuni VSS
Purunagarh	Pokunda PRF	PNG-IV	10	NTFP	4000	51%	OFSDP	Pokunda

								Matiasahi VSS
Purunagarh	Saharagoda RF	PNG-III	10	NTFP	4000	54%	OFSDP	Saharagoda VSS
Raigoda	Balanga RF	BLG-IMP-III	10	NTFP	4000	65%	OFSDP	Hidising VSS
Raigoda	Balanga RF	BLG-IMP-IV	10	NTFP	4000	75%	OFSDP	Madhupur VSS
Raigoda	Balanga RF	BLG-IMP-V	15	NTFP	6000	78%	OFSDP	Pokatunga Dehury Sahi
Raigoda	Nuakheta RF	NKT-IMP-VI	10	NTFP	4000	92%	OFSDP	Nuaheta II
Total			**1118.5**					

ii. Under planting of Satabari has been taken up over an area of 667.6ha under the financial assistance of OFSDP which is in **Table No. 11.21**

Table No. 11.21

No of VSS involved	**No. of sites**	**Target for 2014-15**		**Achievement**				**Under the Scheme**
		Area in Ha to be Planted	**No of Seedlings to be Planted**	**Area in Ha**	**No of seedlings Planted**	**Species Planted**	**Expenditure in Rs.**	
144	144	667.6	200280	667.6	200280	Satabari	1401960	OFSDP

iii. Capacity building of the VSS members & forest fringe dwellers has been done in identification of medicinal plants, NTFP species, non-destructive harvesting, processing, value addition & marketing.

iv. Workshops have been organized with local Baidyas and VSS members regarding uses and procedure for harvesting of medicinal plants in view of protection of NTFP species.

11.2.14.41Result /Analysis

Measures to be taken for sustainable harvest/management of NTFPs

It has good impact on the forest fringe dweller & VSS members as they have earned more from NTFP species. So they willingly participate in forest protection. The NTFP species available in Angul Division is given in table no. 3.16 & 3.17. It is observed that during the outgoing working plan there is an increase in the density of the forest cover in spite of destruction of the forest due to phyllin cyclone during 2013. Steps will be taken for conservative marking of the trees to avoid wider gap in crop canopy. Because of the regid fire protection measure which found to be adequate and regeneration of various species have established well. Further the protection mechanism adopted during the outgoing working plan has added to the growing stock. Surveillance has increased. plantation through various plantation module like ANR with Gap plantation, AR and even farm forestry plantation have resulted in increase of forest and tree cover in the Angul Division.

Around development of forest cover has increased the possibility of more and more production of various NTFP items. This will definitely full fill the requirement of poorest of the poor of rural folks especially the forest fringe villages. Their requirement and future dream has been assessed during various awareness meeting at the base level and monthly VSS meeting taken of by the Range staff in the VSS villages as well as in the general body meeting of the FDA Angul Division held on 25.03.2015. The production of the NTFP species have been assessed in the various ranges during the outgoing working plan period by the forest field staff by involving the local people and local institution. Presently collection of NTFP items like Siali leave, Siali fiber, Sal leave, Mahua flower, Tamarind etc. are going on the division on a substantial scale. Since 69 nos. of NTFP items are dealt with Gram panchayat in Odisha no collection figure are available with the forest department. There is a feeling that the villagers have not been benefited to the desire extent due to transfer of the MFP items to the gram panchayat. For sustainable harvest of MFP items prescription for closer of area for collection/extraction of particular forest produce for a specific period (closed area) barring collection for a certain period (closed season) and limits on quantity to ensure sustainable harvesting in future will be fixed. Further awareness among the primary collector of the forest fringe villages is to be created regarding sustainable harvest of various items of NTFP without harming the mother tree it self, Seeds of important species are to be in collected after they attain both physiological as well as physical maturity. More over at least 10 to 20 % of the seeds of the NTFP species are to be left on the tree its self for natural regeneration by various means. Further the technique of harvesting, storage as well as value addition aspect are to be attached more importance for fetching better price by primary collector. Federation of primary collection and their attachment with producer companies needs to be arranged for sustainable collection, sale and fetching better price by the forest fringe villages without involving middle man. This will definitely full fill the aspiration of the forest fringe villagers in improvement of their livelihood thereby giving rise to better growth stock as well as sustainable use of NTFP items and other forest produce obtained from the forest.

Table No. 11.22.

NTFP Species Recorded in the form of Tree, Shrub, Herb & Climber in Angul Division.

Sl. No.	**Local Name**	**Category**	**Form of plants**	**Botanical Name**	**Total Nos. in 100 nos. of Sample Plots.(10 Ha.)**	**No. of plants per Ha.**	**Percentage of Compositio n.**
1	Sal	♣	T	Shorea robusta	4130	413	1.55
2	Chara	♣	T	Buchnania lanzan	641	64.1	0.24
3	Suamanai	♣	C	Ichnocarpus frustescens	583	1166	4.36
4	Bhuinnem a	♣	H	Andrographis paniculata	562	7025	26.28
5	Asana	♣	T	Terminalia tomentosa	559	55.9	0.21

6	Dhaura	♣	T	Anogeissus latifolia	364	36.4	0.14
7	Mahula	♣	T	Madhuca indica	351	35.1	0.13
8	Bhalia	♣	T	Semecarpus anacardium	345	34.5	0.13
9	Kurein	♣	S	Holarrhena antidysenterica	332	664	2.48
10	Bahada	♣	T	Terminalia bellirica	315	31.5	0.12
11	Amla	♣	T	Emblica officinalis	278	27.8	0.10
12	Gohira	♣	T	Acacia leucophaloea	264	26.4	0.10
13	Anchu	♣	T	Morinda tinctoria	245	24.5	0.09
14	Dhatki	♣	S	Woodfordia fruticosa	237	474	1.77
15	kumbhi	♣	T	Careya arborea	228	22.8	0.09
16	Khaira	♣	T	Acacia catechu	220	22	0.08
17	Kendu	♣	T	Diospyros melanoxylon	215	21.5	0.08
18	Satabari	♣	C	Aparagus racemosus	206	412	1.54
19	Sirisa	♣	T	Albizia lebbek	182	18.2	0.07
20	Atundi	♣	C	Combretum roxburghii	172	344	1.29
21	Mai	♣	T	Lannea coromondelica	168	16.8	0.06
22	Muraphal	♣	S	Helicteres ixora	165	330	1.23
23	Sisoo	♣	T	Dalbergia sissoo	162	16.2	0.06
24	Patalgaruda	♣	S	Rauwolfia serpentina	148	296	1.11
25	Banakhajuri	♣	S	Phoenix acaulis	145	290	1.08
26	Harida	♣	T	Terminalia chebula	145	14.5	0.05
27	Ram Gua	♣	S	Biospyrs ferrea	145	290	1.08
28	Muthaghasa	♣	H	Cyperus rotundus	142	1775	6.64
29	Sunaragada	♣	S	Grewia helicterifolia	138	276	1.03
30	Rohini	♣	T	Soymida febrifuga	136	13.6	0.05
31	Gangasiuli	♣	S	Nyctanthes arbortristis	128	256	0.96
32	Sidha	♣	T	Lagerstroemia parviflora	125	12.5	0.05
33	Bana Tulasi	♣	H	Ocinum americanum	124	1550	5.80
34	Kantaikoli	♣	S	Zyzyphus oenoplia	123	246	0.92

35	Sunari	♣	T	Cassia fistula	120	12	0.04
36	Piasal	♣	T	Pterocarpus marsupium	115	11.5	0.04
37	Dubaghasa	♣	H	Synodon dactylon	93	1162.5	4.35
38	Ghurudu	♣	S	Gardenia gummifera	92	184	0.69
39	Baincha koli	♣	S	Flacourtia jangomos	85	170	0.64
40	Giliri	♣	S	Indigofere cassioides	85	170	0.64
41	Phanphana	♣	S	Oroxylon indicum	85	170	0.64
42	Phulachhanchuni	♣	H	Thysanolanena maxima	85	1062.5	3.97
43	Salaparni	♣	H	Desmodium gangetium	85	1062.5	3.97
44	Muturi	♣	C	Smilax ovalifolia	84	168	0.63
45	Bandhan	♣	T	Ougeinia oojeinensis	78	7.8	0.03
46	Pokasunga	♣	S	Pogostemon benghalense	74	148	0.55
47	Talmuli	♣	H	Elephantopus scabar	73	912.5	3.41
48	Panasi	♣	H	Eulaliopsis binapa	72	900	3.37
49	Chana	♣	H	Imperata arundinacea	69	862.5	3.23
50	Basanga	♣	S	Justicia adhatoda	67	134	0.50
51	Baghanakhi	♣	S	Martynia annua	65	130	0.49
52	Bhuiamla	♣	H	Phyllanthus niruri	63	787.5	2.95
53	Kusuma	♣	T	Schleichera oleasa	62	6.2	0.02
54	Bhalupadi	♣	S	Lantana Camara	58	116	0.43
55	Karada	♣	T	Cleistanthus collinus	57	5.7	0.02
56	Lai Palasa	♣	C	Butea superba	49	98	0.37
57	Kaincha	♣	C	Abrus precaporius	48	96	0.36
58	Mitkunia	♣	T	Mitragyna parvifolia	47	4.7	0.02
59	Siali	♣	C	Bauhinia vahlii	47	94	0.35
60	Khakada	♣	T	Homalium nepalense	45	4.5	0.02
61	Urguna	♣	S	Cycas circinalis	45	90	0.34
62	Pitalu	♣	C	Dioscorea bul bifera	43	86	0.32
63	Dantari	♣	C	Acacia sinuata	40	80	0.30
64	Guluchi	♣	H	Tinospora cordifolia	35	437.5	1.64
65	Jamu	♣	T	Syzygium cumini	35	3.5	0.01

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66	Kukurchatia	♣	S	Pavetta crassicaulis	35	70	0.26
67	Narguni	♣	S	Atalantia monopihylla	35	70	0.26
68	Palasa	♣	T	Butia monosperma	32	3.2	0.01
69	Mankada Kendu	♣	T	Diospyros embryopteris	31	3.1	0.01
70	Gila	♣	C	Entada phoseoloides	28	56	0.21
71	Badichang	♣	S	symphorema polyandrum	27	54	0.20
72	kochila	♣	T	Strychnos nuxvomica	27	2.7	0.01
73	Jhumpuri	♣	S	Streblus paxoibes	23	46	0.17
74	Simili	♣	T	Bombax ceiba	22	2.2	0.01
75	Tentuli	♣	T	Tamarindus indica	22	2.2	0.01
76	Baidanka	♣	C	Mucuna pruriens	17	34	0.13
77	Panialu	♣	C	Dioscorea oppositifolia	16	32	0.12
78	Akanabindu	♣	C	Cissampelos pareira	15	30	0.11
79	Banakunduri	♣	C	Trichosanthes cucumerina	15	30	0.11
80	Uturudi	♣	C	Pergularia daemia	15	30	0.11
81	Dhanwantary	♣	H	Symdotogon nartini	14	175	0.65
82	Salai	♣	T	Boswellia serrata	14	1.4	0.01
83	Bana Haladi	♣	H	Curcuma aromaica	12	150	0.56
84	Brahmi	♣	H	Bacopa monnieri	12	150	0.56
85	Guakoli	♣	S	Maba boxifolia	11	22	0.08
86	Ankaranti	♣	H	Solanm Surattense	10	125	0.47
87	Buduli	♣	C	Butea superba	10	20	0.07
88	Anantamula	♣	C	Hemibesnus indicus	8	16	0.06
89	Banamali	♣	S	Jasminum sambar	8	16	0.06
90	Khirkoli	♣	S	Manilkara hoxandra	8	16	0.06
91	Pingu	♣	C	Colastrustrus paniculata	8	16	0.06
92	Arakha	♣	S	Calotropis gigantia	5	10	0.04

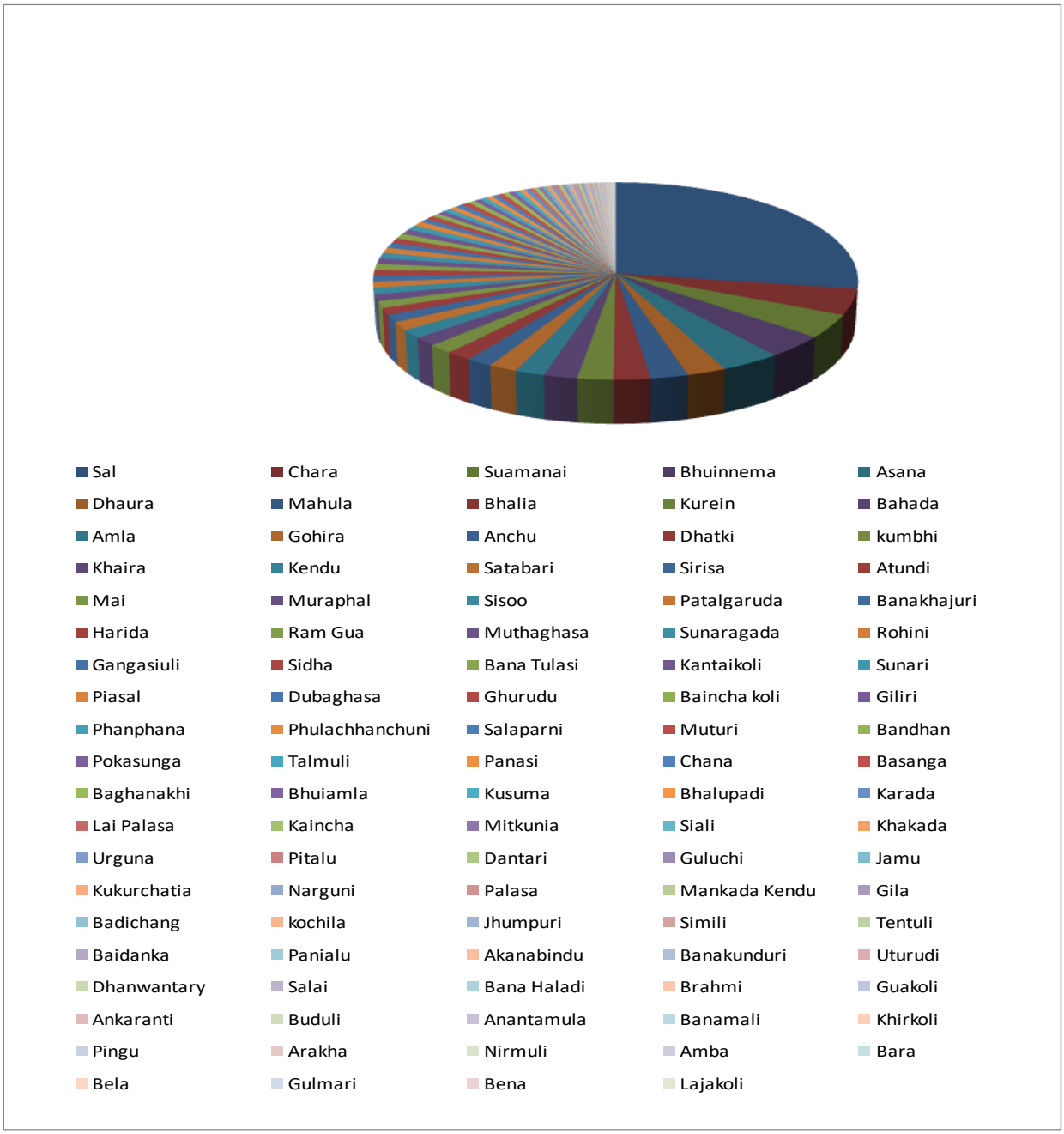
93	Nirmuli	♣	C	Cuscupa reflexa	5	10	0.04
94	Amba	♣	T	Mangifera indica	4	0.4	0.00
95	Bara	♣	T	Ficus bengalensis	4	0.4	0.00
96	Bela	♣	T	Aegle marmelos	4	0.4	0.00
97	Gulmari	♣	C	Gymnema sylvestre	4	8	0.03
98	Bena	♣	H	Vetiveria Zizaniodes	2	25	0.09
99	Lajakoli	♣	H	Mimosa pudica	2	25	0.09
Total					15029	26730	100.00

T - stands for NTFP Tree Species

S - stands for NTFP Shrub Species.

C - stands for NTFP Climber Species.

H - stands for NTFP Herbs Species.


Sal
Chara
Suamanai
Bhuinnema
Asana
Dhaura
Mahula
Bhalia
Kurein
Bahada
Amla
Gohira
Anchu
Dhatki
kumbhi
Khaira
Kendu
Satabari
Sirisa
Atundi
Mai
Muraphal
Sisoo
Patalgaruda
Banakhajuri
Harida
Ram Gua
Muthaghasa
Sunaragada
Rohini
Gangasiuli
Sidha
Bana Tulasi
Kantaikoli
Sunari
Piasal
Dubaghasa
Ghurudu
Baincha koli
Giliri
Phanphana
Phulachhanchuni
Salaparni
Muturi
Bandhan
Pokasunga
Talmuli
Panasi
Chana
Basanga
Baghanakhi
Bhuiamla
Kusuma
Bhalupadi
Karada
Lai Palasa
Kaincha
Mitkunia
Siali
Khakada
Urguna
Pitalu
Dantari
Guluchi
Jamu
Kukurchatia
Narguni
Palasa
Mankada Kendu
Gila
Badichang
kochila
Jhumpuri
Simili
Tentuli
Baidanka
Panialu
Akanabindu
Banakunduri
Uturudi
Dhanwantary
Salai
Bana Haladi
Brahmi
Guakoli
Ankaranti
Buduli
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Gulmari
Bena
Lajakoli

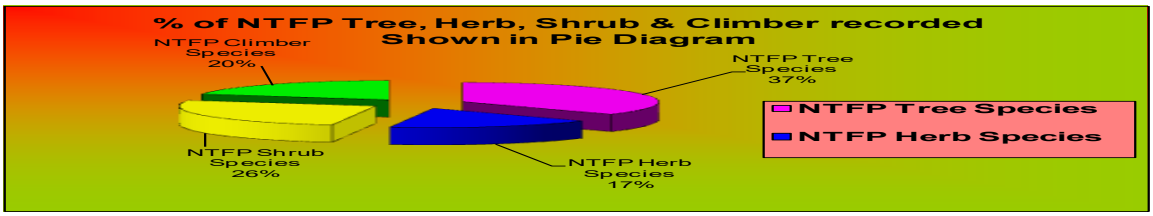
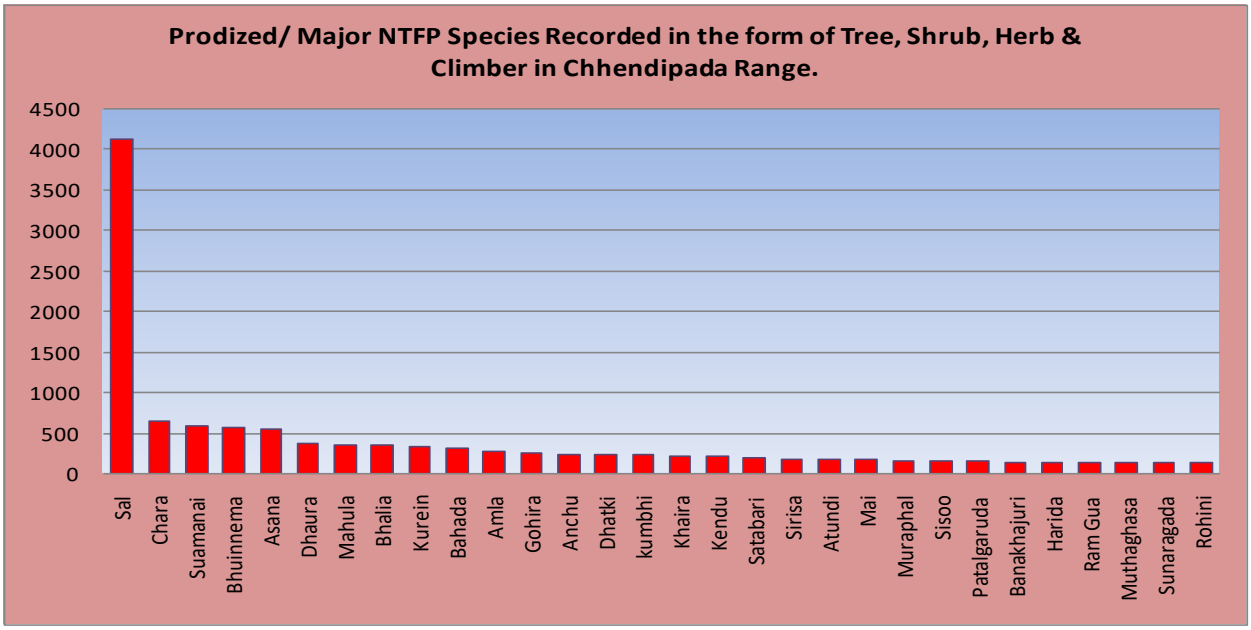

% of NTFP Tree, Herb, Shrub & Climber recorded
Shown in Pie Diagram
NTFP Climber Species 20%
NTFP Tree Species 37%
NTFP Shrub Species 26%
NTFP Herb Species 17%
NTFP Tree Species
NTFP Herb Species

Table No.11.23

Prioritizely Major NTFP Species Recorded in the form of Tree, Shrub, Herb & Climber in Angul Division

Sl. No.	Local Name	Category	Form of plants	Botanical Name	Total Nos. in 100 nos. of Sample Plots.(10 Ha.)	No. of plants per Ha.	Percentage of Composition.
1	Sal	♣	T	Shorea robusta	4130	413	1.55
2	Chara	♣	T	Buchnania lanzan	641	64.1	0.24
3	Suamanai	♣	C	Ichnocarpus frustescens	583	1166	4.36
4	Bhuinnema	♣	H	Andrographis paniculata	562	7025	26.28
5	Asana	♣	T	Terminalia tomentosa	559	55.9	0.21
6	Dhaura	♣	T	Anogeissus latifolia	364	36.4	0.14
7	Mahula	♣	T	Madhuca indica	351	35.1	0.13
8	Bhalia	♣	T	Semecarpus anacardium	345	34.5	0.13
9	Kurein	♣	S	Holarrhena antidysenterica	332	664	2.48
10	Bahada	♣	T	Terminalia bellirica	315	31.5	0.12
11	Amla	♣	T	Emblica officinalis	278	27.8	0.10
12	Gohira	♣	T	Acacia leucophaloea	264	26.4	0.10
13	Anchu	♣	T	Morinda tinctoria	245	24.5	0.09
14	Dhatki	♣	S	Woodfordia fruticosa	237	474	1.77
15	kumbhi	♣	T	Careya arborea	228	22.8	0.09
16	Khaira	♣	T	Acacia catechu	220	22	0.08
17	Kendu	♣	T	Diospyros melanoxylon	215	21.5	0.08
18	Satabari	♣	C	Aparagus racemosus	206	412	1.54

19	Sirisa	♣	T	Albizia lebbek	182	18.2	0.07
20	Atundi	♣	C	Combretum roxburghii	172	344	1.29
21	Mai	♣	T	Lannea coromondelica	168	16.8	0.06
22	Muraphal	♣	S	Helicteres ixora	165	330	1.23
23	Sisoo	♣	T	Dalbergia sissoo	162	16.2	0.06
24	Patalgaruda	♣	S	Rauwolfia serpentina	148	296	1.11
25	Banakhajuri	♣	S	Phoenix acaulis	145	290	1.08
26	Harida	♣	T	Terminalia chebula	145	14.5	0.05
27	Ram Gua	♣	S	Biospyrs ferrea	145	290	1.08
28	Muthaghasa	♣	H	Cyperus rotundus	142	1775	6.64
29	Sunaragada	♣	S	Grewia helicterifolia	138	276	1.03
30	Rohini	♣	T	Soymida febrifuga	136	13.6	0.05



VILLAGE/ HOUSEHOLD SURVEY ON NTFP COLLECTION /CONSUMPTION/ MARKETING

32 nos. of Forest fringe villages was identified for household survey on NTFP collection, consumption and marketing. All details of total no. of household, their category and socio economic statistics data were collected from in the concerned Anganwadi Center. Then 15% of household out of total H.H. of each village was selected from all categories of

house hold for NTFP survey. Accordingly household survey was carried out by the crews. The abstract of findings i.e. collection, consumption and marketing as below in a table no. 11.24.

Table. 11.24

No. of village surveyed	Total no. of household	No. of household surveyed	Name of the NTFP species	Quantity collected in Qtl	Quantity consumed in Qtl	Quantity sold in Qtl	Unit price in Rs.	Total Sale Value in Rs.	Remarks.
32	4768	720	Amla	89	18	71	2200/- per Qtl.	156200.00	
			Bahada	75	2	73	1500/- per Qtl.	109500.00	
			Bela	184	57	127	500/- per Qtl.	63500.00	
			Bhuineem	4.57	0.85	3.72	3000/- per Qtl.	11160.00	
			Char	5.50	2.50	3.00	1800/- per Qtl.	54000.00	
			Chhatu	285	125	160	12000/- per Qtl.	1920000.00	
			Jamu	22	5.75	16.25	3000/- per Qtl.	48750.00	
			Harida	15	2.5	13.5	3000/- per Qtl.	40500.00	
			Kendu	45	11	34	2000/- per Qtl.	68000.00	
			Mahula	3550	1220	2330	1500/- per Qtl.	3495000.00	
			Sal Leaf	8900 Bdl	1800 Bdl	7100	40/- per Bdl	284000.00	
			Siali leaf	320 Bdl	Nil	320 Bdl	60/- per bundle	19200.00	
			Satabari	1.20	.40	.80	4000/- per Qtl.	3200.00	
			Tula	575	575	Nil	2000/- qtl	1150000.00	
			TOTAL =					**7423010.00**	

NTFP Species available –99 Species.
NTFP Species Collecting – 14 items.
Earning NTFP collection per household – 10309 per house hold

DISCUSSION & RECOMMENDATION

The main objective is to encourage the natural regeneration in the forest blocks, supplement the existing crop artificially, preserve and nourish the same for better growth. Soil and Moisture Conservation measures should be taken up to increase the ground flora so as to the increase NTFP species. Site specific Silvicultural operation is proposed for the forest area for tending the NTFP species of both harvestable and regeneration crop.

Special attention should also be given for in the regenerated area as it is the greatest enemy for the newly recruited seedlings as well as established vegetation. A strict vigil should be kept to protect the regenerated area from fire hazard by providing watch & ward and fire. People shall be made aware not to put fire in the Forest; rather they will be motivated to extinguish the forest fire at the first sight.

Grazing shall be prohibited in the regenerated area and scope for stall feeding should be created to minimize grazing damage. The F.D staff should motivate co-operate the local people in this aspect. The primary gatherers are to be motivated to avoid pre-mature harvesting of NTFP produce and not to collect entire seed from the forest floor and allow some seeds to remain on ground for regeneration purpose. They should also be trained on proper collection, processing, packaging and marketing.

The local F.D staff should prevent distress sale of NTFP items, should create link with the G.P & ensure collection/ disposal as per the NTFP Rules 2002. The minimum procurement price should be given to the primary collectors by awareness creation through publicity in media like News paper & T.V

The forests of this Range are rich in various non-timber forest produce in the form of fruits, tubers, leaves, gums, flowers, seeds etc. But during household survey on NTFP, it was found that only 20 no of NTFP items are collected from the forest area by the primary collectors only on the indent of local traders. The primary collectors also lack in identification, use and marketing of different NTFP species. So attention is to be given for training and awareness creation among the forest fringe villagers for qualitative collection of NTFP items. Sufficient care should also be given for market linkage of the NTFP items. Arrangement should be done for interaction of the primary collectors with the local Baidyas on market demand. They should be supported fully by forest department till they become self dependant.

11.2.14.43The Protection over lapping circle

In the last plan the protection working circle was an over lapping working circle. It included the forest blocks of Angul Forest Division which are in various stages of degradation due to heavy illicit felling, quarry activities, mining operation, industrial operation, widening of road, urbanization, causing of forest fire, migration of population from rural area to urban area and need special attention and specific measures to tackle various issues on protection problem.

11.2.14.44Area allotted

Total area allotted to this circle is 69836.474ha

The total forest blocks of this division are included in this working circle. Out of which 26597.745ha of forest areas are under theft prone area. So special protection measures have been taken to check illicit felling, encroachment, illegal mining, poaching and forest fire.

Table No: 11.26 DETAILS OF PROTECTION UNITS AND THEIR CONSTITUTION

Unit Name	Range Name	Name of the Forest Block	Block Status	Extent/ Comptt.	Block Area Included (in ha)	Unit Area (in ha)
Krushnachakra	Purunagarh	Krushnachakra	PRF	1 to 5	2489.598	
		Sahargoda	RF	Whole	184.713	
		Bhogapal	RF	Whole	184.560	
		Mandargiri-Kalima	RF	Whole	606.995	
		Nandapur-Barhampur	RF	Whole	40.975	
		Bada-dandasahi	RF	Whole	284.431	
		Sorispal	RF	Whole	216.198	
		Guranga	RF	Whole	59.007	
		Nanda	RF	Whole	55.408	11629.048
		Madhapur	RF	Whole	221.793	
		Kurudu	PRF	1 & 2	712.221	
		Burti	PRF	1 to 7	3135.584	
		Kalapat	PRF	1 to 4	1214.712	
		Hinsar-Sorispal	PRF	Whole	763.359	
		Pokunda	PRF	Whole	371.416	
		Kulasinga	PRF	1 & 2	641.715	
		Chandanpur	PRF	Whole	446.364	
Bolong	Raigoda	Bolong	RF	1 to 10 & 13	3097.125	

		Nuakheta	RF	1 to 9	2917.849	
		Bargounia	RF	Whole	70.634	
		Bolong	PRF	Whole	53.522	6304.663
		Kanguloi	PRF	Whole	46.009	
		Talsira	DPF	Whole	49.564	
		Labangi	DPF	Whole	69.960	
Antulia	Durgapur	Katada	RF	1 to 7	3142.493	
		Antulia-Tabada	RF	1 to 10	2259.799	
		Pathargarh	PRF	1 to 4	1633.068	
		Dandasinga-Bhagatpur	PRF	Whole	221.380	8864.034
		Rodsinga	PRF	Whole	143.939	
		Para	PRF	Whole	1052.774	
		Tabada	PRF	Whole	210.581	
Grand Total (Three Protection Units)						26597.745

11.2.14.45 Special objective of management

1 To Keep delicate and eco-fragile area undisturbed
2 To check further depletion of forest resource.
3 To protect the forests from fire, grazing, illicit felling, encroachments, poaching and illegal mining.
4 To strengthen infrastructure and enhance the protection network of the division.

11.2.14.46Achievement

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, Special Budget under 101-Protection Working Circle, Education and Training and engagement of Para Forest staff and Protection squad.

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.

3 Two special protection squad has been deployed at Antulia area to check illicit felling and to protect flora and fauna in that area.

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 6799 no. of offence cases has been detected against 5126 numbers of offenders. Out of these, 195numbers of cases are sent to the court for trial on the outstanding performance of the staff during the present plan period 177 numbers of motorized vehicles are seized.

5 Deployment of three units of anti smuggling squad at the theft prone area of

- Karatapatta & Pokunda
- Labangi & Pampasar
- Antulia

6 Provided mobile phone to the staff posted in theft prone area

7 Seasonal fire watchers have been engaged in the fire prone area

8 Strengthening divisional level mobile unit

9 Capacity building of the VSS members for protection of forest from illicit felling, poaching and forest fire.

11.2.14.47 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 43 VSSs of this division in forest protection and co-operation with the staffs for protection.12 nos. of VSS have been awarded with Biju Pattnaik award for wildlife conservation at sub division level and Biju Pattnayak Award for Forest Protection and Conservation have been given to 3 nos. of VSS for best VSS in the state.

11.2.14.48 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 all Range specially to facilitate the staffs for instant action to the challenging problem of forest protection. A team of Rapid Action Force is also formed at Division level consisting of the Forester and Forest Guards and also trained personals. The Camp equipments, Fire arms, 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.

11.2.14.49 Forest Fire: -

In this Division, forest fire incidence are very less during the plan period. However some fire incidence occurred. 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. Some of the special

activities practiced in the Division such as during the plan period incentives are given to the VSS members for extinguishing fire. Special awareness campaign organized through banners and posters on fire and to educate people for controlled burning during the time of NTFP collection.

11.2.14.50 Forest boundary and pillar: -During the plan period the forest block boundaries are maintained over a length of 2059.77 km. and also 3377nos. of boundary pillars newly constructed 936nos pillars repaired 4228nos stone cairns are posted to maintain and protect the forest blocks. The detail is given in **Annexure -32.**

11.2.14.51 Result

1. Fire incidence minimized by creating public awareness and due deployment of forest fire fighting squad.
2. Illicit felling, poaching have been controlled by deployment of critical endangered squad and night patrolling in vulnerable theft prone area.
3. Regeneration comes after proper protection.
4. As observed in the field, Encroachment of forest land are mainly for homestead land due to rising population This problem is tackled to some extent by deploying protection squads to prevent further encroachments, but no steps have been taken for eviction of forest.
5. During last plan period effective steps have been taken to protect existing forest and wildlife by engaging various protection squads, sufficient manpower engaged by daily wage basis.
6. The boundaries of various Forest Blocks are poorly maintained due to various reasons including paucity of funds. During field verification, many of the boundary pillars were found missing.
7. Forest fire in this Angul Forest Division is not a major problem during the plan period. Incidence of Forest Fire is very less due to active and intensive protection activities.

11.2.14.52Suggestion for Future plan

1. All the forest blocks over an area of 69332.293ha is proposed for future plan
2. Public awareness shall be created among the forest fringe dwellers and VSS regarding protection of forest from fire incidence, illicit felling, poaching & grazing.
3. Deployment of fire fighting squad & critical endanger squad should continued & strengthen by supplying vehicle.
4. Networking system should be strengthening.
5. Informant should be rewarded.
6. The boundary lines of the forest blocks need to be verified .
7. 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 along with joint effort of police, revenue officials to prevent new encroachments.

8. 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.
9. 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.
10. 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.
11. The forest roads should be improved for transportation of forest produce, for supervision of forestry operation and to check smuggling, illicit felling and poaching.

11.2.14.53The Joint Forest Management overlapping working circle

This overlapping working circle overlaps mainly the Rehabilitation Working Circle. All the forest blocks which have been allotted to the Van Surakhya Samities for protection and management as per the JFM resolution 2011 of the State have been included in this working circle. Further all the notified Village forests have also been brought under this working circle. The forest under this overlapping circle will be managed through micro plans prepared by the village committees which will be in consonance with the prescriptions of the Working plan. This Working Circle aims at involving local community in management of forest and natural resources coupled with enjoying usufruct benefit from the assigned area. As the name denotes, the management of the forest has been entrusted jointly to both forest Department and local people. It is just like a management in partnership by govt. & public.

11.2.14.54Area allotted

Total area allotted to this working circle is 58794.57**.** The area allotted to this working circle will remain dynamic and is likely to increase as more and more degraded forest land is allotted to the VSS. The details regarding the constitution of Van Surakhya Samities (VSS) of the Division in appended in Annexure-30. The total numbers of VSS have been constituted in Angul forest Division is 341nos. The total area alloted to 341nos of VSS is 47766.767ha.In addition to this, area 91 Village Forests (raised through Social Forestry Project and notified under Orissa Village Forest Rule, 1985)) covering an area of 694 ha have been included in the plan. The area allotted in this circle is distributed over all the six ranges of the Division which are under the **Table no. 11.27**

Table No 11.27 POTENTIAL JFM AREA OF ANGUL DIVISION (Area in Ha.)			
RANGE	NAME OF THE BLOCK	GIS Area of the Block	Potential JFM Area
CHHENDIPADA	BAIHANALI RF	33.69	13.78
	BRAHMANABIL RF	203.108	91.11
	CHAKUNDAPAL DPF	178.821	101.61
	CHHENDIPADA RF	1852.968	1841.40
	DANGAPAL PRF	831.814	831.85
	DEBINAGAR PRF	1838.33	1399.67
	DURGAPUR RF	2945.682	2666.87
	JALTAP RF	444.978	291.14
	JAYAPUR RF	478.263	474.43
	KANKURUPAL RF	929.905	929.67
	KANLOI PRF	69.769	69.75
	KANLOI RF	2066.12	1376.87
	KHALAPAL RF	101.698	101.64
	KOSALA RF	319.127	189.70
	MARUDHIP PRF	1351.149	1351.14
	NUNAMATI PRF	440.62	440.53
	PUTUGADIA RF	68.159	58.55
	SIMILISAHI RF	307.1148	60.87
	SUNARIJHARAN PRF	450.817	391.68
CHHENDIPADA Total		14912.166	12682.26
DURGAPUR	ANTULIA-TABADA RF	2259.800	1550.80
	ARISULA-SULIA RF	142.044	142.06
	DANDASINGHABHAGATPUR PRF	221.38	186.05
	DEBINAGAR PRF	1364.60	948.67
	DURGAPUR PRF	56.305	56.29
	DURGAPUR RF	55.486	51.83
	KANDHAKURUDU RF	98.948	98.94
	KATARA RF	3142.494	2524.25
	PARHA PRF	1052.774	805.85
	PATHARGARH PRF	1633.067	1019.71
	PITACHERI PRF	60.853	59.89
	ROADSINGHA PRF	143.939	86.30
	SIMULIAPATHAR RF	2593.972	2483.07
	SODAGOLESWAR PRF	98.877	98.88
	TABADA PRF	210.582	144.24
DURGAPUR Total		13135.121	10256.82
KANIHA	ARAKHADIHA RF	679.496	675.58
	BANDHULI RF	65.361	50.29
	BADAKATHIA RF	1581.145	1438.27

	BHAN RF	63.214	63.22
	BIRIPAL RF	1239.34	1035.97
	BURIHA RF	116.725	116.74
	CHANDRAPADA RF	303.143	303.12
	DHANKUILI RF	694.667	590.91
	DURGAPUR DANDA RF	227.963	183.75
	GODIGOTHA RF	346.45	335.33
	GOHIRADANDA RF	29.755	13.92
	GUMPHA HILL RF	37.359	28.93
	JAGHANI RF	38.856	38.85
	KHAJURIA RF	136.076	108.14
	KIAJHAR RF	277.085	103.17
	KUKURKHAI RF	16.735	16.71
	MATHARUGUDI RF	45.855	45.89
	NIALU-LODHAJHARI-SAPKATA RF	1225.276	766.96
	PATAKHAMANA RF	438.412	314.11
	PEDI RF	392.464	319.77
	PITAL HILL RF	27.903	22.44
	POIPALDANDA (D RF	645.413	553.90
	RAMESWAR RF	84.033	64.41
	SACHI RF	97.13	97.14
	SADARKHOL RF	1077.441	1021.51
	SALIAMEDA RF	356.059	356.14
	SANTARABANDHA RF	172.556	151.16
	SARADHAPUR RF	113.778	113.80
	SILA SIKHANI RF	933.211	633.00
	TANGIRI RF	265.847	238.07
KANIHA Total		11718.784	9801.21
PURUNAGARH	BADADANDASAHI RF	284.431	284.38
	BHOGAPAL RF	184.56	184.57
	BURTI PRF	3135.584	2851.87
	CHANDANPUR PRF	446.364	444.98
	DERJANGAGOLABANDHA PRF	27.844	27.80
	DERJANGAGOLABANDHA RF	176.649	176.67
	DURGAPUR RF	684.439	670.04
	GURANGA RF	59.007	59.01
	HINSARASORISPAL PRF	763.359	400.39
	KALAPAT PRF	1214.713	827.47
	KALIAKATA RF	205.691	205.69
	KERJANG PRF	466.011	440.50

	KRUSHNACHAKRA PRF	2489.598	2060.46
	KUIO RF	534.329	534.31
	KUIO SAKASINGA RF	88.722	88.72
	KULASINGHA PRF	641.715	526.78
	KUMANDATALTAILA RF	38.779	38.81
	KURUDU PRF	712.221	536.55
	MADHAPUR RF	221.793	221.77
	MALIBRAHHMANI RF	150.391	150.36
	MANDARGIRIKALIMA RF	606.995	606.98
	NANDA RF	55.408	55.41
	NANDAPUR-BARHAMPUR RF	40.975	40.99
	NISHA RF	625.60	529.33
	PARANGA RF	222.077	222.07
	POKUNDA PRF	371.416	257.33
	SAHARAGORHA RF	184.713	184.70
	SORISHPAL RF	216.198	175.35
PURUNAGARH Total		14849.582	12803.30
RAIGODA	BALANGA PRF	53.522	53.51
	BALANGA RF	3097.126	2772.62
	BARAGAUNIA RF	70.634	42.98
	KANGULAI PRF	46.009	30.64
	LABANGI DPF	69.96	51.79
	NUAKHENTA RF	2917.85	2322.73
	TALASIRA DPF	49.564	49.49
RAIGODA Total		6304.665	5323.76
TALCHER	BAISNAB RUGUDI RF	62.77	62.74
	BALARAMPRASAD RF	51.421	51.42
	BULAJHAR RF	1948.152	1027.12
	DERA PRF	76.229	76.27
	GANTHIGARHIA DPF	109.245	109.21
	GENGUTIA RF	56.178	56.17
	GOPALPRASAD RF	154.057	154.05
	HIRAPUR RF	209.577	209.63
	KAHNEIJENA RF	1393.382	1393.39
	KANDHABERINE PRF	243.076	243.08
	KANDHAL RF	189.70	189.66
	KANTEIKOLIA RF	299.493	299.48
	KAUCHIAKHOL RF	549.995	549.96
	LONGOLIKHOLE RF	125.123	125.14
	MAKUNDANALI RF	66.153	66.18
	MALIBANDHA(NB) RF	293.076	293.02
	MANKARHCHUA RF	402.188	402.17

	PITACHIRAPATHU RF	289.763	289.77
	RABIPUR RF	1182.925	1182.78
	RAKAS RF	564.549	564.70
	SEEPUR RF	242.085	190.74
	SIBARAMPUR PRF	290.559	290.49
	SILLING RF	106.47	100.05
TALCHER Total		8906.166	7927.21
Grand Total		69836.484	58794.57
Source: NRSA, Hyderabad			

11.2.14.55 Special Objective of Management.

This overlapping working circle has been prescribed in the current working plan with special objectives as under:

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 degraded forest area through natural supplemented with artificial regeneration.
4. To increase the productivity of soil through suitable soil and moisture conservation activity.
5. To involve people in NTFP collection and trade.
6. To create income generating activities in the village protection the Forests, particularly based on non-forest resources.
7. 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. A sound amount 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.

11.2.14.56Achievement

1. 341nos of VSS have been formed and 40499.76ha of RF / PRF/ DPF have been assigned to them. Apart from this 7267.007ha of village forest have also been assigned to the VSS.
2. Out of 341nos VSS, 206nos VSS are included under OFSDP, 101nos VSS included in NAP & 10nos of VSS in support to VSS scheme.
3. It is found that 18.11 % of the plan area has been kept under this working circle and managed jointly with the help of VSS. In this partnership arrangement, the main task of protection is almost done by the village community. It has brought an attitudinal change in the local community for rendering effective protection leading to increase in forest cover of this Division as revealed from the State of Forest Report published by Govt. of India. Further, rational use of the forest produce keeping pace with availability in the local forest is gradually inculcating in the minds of local people. The protection of the forest from the fire is also another achievement of this working Circle. Though the capacity building of this village level institution has been started, but it will take some time to consolidate. However, the performance of this working circle is encouraging and satisfactory.

11.2.14.57 Results of consultation with VSS members- The Angul Forest Division is a pioneer in assigning forest area to village forest protection committee for forest protection and regeneration of degraded forest areas by involvement of local people. Till date as many as 341VSS have been constituted up to end of the out going plan period involving assignment of area 47766.767ha of forest land to various VSS. JFM has attained the level of revolution in Angul forest Division because of appropriate involvement of the local inhabitant in the forest protection and regeneration process through the funds received from FDA as well as OFSDP during the outgoing plan period. The forest area of Angul Forest District has increased which is evident from the latest 2013 FSI assesment through satelite imagery. This is a boon for an industrial district like Angul where appreciable forest areas have been diverted for non forestry work in favour of various companies for coal mines and various industries in the districts through FC Act, 1980. The present status of forest regeneration has been assessed even at VSS level in as much as 206 nos. of VSS taken up under OFSDP project. Incresing in qualitative forest area through VSS has side by side increase the aspiration of the villagers who are dependent on the MFP products obtaining from the forest areas. The aspiraiton of the members of the VSS have been assessed at various level during various awereness meetings under taken at village level during general body meeting of VSS and division level FDA meeting chaired by the RCCF, Angul Circle as was done on 25.03.2015. The quality of the protection measure taken by the VSS and plantations taken up in the VSS area to regenerate the degraded forest land in the asigned area is highly commendable.

VSS like Madanmohan patna, Talapada and Poktunga Dehury Sahi have been evaluted as the best VSS of the state and have been honoured by the Hon'ble Chief Ministrer of Odisha and other dignitories during the year 2009, 2011 and 2013 respectively. Their work and involvement have been praised by other visitors from outside state like forest officials of UP State, PCCF Arunachal pradesh, PCCF Utarakhanda, CCF Himanchalpradash, visiters from Japan as well as deligates from Ethiopia. All the VSS members are enthustastic and so the survey lands have increased. Incidence of the forest fire decreased as a result increse in the forest cover qualitatively and quantitatively which is evident from FSI report 2013. From the delibration made with VSS members it has been realised that they expected more Entry Point Activities in their villages in the shape of the road, school building, community centre etc. Presently they are enjoying usufructory benefits which are accruing them as per the JFM resolution 2011. 100% of the intermidiate yield and 50% of the final harvest is being enjoyed by them. In certain villages inter and intra conflits are arrising for distribution of usufactory benefits as the demand exceeds supply. Therefore there is a need to supply alternative source of firewood and timber insuch villages to reduce their dependancy in the forest. Further in angul division since many villages are affected due to elephant depredation during the month from August to January and in even some places thorugh out the year. There is demand for erection of elephant proof trench or solar fencing around their villages, which can be accomendated to some extent. Fulfilling the minimum requirements of the local people through alternative means will be a further mile stone for protection and devlepment of our forest during the coming days.

11.2.14.58 Result

1. There is an increase of 35 Sq Km of forest cover in the District due to contribution of JFMC.
2. There is rise in water table, canopy density of forests, scrub forest have been developed to sapling stage.
3. The JFMC have become self sufficient in fuel wood, bamboo and small timber.
4. Capacity of JFMC has been built up to manage their own forest. Dependency on forest has been reduced.

11.2.14.59 Suggestion for future plan

In 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.

All said and done 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 plenty forest area, there is no alternative expect resorting to joint forest management. More ever, 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 continues 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

i. Boundary demarcation and pillar posting of the JFMC area should be done to reduce inter VSS conflict. More no of JFMC may be constituted to protect more forest area.
ii. Extension of tree cover outside the forest may be taken up through Farm forestry.

11.3 Special works ofimprovement undertaken

Summary and results of works such as fire-protection

An action plan is prepared after analyzing and discussing with the Forest staffs from Range Officer to Forest Guard and representatives of VSS regarding occurrence of fire its intensity/ frequency and its prevention. Accordingly a fire map is prepared by taking the fire incidence occurred during last three year and range wise map is prepared to study the fire frequency / intensity to decide fire combat method. Before fire season the forest roads, foot path, approach roots to the vulnerable forest areas is maintained and fire line created using blower. Selected youths engaged as fire fighting squads and station at high risk fire prone area providing fire fighting equipment with vehicle headed by a trained forester/ forest guard.

A nodal cell in Division office has been created headed by ACF (Affn.), Jr. Clerk, Miscellaneous Selection, DEO and Control room staff who will pick up the fire points communicated by FSI through their register mobile with FSI portal and same will be transmitted to the Nodal Cell constituted at Range level to combat the fire and report feedback. The Division office has also created imagery form of fire points in topo sheets which will be sent to Range Level so that staff in the field can easily access to the fire point to extinguish the fire.

A fire team constituted at Range level headed by the concerned Range Officer, Foresters and DEO. On received of fire occurrence from the control room immediately communicate to the field for quick action.

11.4 Past yield, revenue andexpenditure

The details of revenue & expenditure from 2005-06 to 2017-18 in Angul Forest Division are given in Table No: - 11.28.

Table No. 11.28

Year	Revenue (Rs.	Expenditure (Rs.)	Surplus or deficit
2005-06	10785165	24860930	-14075765
2006-07	1288195	26745825	-25457630
2007-08	1776861	31398958	-29622097
2008-09	6124199	40840429	-34716230
2009-10	1580643	52075227	-50494584
2010-11	10872265	51398432	-40526167
2011-12	2918624	57833590	-54914966
2012-13	2146636	67803122	-65656486
2013-14	2315027	81635885	-79320858
2014-15	4314136	93879853	-89565717
2015-16	3029233	95112827	-92083594
2016-17	4610906	108840611	-104229705
2017-18	882137	93414850	-92532713

11.5 MANAGEMENT UNDER ANNUAL SCHEMES.

After expired of the approved plan (2007-08 to 2016-17) the annual working schemes from 2017-18 to 2020-21 has ben approved to undertake various activities in the forest. The year wise target and achievement in the said period is furnished below in Table 11.29.

Table No. 11.29 Target & Achievement under approve Annual Working Scheme (area in ha.

Name Of the Working Circle	Financial Year					
	2018-19		2019-20		2020-21	
	Target (in ha.)	Achievment (in ha.)	Target (in ha.)	Achievment (in ha.)	Target (in ha.)	Achievment (in ha.)
Improvement WC	2497.608	0	2678.551	0	2695.704	Work under progress
Rehabilitation WC	4375.586	1606.25	4224.171	1586	4660.002	
Plantation WC	1050	35	0	10	0	
Bamboo (Overlapping) WC	2996.457	0	1038.987	0	1391.928	

CHAPTER - 12

12 STATISTICS OF GROWTH AND YIELD

12.1 Statistics of Forest Carbon Stock

WPO has to assess the availability of volume/ yield tables for the maintimber species, which have been prescribed for felling in variousworking circles for calculation of outturn/yield. If such tables are notavailable, then the possibility of stem and stump analysis for suchspecies may be examined and implemented if possible for preparationof local volume table. In case, this is also not feasible, then nondestructivemethod for preparation of local volume may be adopted.Help of research institutes may be undertaken, if necessary. Sitequality wise local volume table must be developed and applied.

12.1 FOREST CARBON STOCK

Globally, forest Carbon sequestration is recognized as cost effective and efficient option to address the issues of climate change. Hence, the Reducing Emission from Deforestation and Forest Degradation (REDD+) mechanism has been objectively functioning for this. The main priority of selection of REDD+ project is having large continuous block of forests and damaged due to deforestation and forest degradation (Skutsch & Van Laake 2009). The carbon sequestration refers to the capture or removal of carbon dioxide (CO2) from the atmosphere and stores it in tree biomass (Jindal *etal.* 2008). As carbon sequestration importantly addresses the issue of climate change (Torres *et al.* 2013), it has a global concern under the reward policy (Muradian *et al.* 2012) of Reducing Emission from Deforestation and Forest Degradation (REDD+) mechanism (Skutsch & Van Laake 2009). In fact, the live and dead trees store 60 % of
the carbon in forest ecosystems. The avoided deforestation and forest degradation could globally generate worth of 1 - 4 billion t CO2 potential (Mackey *et al*. 2013). Moreover, it could be doubled through afforestation, reforestation and sustainable forest management. In addition, the forests endow with natural insurance against many threats specifically drought, flood, and vector-borne diseases (Metsaranta *et al.* 2010). These risks could be exacerbated by climate change but keeping forests intact or expanding forest can contribute to mitigate and adapt against
these risks (Murray *et al.* 2009). Forest areas have been decreasing because of human disturbances and the consequences are release of CO2 emission to the atmosphere. Indeed, forest area of a football ground size is converted into other land in every two seconds around the world. From 1750 to 2011, CO2 emissions from fossil fuel combustion and cement production have released 365 (335 to 395) Gt C to the atmosphere, while deforestation and other land use change are estimated to have released 180 (100 to 260) Gt C. This results in cumulative anthropogenic emissions of 545 (460 to 630) Gt C (IPCC 2013). In contrast, forest conservation, sustainable forest management, and forest enhancement can reduce the CO2 emission and that would be rewarded under REDD+ mechanism.

Global carbon is held in a variety of different stocks. Natural stocks include oceans, fossil fuel deposits, the terrestrial system and the atmosphere. In the terrestrial system carbon is sequestered in rocks and sediments, in swamps, wetlands and forests, and in the soils of forests, grasslands and agriculture. About two-thirds of the globe's terrestrial carbon, exclusive of that sequestered in rocks and sediments, is sequestered in the standing forests, forest under-storey plants, leaf and forest debris, and in forest soils. In addition, there are some non-natural stocks. For example, long-lived wood products and waste dumps constitute a separate human-created carbon stock. Given increased global timber harvests and

manufactured wood products over the past several decades, these carbon stocks are likely increasing as the carbon sequestered in long-lived wood products and waste dumps is probably expanding. A stock that is taking-up carbon is called a "sink" and one that is releasing carbon is called a "source." Shifts or flows of carbon over time from one stock to another, for example, from the atmosphere to the forest, are viewed as carbon "fluxes." Over time, carbon may be transferred from one stock to another. Fossil fuel burning, for example, shifts carbon from fossil fuel deposits to the atmospheric stock. Physical processes also gradually convert some atmospheric carbon into the ocean stock. Biological growth involves the shifting of carbon from one stock to another. Plants fix atmospheric carbon in cell tissues as they grow, thereby transforming carbon from the atmosphere to the biotic system. The amount of carbon stored in any stock may be large, even as the changes in that stock, fluxes, are small or zero. An old-growth forest, which is experiencing little net growth, would have this property. Also, the stock may be small while the fluxes may be significant. Young fast-growing forests tend to be of this type. The potential for agricultural crops and grasses to act as a sink and sequester carbon appears to be limited, due to their short life and limited biomass accumulations. Their role for human management of carbon could increase as we learn more about their potential.

A sink is defined as a process or an activity that removes greenhouse gases from the atmosphere. Carbon sequestration is the extraction of the atmospheric carbon dioxide and its storage in terrestrial ecosystems for a very long period of time - many thousands of years. Forests offer some potential to be managed as a sink, that is, to promote net carbon sequestration. Terrestrially, carbon is stored in vegetation and in the soil. Plants store carbon for as long as they live, in terms of live biomass. Once they die, the biomass becomes a part of the food chain and eventually enters the soil as soil carbon. If the biomass is incinerated, the carbon is reemitted into the atmosphere and is free to move in the carbon cycle. The role of forests in carbon sequestration is probably best understood and appears to offer the greatest near-term potential for human management as a sink. Unlike many plants and most crops, which have short lives or release much of their carbon at the end of each season, forest biomass accumulates carbon over decades and centuries. Furthermore, carbon accumulation potential in forests is large enough that forests offer the possibility of sequestering significant amounts of additional carbon in relatively short periods – decades. Fortuitously, forests managed for timber, wildlife or recreation sequesters carbon as a by-product. Forests may also be managed strictly to sequester carbon. Such a focus on biomass accumulation could provide a somewhat reduced amount of other forest ecosystem services such as biodiversity. However, if forests managed for carbon sequestration are allowed to mature and remain un harvested, one of the long-term effects may be enhanced biodiversity.

There are four components of carbon storage in a forest ecosystem. These are trees, plants growing on the forest floor (under-storey material), detritus such as leaf litter and other decaying matter on the forest floor, and forest soils. Carbon is sequestered in the process of plant growth as carbon is captured in plant cell formation and oxygen is released. As the forest biomass experiences growth, the carbon held captive in the forest stock increases. Simultaneously, plants grow on the forest floor also add to this carbon store. Over time, branches, leaves and other materials fall to the forest floor and may store carbon until they decompose. Additionally, forest soils may sequester some of the decomposing plant litter through root/soil interactions. Forest transitions from one ecological condition to another will produce substantial carbon flows – forests can be a carbon source or a sink. It is important to carefully assess exactly what is happening to the carbon as the forest changes to determine the forest's sink/source contribution. Net forest carbon may be released, thereby making the forest a source, due to biomass reductions from fire, tree decomposition, or logging, any of

which will reduce the forest biomass. In the case of decomposition or fire, forest carbon is released into the atmosphere. However, the forest may again become a carbon sink as it is restored through forest re growth.

Kumar, M., 2011 has cited that "The global forests cover is 3870m. Hectare according to Global Forest Resource Assessment 2000, and contain a total standing volume of 386 billion m3 of wood. In terms of mass of the woody vegetation the stock is estimated at 422 billion tonnes dry matter in the above ground biomass including stems, branches, tops and foliage (Anon, 2001). The average standing stock is thus estimated at 10.9 kg per m^2 in terms of dry biomass and 5.45 kg per m^2 in terms of carbon (Kauppi, 2003)." The Stockholm Convention, 1972 may be taken as the first significant international convention to discuss the global environmental situation. The second major international conference at Rio de Janeiro, Brazil in 1992, Agenda-21 programme of Actions were declared. The last global summit at Paris, 2017 an agreement on climate change lays out commitments for nations to limit their greenhouse-gas emissions and contain the impact of global warming. Though all the plant species having photosynthesis absorb a part of carbon from the atmosphere, trees are considered as the largest individual carbon sinks. Theoretically, the carbon absorbing capacity is high in the initial stages of plant growth because metabolism is comparatively high. One half of a tree's dry weight is carbon (Nowak, 1994). Kumar M. has stated that "Thus carbon storage is directly related to size. Annual carbon sequestration is related to tree size and growth rates." According to the India State of Forest Report, 2017 total carbon stock in forests of India in 2017 is 7082 million tonnes. It has also reported that the annual increase in carbon stock is 19 million tonnes.

12.2 Methodology

For measurement of carbon stock especially the five types of carbon pools were taken for measurement of carbon stock such as-

a. Aboveground biomass: All living biomass above the soil including stem, stump, branches, bark, seeds, and foliage.
b. Belowground biomass: All living biomass of live roots. Fine roots of less than 2 mm diameter (suggested) are sometimes excluded because these often cannot be distinguished empirically from soil organic matter or litter.
c. Dead wood: All non-living woody biomass not contained in the litter, either standing, lying on the ground or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm.
d. Litter: All non-living biomass with a diameter less than a minimum lying dead or in various states of decomposition above the mineral or organic soil. This includes the litter, fumic and humic layers. As litter and dry leafs loss due to fire and other factors in every year it is not taken into consideration. This estimate did not take into account which could be decomposed/ Destroyed within same year/ grasses/ leave litters etc.)
e. Soil organic carbon: Organic carbon in mineral and organic soils (including peat) to a specified. Live fine roots (of less than the suggested diameter limit for belowground biomass) are included with soil organic matter where they cannot be distinguished from it empirically.

12.3Biomass carbon stock assessment

A) Tree biomass

. The volume of of Growing Stock estimated by multiplying forest area with average volume per ha. The estimated volume of each tree was multiplied by its wood density to derive the bole biomass. Further the bole biomass was multiplied by the biomass expansion factor i.e. 1.5 to derive individual tree aboveground biomass (Haripriya 2000). Aboveground biomass was used to calculate the Belowground Biomass by multiplying the value of aboveground biomass with the constant factor 0.26 (IPCC 2006). Aboveground biomass and belowground biomass were added to get the individual total tree biomass. The carbon content for a particular tree or species was calculated by multiplying the individual tree total biomass with the conversion factor 0.47 (IPCC 2006). The assessment of whole carbon stock for all the tree biomass is calculated as follows--

- ✓ The **growing stock density (GSVD)** is estimated using Mean Volume per ha of the division multiplied with the forest area in ha.
- ✓ The estimated **GSVD** is then converted into **above ground biomass density (AGBD)** of tree components, which was calculated by multiplying GSVD of the tree species by wood density i.e 0.78 and appropriate **biomass expansion factors** (**BEF**) (Brown et al., 1999): **AGBD = GSVD * WOOD DENSITY * BEF**
- ✓ BGBD (below ground biomass density) is estimated for different tree species as follows: **BGBD = AGBD * 0.26**
- ✓ **DWB (**Dry Wood Biomass) are estimated by factor i.e. 0.11 as per IPCC default factor for tropical forest multiplying with sum of AGBD(Above Ground Biomass Density and Below Ground Biomass density; **DWB = 0.11 * (AGB+BGB)**
- ✓ **AGB** (above ground biomass),**BGB and DWB** are added to get the **total tree biomass** (TTB): **AGB + BGB+DWB = TTB**
- ✓ The total C density (TCD) or Total Tree Carbon Content was computed using the following formula (IPCC 2006): **TCC = TTB x (1 + RS) * (0.47)** , where RS = Root : Shoot Ratio (0.24)

B) Soil biomass

To reduce variability, soil samples are extracted from three to five random places in each plot and mixed together to form a composite sample. These samples are dried, sieved (through 2 mm stainless steel sieve) and stored further in the labelled bags and brought back by quarter disposal manner for further analysis. **Walkley - Black acid digestion method** (Walkley and Black, 1934; Nelson and Sommers, 1996) is the most commonly used method for determination of organic carbon in soil. The soil was tested in the **Laboratory of Soil Science, Orissa University of Agriculture and Technology (OUAT), Bhubaneswar** for detailed analysis of organic carbon content and its bulk density.

$$\text{SOCD (Mg ha-1)} = \frac{\text{SOC (\%)} \times \text{CBD (Mg m}^{-3}) \times \text{layer depth(m)} \times 10^4 (\text{m}^2\text{ha}^{-1})}{100}$$

Where,

SOCD = Soil Organic Carbon Density i.e 1.48 as per report

CBD = Corrected Bulk Density i.e. 1.33

Layer depth taken 0.15 metre

Total SOC stock = SOC density (Mg ha^{-1}) × forest area (ha).

The total carbon stock for a particular sample plot is calculated by summing up the all biomasses and their carbon contents as follows-

Carbon Stock = Tree Carbon Content + Total Soil Carbon Content

Forest Category By Canopy Density	Area in Ha.	Mean Volume per Ha	Total Growing Stock in cubic meter	Above Ground Biomass	Below Ground Biomass	Dry Wood Biomass	Total Tree Biomass	Total Tree Carbon Content	Soil Organic Carbon Content	Total Carbon Stock in Tons
>70 %	4607.87	49.82	229564	268590	69833	37227	375650	218929	272095	491024
40-70 %	25508.02	49.82	1270810	1486847	386580	206077	2079504	1211935	1506249	2718184
10-40%	22242.06	49.82	1108099	1296476	337084	179692	1813252	1056763	1313394	2370157
<10 %	18317.48	47.56	871179	1019280	265013	141272	1425565	830819	1081647	1912466
	70675.43		**3479652**	**4071193**	**1058510**	**564267**	**5693971**	**3318446**	**4173384**	**7491830**

As per the calculated total carbon stock for Angul Forest Division is about 106 tons/ha.

12.4Quantification of Carbon dioxide

Carbon dioxide used was calculated on the basis of formula used by Ajay Kumar & Singh, 2003: Quantum of carbon dioxide = Quantum of carbon * 44 / 12 Where 44 is the molecular weight of CO2 & atomic weight of carbon is 12.

Methodology-I

Quantification of Carbon dioxide is = 106 t / ha * 44/12

= 106 * 3.7 = 392.2 tonnes CO2/ hectare

= 392.2 tonnes of Carbon dioxide

The value of sequestered carbon per hectare plantation worked out to be (Kumar M. 2011):

392.2 t / ha * $ 40 = $ 15688 * 71.175 = INR 1,116,593.4 / per hectare. So valuation of sequestered carbon / ha / yr = INR INR 1,116,593.4

Annual Carbon Sequestration:

From various data available:

Name of Species	Growth in (10-20 year) in cum					Annual increment predicted	Remark.
	10-20 Yr	20-30 Yr	30-40 Yr	40-50 Yr	50-60 Yr		
Sal	0.027714	0.1157	0.1183	0.23996	0.51652	0.020364	AVERAGE annual increment **0.031739** cum per stem/tree
Bija	0.025343	0.21759	0.21789	0.41003	0.49323	0.027282	
Asan	0.00851	0.16933	0.17529	0.28205	0.29609	0.018625	
Arjun	0.04717	0.28509	0.29818	0.4254	1.05041	0.042125	
Dhaura	0.04064	0.25982	0.20837	0.34621	0.94043	0.035909	
Teak	0.04663	0.12973	0.46868	0.74902	0.91239	0.046129	

The number of stems estimated to be 1,24,02,593 numbers as details below or sat 1.24 Crore stems.

Forest Category By Canopy Density	Area in Ha.	Total Number of Stems	Average Annual Increment in Cum	Total Annual Increment	Total Wood Content	Remark	Total Carbon Sequestration	Total Carbon Dioxide sequestration in Tons
>70 %	4607.87	784354	0.031739	24895	19916	Taking 20% more tham MDF	7767	28738
40-70 %	25508.02	5354692	0.031739	169953	135962		53025	196193
10-40%	22242.06	4710291	0.031739	149500	119600		46644	172583
<10 %	18317.48	1553255	0.031739	49299	39439		15381	56910
	70675.43	**1240259 3**		**39364 6**	**31491 7**		**122818**	**454425**

The total wood increment in entire forest of Angul Forest Division is about 314917 ton. This is equivalent to sequestration of 122818 ton carbon (1 Ton of wood equivalent to 0.39 Ton of Carbon & 1 Ton of carbon equivalent to 3.7 ton of carbon dioxide).

CHAPTER - I

FUTURE MANAGEMENT

1. Basic of proposals

1.1 Objectives of Management

The object of management adopted in this Plan is in conformity with the National Forest Policy 1988. The general objects of this Plan are as follows:

(i) ***Dynamics of forests and stands :*** - To give emphasis on conservation and protection of flora and fauna in its natural condition, genetic resource and diversity with least interference in the wildlife habitat, catchments of rivers, steep hill slopes with an aim to prevent further degradation of environment.

(ii) ***Forests and Soil:*** - To improve density and quality of forests, to arrest soil erosion, soil moisture and soil fertility.

(iii) ***Forests and Water:*** - To rehabilitate and enrich degraded forests, restock blank & barren lands by adopting appropriate silvicultural techniques, to increase ground water level and perianal flow of natural nalahs.

(iv) ***Forest Biodiversity:*** To take steps for biodiversity conservation and protection of traditional knowledge of the rural and tribal people.

(v) ***Climate and Forests:*** -To manage forests in such a manner to meet the challenges of climate change such as reducing, green house gas (GHG) e-mission, enhancing carbon sequestration capacity of the forest.

(vi) ***Socioeconomic considerations and generation of forest based employment opportunities and livelihood options:*** - To cater the needs of forest dwellers, rural population, urban population and industries in descending order. As there is no alternate resource of forest produce much emphasis to be given NTFP for sustainable harvest.

(i) ***Tool for integrated development:*** To involved VSS and management of forest in JFM mode. To provide income generation activities (IGA), to the villagers of the fringe villages to increase their income. To provide them alternate and economic fuel resource to reduce pressure of firewood on forest.

1.2 Methods of Treatment

1.2.1 The prescriptions in the outgoing plan were with objectives similar to the ones set in the present revision. But, for various reasons most of these prescriptions could not be carried out during the last plan period and hence results are difficult to analyse. The productivity of forest of the divisions has been reduced due to lack of proper and timely silvicultural operations, particularly with regard to bamboo and NTFP items. Hence, the forests have in general degraded during the outgoing plan period though at many places, crop condition has shown improvement mainly because of active participation of local people during the intervening period. This indicates the necessity to ensure the protection and improvement of forests through the active participation of the people as the prime strategy of forest management.

1.2.2 Since, dependence of the people on forests cannot be wished away, the management practices to be prescribed should lay special emphasis on people's participation in the process of regeneration, protection and development of forests and should aim at the fulfillment of the bonafide requirements for different forest produce.

1.2.3 Chapter II of Part-I reveals that some blocks particularly Bantala, Jarapada and Angul Ranges have good forest growth requiring improvement/ silvicultural operations to further boast the existing stock. Similarly, some other blocks have congested coppice crop requiring thinning/cleaning operations to create conducive conditions for better growth of the remaining stems. However, many forest blocks stand partially denuded and degraded needing special treatment efforts ranging from complete protection from biotic interference to tending and rehabilitation measures supplemented by artificial regeneration in gaps to pure plantations.

1.2.4 Adequate attention is to be provided to the management of NTFPs. After the decontrol of most of the NTFP items and transfer of their rights of collection and disposal to the local bodies, there is necessity to increase the productivity of all such NTFP items and monitor its collection and disposal in the interest of the forests and the collectors. These measures will help in gaining the confidence and cooperation of the local people and they would willingly assist in the process of protection and improvement of the forests. Besides, the Wild life of the division also needs special attention for its management.

1.2.5 Protection of forests will only be possible when its boundaries are demarcated and maintained. A special drive will have to be taken up to consolidate the block boundaries to check for encroachment and prevent further encroachment. Along with consolidation, fixing/repairing of boundary pillars, determining the coordinates of pillars and fixing of signboards at prominent locations will have to be taken up.

1.3 ConstitutionofWorking Circles

In order to achieve further improvement of the growing stock the following working circles has been prescribed after considering the ground realities. In this approach emphasis has been laid on a watershed approach and the involvement of local people in management of forests. In consistence with the provisions of the National Working Plan Code, 2014 and the recommendations and approval of the Working Plans' Committee, the following working circles have been constituted for the for management of the forest area covered under this plan.

The Improvement Working Circle.	-	27586.678 ha.
The Rehabilitation Working Circle.	-	22586.239 ha.
The Plantation Working Circle.	-	8142.106 ha.
The Protection Working Circle.	-	6295.027 ha.
The Bamboo (Overlapping) Working Circle.	-	6513.201 ha.
The Wild life (Overlapping) Working Circle.	-	64610.0503 ha.
The NTFP (Overlapping) Working Circle.	-	64610.0503 ha.
The JFM (Overlapping) Working Circle.	-	47416.323 ha.

Allocation of Working Circles in the forest blocks of Angul Forest Division has been**Annexurein Appendix – IV.**

1.3.1 The Improvement Working Circle

The forest blocks and compartment with pole and above pole crop having density 0.4 to 0.6 with good staking and adequate natural regeneration are included in this working circle with an objective to further improve the growing stock. In fact, the blocks covered under this circle are mostly Sal mixed and miscellaneous forests which are un-even aged with good tree growth. These forest blocks have forests with good crown density. Suitable silvicultural operations shall be taken to further improve the crop condition. No felling operation has been prescribed except removal of dead and uprooted trees from the forest blocks. Majority of the blocks included under this circle are in the Jarapada, Bantala, Angul, Talcher and Kaniha Range. The total GIS area allotted to this working circle is 27586.678 ha which is approximately 42.696% of the total forest area covered in the plan.

Area adopted in IWC in Revised Working Plan of Angul Forest Division period 2021-22 to 2030-31

Name of the Forest Block	Forest Block Area in Ha	Transferred from RWC to IWC Area in Ha	Continue in IWC Area in Ha	Total proposed Area in IWC in Ha
1	2	3	4	5
Antulia Tabada RF	2230.546	1119.611	0	1119.611
Badakathia RF	1580.345	1027.987	0	1027.987
Bahianali RF	33.69	33.69	0	33.69
Brahmanabil RF	203.108	201.108	0	201.108
Bulajhara RF	1947.852	0	1876.852	1876.852
Burti PRF	3135.584	0	2511.852	2511.852
Chandanpur PRF	446.364	0	411.364	411.364
Dandasinga Bhagatpur PRF	221.38	0	210.38	210.38
Dhanakoili RF	686.405	680.905	0	680.905
Durgapur RF	3609.371	3431.551	0	3431.551
Gohiradanda RF	29.755	19.755	0	19.755
Kanaloi RF	2066.12	0	2045.12	2045.12
Kandhakurudu RF	98.948	0	98.948	98.948
Kandhal RF	189.7	173.861	0	173.861
Kanehijena RF	1393.382	1258.382	0	1258.382
Kanteikulia RF	299.493	259.493	0	259.493
Katada RF	3142.494	0	2905.494	2905.494
Kosala RF	243.127	179.127	0	179.127
Krushana Chakra PRF	2489.598	0	2005.881	2005.881
Kuio RF	534.329	501.329	0	501.329
Kukurkhai RF	16.735	16.735	0	16.735
Kulasinga PRF	641.715	411.715	0	411.715
Kurudu PRF	712.221	536.621	0	536.621
Langalkhol RF	125.123	0	125.123	125.123

Nialu Lodhajhari Sapakata RF	1225.276	0	1201.276	1201.276
Patakhamana RF	413.4	301.4	0	301.4
Putagadia RF	68.159	68.159	0	68.159
Santarabandha RF	172.556	134.556	0	134.556
Sibarampur PRF	290.559	240.559	0	240.559
Silakhani RF	933.211	0	933.211	933.211
Similipathar RF	2524.903		2201.903	2201.903
Similisahi RF	307.148	307.148	0	307.148
Tabada PRF	210.582	0	155.582	155.582
Total	**32223.179**	**10903.692**	**16682.986**	**27586.678**

1.3.2 The Rehabilitation Working Circle

The forest blocks proposed to this working circle are those whose forest crops are in variousstages of degradation. This Working Circle includes mainly denuded/degraded forest blocks with degraded Sal and other miscellaneous forests. These blocks have adequate root stock and coppice growth which can be improved by cultural operations supplemented with artificial regeneration. These areas are in need of urgent rehabilitation and restoration measures. All such areas are found to be in close proximity to human habitation and therefore attempt has to be made to involve the local in the protection and regeneration of these degraded forests. An area of 22586.239 ha has been allotted to this working circle which is approximately 34.957% of the total forest area covered in the plan. The details of forest block included in this working circle are in table as under.

Area adopted in Rehabilitation Working Circle for Revised Working Plan of Angul Forest Division period 2021-22 to 2030-31

Name of the Forest Block	Forest Block Area in Ha	Adopted in RWC Area in Ha		Total Rehabilitation working circle Area in Ha	Remarks
1	2	3	4	5	6
Arakhadahi RF	679.496	300.496	0	300.496	
Arisulia Sulia RF	142.044	122.044	0	122.044	
Badadandasahi RF	284.431	196.631	0	196.631	
Baistamba Ragadi RF	32.194	12.194	0	12.194	
Balaramprasad RF	51.421	51.421	0	51.421	
Bandhuli RF	65.361	65.361	0	65.361	
Baragaunia RF	70.634	55.634	0	55.634	
Bhana RF	62.608	62.608	0	62.608	
Biripal RF	1235.18	1147.18	0	1147.18	
Budhia RF	116.725	116.725	0	116.725	
Chandrapada RF	303.143	303.143	0	303.143	
Dalak Poipal Danda RF	645.413	573.413	0	573.413	
Durgapur A RF	55.486	55.486	0	55.486	
Durgapur Danda RF	227.963	169.963	0	169.963	
Gengutia RF	40.834	30.834	0	30.834	

Godigotha RF	346.45	321.45	0	321.45	
Gopalprasad RF	153.427	102.254	0	102.254	
Gumpha RF	37.359	37.359	0	37.359	
Guranga RF	59.007	59.007	0	59.007	
Hirapur RF	168.007	168.007	0	168.007	
Jaghani RF	38.856	38.856	0	38.856	
Joyapur RF	478.263	357.263	0	357.263	
Kaliakata RF	205.691	180.241	0	180.241	
Kauchiakhol RF	146.215	56.215	0	56.215	
Khajuria RF	136.076	136.076	0	136.076	
Khalapal RF	101.698	101.698	0	101.698	
Kiajhar RF	274.197	272.197	0	272.197	
Kuio Sakasinga RF	88.722	68.722	0	68.722	
Madhapur RF	221.793	173.917	0	173.917	
Makundanali RF	66.153	32.66	0	32.66	
Malibrahmani RF	142.541	122.541	0	122.541	
Mankadachua RF	402.188	339.188	0	339.188	
Matharagadi RF	45.855	45.855	0	45.855	
Nanda RF	55.408	55.408	0	55.408	
Nandapur & Berhampur RF	40.975	40.975	0	40.975	
Nisha RF	489.8	434.93	0	434.93	
Nuabhuin RF	114.766	8.506	0	8.506	
Paranga RF	216.387	166.387	0	166.387	
Pathuria Petachira RF	289.763	289.763	0	289.763	
Pedi RF	392.464	392.464	0	392.464	
Pital Hill RF	27.903	27.903	0	27.903	
Rabipur RF	1174.319	1052.799	0	1052.799	
Rameswar Hill RF	84.033	84.033	0	84.033	
Sachi RF	97.13	91.13	0	91.13	
Sadarkhol RF	1057.737	956.737	0	956.737	
Saharagoda RF	184.713	159.713	0	159.713	
Saleimada RF	356.095	326.095	0	326.095	
Saradhapur RF	107.89	50.89	0	50.89	
Seepur RF	242.085	107.085	0	107.085	
Silling RF	106.47	39.003	0	39.003	
Sorishapal RF	211.207	191.207	0	191.207	
Tangiri RF	265.847	254.847	0	254.847	
Dangapal PRF	831.814	703.938	0	703.938	
Dera PRF	76.229	76.229	0	76.229	
Devinagar PRF	3202.93	3043.93	0	3043.93	
Durgapur PRF	56.305	56.305	0	56.305	
Kalapata PRF	1214.713	1115.713	0	1115.713	
Kanaloi PRF	69.769	57.769	0	57.769	

Kandhabereni PRF	243.076	219.576	0	219.576	
Kangulei PRF	46.009	46.009	0	46.009	
Kerjang PRF	466.011	441.011	0	441.011	
Marudhipa PRF	1351.149	1192.149	0	1192.149	
Nunmati PRF	440.62	398.62	0	398.62	
Para PRF	1052.774	909.774	0	909.774	
Pathargarh PRF	1633.068	1563.068	0	1563.068	
Pitachari PRF	60.853	60.853	0	60.853	
Pokunda PRF	371.416	290.976	0	290.976	
Roadsinga PRF	143.939	116.939	0	116.939	
Sorishapal Hinsar PRF	763.359	705.699	0	705.699	
Sudagoleswar PRF	98.876	89.876	0	89.876	
Sunarijharana PRF	450.817	450.817	0	450.817	
Chakundapal DPF	178.821	178.821	0	178.821	
Ganthigadia A	84.738	63.738	0	63.738	
Ganthigadia B	21.259	21.259	0	21.259	
Talasira DPF	49.564	0	3.564	3.564	
Jukub PF	4.860	0	0	4.86	
Talagarh, Kantamegha, Ragudiapada PF	168.232	0	0	168.232	
Total	**25721.624**	**22409.583**	**3.564**	**22586.239**	

1.3.3 The Plantation Working Circle

In Angul Forest Division, the Plantation Working circle was overlapped with rehabilitation working circle and Improvement working circle in outgoing Working Plan. As per discussion by the committee held on 26.11.2015 the plantation working circle to be kept in independent working circle. Presently most of the blank patches have been covered up with vegetation due to intense plantation activities during the last working plan period. So it is very difficult to find out a completely blank patch inside the forest blocks for Block plantation. It is observed that due to proper protection and post planting care during the last working plan period a good no. of plantations are coming up successfully in different forests block of this division and those are included in this Working Circle for better improvement. The total area allotted to this Working Circle is 8142.106 Ha. Considering the fact and vegetation condition of the plantations independent plantation working circle proposed as (a) Restocking of Village Forest (b) Tending to the old teak plantation raised during and/ or prior to the out going plan period (c) Tending to the old existing MISC plantation, compensatory plantation, Fuel fodder plantation, NTFP plantation, Bamboo plantation, JVP plantation etc. raised during and/or prior to the out going plan. No harvest is recomended in old teak plantation.The plantation area is shown in the all topo sheet covering Angul Forest Division.

Angul Forest Division

Area adopted in Plantation Working Circle for for Revised Working Plan of Angul Forest Division period 2021-22 to 2030-31

Name of the Forest Block	Forest Block Area in Ha	Area adopted in Plantation WC from IWC Area in Ha	Area adopted in Plantation WC from RWC Area in Ha	Area adopted in Plantation WC from Newly added VF	Total area in Plantation working circle Area in Ha	Remarks
1	2	3	4	5	6	7
Antulia Tabada RF	2230.546	688.270	0	0	688.270	
Arakhadahi RF	679.496	0	374.000	0	374.000	
Arisulia Sulia RF	142.044	0	20.000	0	20.000	
Badadandasahi RF	284.431	0	87.800	0	87.800	
Badakathia RF	1580.345	0	552.358	0	552.358	
Baistamba Ragadi RF	32.194	0	20.000	0	20.000	
Balanga RF	3096.766	0.000	0	0	0.000	
Baragaunia RF	70.634	0	15	0	15.000	
Bhogapal RF	184.56	25.866	0	0	25.866	
Biripal RF	1235.18	0	88.000	0	88.000	
Brahmanabil RF	203.108	0	2.000	0	2.000	
Bulajhara RF	1947.852	71.000	0	0	71.000	
Chhendipada RF	1824.968	0	524.000	0	524.000	
Dalak Poipal Danda RF	645.413	0	72.000	0	72.000	
Derjang Golabandha RF	176.649	0	53.000	0	53.000	
Dhanakoili RF	686.405	0	5.500	0	5.500	
Durgapur Danda RF	227.963	0	58.000	0	58.000	
Durgapur A RF	55.486		20.000	0	20.000	
Durgapur RF	3609.371	0	177.820	0	177.820	
Gengutia RF	40.834	0	10.000	0	10.000	
Godigotha RF	346.45	0	25.000	0	25.000	
Gohiradanda RF	29.755	0	10.000	0	10.000	
Gopalprasad RF	153.427	0	51.173	0	51.173	
Jalatap RF	444.978	0	43.000	0	43.000	
Joyapur RF	478.263	0	131.000	0	131.000	
Kaliakata RF	205.691	0	25.450	0	25.450	
Kanaloi RF	2066.12	21.000	0	0	21.000	
Kandhal RF	189.7	0	15.839	0	15.839	
Kanehijena RF	1393.382	0	135.000	0	135.000	
Kankurpal RF	929.905	0	42.000	0	42.000	
Kanteikulia RF	299.493	0	40.000	0	40.000	
Katada RF	3142.494	237.000	0	0	237.000	

Kauchiakhol RF	146.215	0	0.000	0	0.000	
Kiajhar RF	274.197	0	2.000	0	2.000	
Kosala RF	243.127	0	64.000	0	64.000	
Kuio RF	534.329	0	33.000	0	33.000	
Kuio Sakasinga RF	88.722	0	20.000	0	20.000	
Kumanda Talataila RF	38.779	0	21.000	0	21.000	
Madhapur RF	221.793	0	47.876	0	47.876	
Makundanali RF	66.153	0	33.493	0	33.493	
Malibrahmani RF	142.541	0	40.000	0	40.000	
Mandargiri Kalima RF	606.995	0	163.000	0	163.000	
Mankadachua RF	402.188	0	63.000	0	63.000	
Nialu Lodhajhari Sapakata RF	1225.276	24.000	0	0	24.000	
Nisha RF	489.8	0	44.870	0	44.870	
Nuabhuin RF	114.766	0	0.000	0	0.000	
Nuakheta RF	2889.93	0.000	0	0	0.000	
Paranga RF	216.387	0	50.000	0	50.000	
Patakhamana RF	413.4	0	112.000	0	112.000	
Rabipur RF	1174.319	0	121.520	0	121.520	
Rakasha RF	314.912	0	0.000	0	0.000	
Rameswar Hill RF	84.033		10.000	0	10.000	
Sachi RF	97.13	0	6.000	0	6.000	
Sadarkhol RF	1057.737	0	101.000	0	101.000	
Saharagoda RF	184.713	0	25.000	0	25.000	
Saleimada RF	356.095	0	30.000	0	30.000	
Santarabandha RF	172.556	0	38.000	0	38.000	
Saradhapur RF	107.89	0	57.000	0	57.000	
Seepur RF	242.085	0	135.000	0	135.000	
Silling RF	106.47	0	67.467	0	67.467	
Similipathar RF	2524.903	323.000	0	0	323.000	
Sorishapal RF	211.207	0	20.000	0	20.000	
Tangiri RF	265.847	0	11.000	0	11.000	
Sibarampur PRF	290.559	0	50.000	0	50.000	
Kerjang PRF	466.011	0	45.000	0	45.000	
Balanga PRF	53.522	20.000	0	0	20.000	
Burti PRF	3135.584	204.850	0	0	204.850	
Chandanpur PRF	446.364	0	35.000	0	35.000	
Dandasinga Bhagatpur PRF	221.38	11.000	0	0	11.000	
Dangapal PRF	831.814	0	164.572	0	164.572	
Devinagar PRF	3202.93	0	159.000	0	159.000	
Durgapur PRF	56.305	11	0.000	0	11.000	
Kalapata PRF	1214.713	0	104.000	0	104.000	

Kanaloi PRF	69.769	0	12.000	0	12.000	
Kandhabereni PRF	243.076	0	23.500	0	23.500	
Krushana Chakra PRF	2489.598	79.460	0	0	79.460	
Kulasinga PRF	641.715	0	230.000	0	230.000	
Kurudu PRF	712.221	0	175.600	0	175.600	
Marudhipa PRF	1351.149	0	159.000	0	159.000	
Nunmati PRF	440.62	0	42.000	0	42.000	
Para PRF	1052.774	0	143.000	0	143.000	
Pathargarh PRF	1633.068	0	95.000	0	95.000	
Pokunda PRF	371.416	0	80.440	0	80.440	
Roadsinga PRF	143.939	0	27.000	0	27.000	
Sorishapal Hinsar PRF	763.359	0	77.660	0	77.660	
Sudagoleswar PRF	98.876	0	9.000	0	9.000	
Tabada PRF	210.582	55.000	0	0	55.000	
Ganthigadia A (DPF)	84.738	0	51.000	0	51.000	
Talasira DPF	49.564	46.000	0	0	46.000	
Baudabeda PF	33.722	0	33.722	0	33.722	
Atrapada VF	10	0	0	10	10.000	
Badagunduri VF	5	0	0	5	5.000	
Badahar VF	10	0	0	10	10.000	
Badahar VF	12.52	0	0	12.52	12.520	
Badahar VF	4.83	0	0	4.83	4.830	
Badatribida VF	5	0	0	5	5.000	
Balipata VF	0.25	0	0	0.25	0.250	
Banabaspur VF	14	0	0	14	14.000	
Barapali VF	4.55	0	0	4.55	4.550	
Barapali VF	3.84	0	0	3.84	3.840	
Bedasasan VF	1.38	0	0	1.38	1.380	
Belpada VF	5	0	0	5	5.000	
Bhagirathipur VF	13.5	0	0	13.5	13.500	
Bikisar VF	5	0	0	5	5.000	
Bilinda VF	30	0	0	30	30.000	
Brahmanbil VF	5	0	0	5	5.000	
Brahmanbil VF	5	0	0	5	5.000	
Budakera VF	5	0	0	5	5.000	
Chakundapal VF	5	0	0	5	5.000	
Chhelia VF	10	0	0	10	10.000	
Chitalpur VF	10	0	0	10	10.000	
Danara VF	6.78	0	0	6.78	6.780	
Dumduma VF	10	0	0	10	10.000	
Gopalprasad VF	2.13	0	0	2.13	2.130	
Gundurinali VF	6	0	0	6	6.000	
Gurjanga VF	5	0	0	5	5.000	

Inkarbandha VF	1.52	0	0	1.52	1.520	
Inkarbandha VF	0.71	0	0	0.71	0.710	
Jadunathpur VF	10	0	0	10	10.000	
Jadunathpur VF	10	0	0	10	10.000	
Jamunali VF	0.6	0	0	0.6	0.600	
Jamunali VF	17.57	0	0	17.57	17.570	
Jamunali VF	10	0	0	10	10.000	
Jarada VF	10	0	0	10	10.000	
Jarasingha VF	3	0	0	3	3.000	
Jarasingha VF	1.02	0	0	1.02	1.020	
Jhulakhuntia VF	10	0	0	10	10.000	
Joragadia VF	1.18	0	0	1.18	1.180	
Joragadia(kuria) VF	6.43	0	0	6.43	6.430	
Jukub VF	4	0	0	4	4.000	
Kaliakata VF	10	0	0	10	10.000	
Kandhabereni VF	10	0	0	10	10.000	
Katarapada VF	10	0	0	10	10.000	
Katrapalli VF	10	0	0	10	10.000	
Kuluma VF	20	0	0	20	20.000	
Kuluma VF	30	0	0	30	30.000	
Kumanda VF	5	0	0	5	5.000	
Kuruhuni VF	4.27	0	0	4.27	4.270	
Lodhabandha VF	5	0	0	5	5.000	
Lokeipasi VF	0.48	0	0	0.48	0.480	
Lokeipasi VF	0.58	0	0	0.58	0.580	
Mahuliapasi VF	8.66	0	0	8.66	8.660	
Malibandha VF	5.48	0	0	5.48	5.480	
Malibrahmani VF	10	0	0	10	10.000	
Mardharipur(kumunda) VF	8	0	0	8	8.000	
Natada VF	6	0	0	6	6.000	
Nisa VF	10	0	0	10	10.000	
Nisa VF	5	0	0	5	5.000	
Nua-Jarasingha VF	2.73	0	0	2.73	2.730	
Olanda VF	5	0	0	5	5.000	
Padmabatipur VF	4.43	0	0	4.43	4.430	
Padmabatipur VF	1.21	0	0	1.21	1.210	
Phulapada VF	5	0	0	5	5.000	
Phulpada VF	4	0	0	4	4.000	
Raghunathpur VF	20	0	0	20	20.000	
Ranjagola VF	12	0	0	12	12.000	
Ranjagola VF	15	0	0	15	15.000	
Rankasingha VF	4	0	0	4	4.000	

Rengali VF	8	0	0	8	8.000	
Rutubhuin Vf	8	0	0	8	8.000	
Rutubhuin VF	8	0	0	8	8.000	
Sahadagoda VF	3	0	0	3	3.000	
Samal VF	10	0	0	10	10.000	
Samal VF	5	0	0	5	5.000	
SamalVF	5	0	0	5	5.000	
Sanhar VF	10	0	0	10	10.000	
Santarabandha VF	5	0	0	5	5.000	
Santribida VF	15	0	0	15	15.000	
Santribida VF	8	0	0	8	8.000	
Sarangi VF	15	0	0	15	15.000	
Sibarampur VF	12.08	0	0	12.08	12.080	
Sibarampur VF	3	0	0	3	3.000	
Sibarampur VF	10	0	0	10	10.000	
Solada VF	5	0	0	5	5.000	
Solada VF	5.27	0	0	5.27	5.270	
Solada VF	29	0	0	29	29.000	
Sunakhani VF	5	0	0	5	5.000	
Surendrapur VF	1	0	0	1	1.000	
Susab VF	3	0	0	3	3.000	
Tubey VF	5	0	0	5	5.000	
Tumuni VF	3	0	0	3	3.000	
Total	**64651.766**	**1817.446**	**5630.66**	**694**	**8142.106**	

1.3.4 The Protection Working Circle

The forest protection is the prerequisite of any effective management of forest. This working circle overlaps all the forest blocks when there is need special protection measures. The forest blocks of Angul Forest Division are in various stages of degradation due to heavy illicit felling, quarry activities, industrial operation, widening of road, urbanization, causing of forest fire. The biotic pressure from human along with bovine population plays a pivotal role in the process of degradation.

Special Objectives of Management

1. To increase the natural regeneration by adopting strong protection measure.
2. To minimize biotic pressures like illicit felling, fire, grazing, etc.
   The forest protection is to be improved by developing forest road network, constitution of protection unit, improving VHF coverage, infrastructure developments and communication network.
3. To prevent further degradation of forest by adopting suitable planting models in order to increase vegetative cover and to stable the degraded area.
4. To protect the area from massive quarrying of granite and laterite stones, removal of boulders, moorums and soil.
5. To evict the persons from encroached forest area and restock the encroachment area by massive plantation with strong administrative measures.
6. To develop infrastructure in the remote areas to provide shelter to forest protection staff.
7. To protect the forest from biotic pressures like illicit felling, fire, grazing and poaching.
8. Keeping delicate and eco-fragile area undisturbed

Area adopted in Protection working circle for Working plan of Angul Forest Division

Name of the Forest Block	Forest Block Area in Ha	Area adopted in Protection WC Area in Ha		Protection warking Circle Area in Ha	Remarks
Chhendipada Range		From RWC	From IWC		
Kankurpal RF	929.905	887.905	0	887.905	Elephant Habitat Area
Jalatap RF	444.978	401.978	0	401.978	
Chhendipada RF	1824.968	1280.968	0	1300.968	
Talcher Range					

Rakasha RF	314.912	288.862	0	314.912	Mining Area
Jarapada Range					
Antulia Tabada RF	2230.546	0	422.665	422.635	Theft prone area
Bantala Range					
Balanga RF	3096.766	0	2573.038	1264.453	Tiger conservation Landscape area
Nuakheta RF	2889.93	0	2502.160	0.000	
Balanga PRF	53.522	0	33.522	33.522	
Talasira DPF	49.664	0	3.564	3.564	
Labangi DPF	69.96	0	69.960	69.960	
Angul Range					
Mandargiri Kalima RF	606.995	443.995	0	443.995	Near to Angul Town for aesthetic and Biodiversity conservation
Kumanda Talataila RF	38.779	0.000	17.779	17.779	
Derjang Golabandha RF	176.649	123.649	0	123.649	Catchment Area of Derjang MIP
Derjang Golabandha PRF	27.844	27.844	0	27.844	
Krushana Chakra PRF	2489.598	0	404.257	404.257	Eco fragile and Theft prone Area
Bhogapal RF	184.56	0	158.694	158.694	
Burti PRF	3135.584	0	502.265	418.912	
Total	**18565.160**	**3455.201**	**6687.904**	**6295.027**	

1.3.5 The Bamboo (Overlapping) Working Circle

This working circle covers the potentially rich bamboo areas of the division areas where bamboo occurs either gregariously or in scattered manner. This Working Circle will overlap with the Improvement and Rehabilitation Working Circle. The bamboo forests of this division are suffering from degradation due to frequent fire, heavy grazing and illicit felling. Though gregarious flowering has not been reported sporadic flowering is noticed almost every year in many forest blocks. The total area allotted to this Working Circle is 6513.561 ha which is approximately 10.08% of the total forest area covered in the plan. The details of area as under the table.

Area adopted in Bamboo working circle for proposed Working plan of Angul Forest Division

Name of the Forest Block	Forest Blcok in Ha.	Bamboo (OL) circle in Ha.	Adoption in Bamboo (OL) working circle with IWC Area in ha.
Jarapada Range			
Katada RF	3142.494	3142.494	3142.494
Bantala Range			
Balanga RF	3096.766	1264.453	1264.453
Nuakheta RF	2889.93	0	0
Balanga PRF	53.522	53.522	53.522
Talasira DPF	49.564	49.564	49.564
Labangi DPF	69.96	69.96	69.96
Angul Range			
Burti PRF	3135.584	1933.208	1933.208
Total	**12437.82**	**6513.201**	**6513.201**

1.3.6 The NTFP (Overlapping) Working Circle

This working circle is also an Overlapping circle covering almost the entire plan area. The object of this working circle is to give suitable prescription for conservation, regulation and value addition of all NTFPs found in the division. The total area under this overlapping working circle works out to be 64610.05 ha.

Special Objectives of Management

1. To regulate and optimize extraction and utilization of various NTFPs in conformity with Government policy with a view to promote sustainable management of forest.
2. To enhance the value of forest by way of developing new NTFPs, creating additional opportunities for further value addition in the existing NTFPs and strengthening the marketing.
3. To develop and extend skills to the local people including the tribals for sustainable collection, extraction and utilization of various NTFPs.
4. To protect NTFP trees, promote their regeneration and develop productivity by taking suitable silvicultural measures.
5. To create alternate employment/ income generation by developing village and cottage industries by using the locally available NTFP items as input / raw materials.

1.3.7 The Wild life (Overlapping) Working Circle

This is an overlapping circle covering almost the entire working plan area of the Division. However, special management prescriptions are provided for some forest blocks, where there is adequate concentration of wild life. During this plan period it is proposed to identify and maintain special wildlife habitats, unique wildlife habitat and also critical wildlife habitats which have been neglected in the past. Steps will be taken to prevent wildlife crimes and wildlife depredation.

Special objectives of management

The special objectives of Management set for this Working Circle are within the general objectives of management. These include:-

1. Special emphasis is to be given to prevent Wild Life crimes and rescue of Wildlife in critical areas.
2. To protect Wild Life in general and endangered species in particular.
3. To address the issue related to man and animal conflict for safety and protection of both Wildlife and human beings outside the Forest Area.
4. To prevent Wild Life accidents caused by electrocution and Railways.
5. To conserve, protect and improve wild life habitat with special emphasis on the proposed corridors.
6. To protect wild life in general and endangered species in particular.

7. To create mass awareness among the locals regarding the necessity to conserve and protect the wild life and their habitat.
8. To conserve and develop important wild life habitat for the purpose of eco-tourism.
9. To increase the biodiversity and wildlife population.
10. To prevent wildlife related crimes.

1.3.8 The Joint Forest Management (Overlapping) Working Circle

A common notion says that the forest is a free resource for human kind. While the invaluable and intangible products of this precious asset are indispensable for the very existence of life on this planet, the valuable and tangible products are the essential commodities of our life. Age-old dependence of the local people on the forests is irrevocable.

Earlier people use to get forest produce for their bonafide use through nistar or nominal charge that is royalty. In this division the per capita forest is very low where as the demand of forest produce is high. Protection of forests is extremely difficult on the part of the forest officials alone. The involvement of local people is very much felt for this purpose. Participation of the local people cannot be ensured without considering their bonafide need. In order to make the matter broad based particularly peoples friendly, Joint Forest Management is conceptualised for protection, conservation and management of the natural forests by the forest officials and local people combinedly in consonance with the compelling need of the circumstances. Such change in the mode of management of forest is the call of the hour.

As already described earlier the joint forest management is regulated through a Resolution No. **16524-IF-Affn.17/2011/F&E** of Forest and Environment Dept. of Odisha. Participation of local people through VSS is becoming popular day by day. It is the most suitable option for protection and management forest in the present circumstances. A sincere, specific and special effort is essential to stabilise this on-going process for sustainability. Hence Joint Forest Management (Overlapping) Working Circle is constituted for this purpose.

The different category of forest assigned to the VSS comes under the preview of this working circle. Similarly all the new area out of the plan area assigned to the VSS in course of implementation of this working plan will automatically become the part of this working circle. The prescriptions of this working circle shall be applicable to them. Further, these prescriptions should also be adopted for the areas protected by the VSS beyond the purview of plan area. The area of this working circle is scattered and also varied in crop composition and density, but mostly degraded forest under the perview of rehabilitation working circle are assigned to the VSS. In general the vegetation belongs to mixed deciduous tropical forest. These forests have the potentiality for speedy rejuvenation due to the availability of rooted waste, coppice shoot and pole crop. As already mentioned above the area of this working circle is flexible with constitution of new VSS as well as assignment of more area to the existing VSS. However, the area is allotted to this working circle is 47416.323 ha.

Special objectives of management.

1. To spread the message of JFM to every forest fringe village by mass awareness campaign.
2. To involve communities in forest and natural resource management.
3. To make the people and Forest Department equal partners in the management process.
4. To restock the barren and blank areas through artificial regeneration.
5. To increase the productivity of soil through suitable soil and moisture conservation measures.
6. To encourage people to rational utilization of their own community resources for the betterment of the community.
7. To involve people in NTFP collection and trade.
8. To create income generating activities in the villages & reduce dependence on forest.
9. To study the scope of enhancing the network of VSS protection areas.
10. To spread the message of JFM to every Forest fringe village by adopting entry point activities & organizing mass awareness campaign.
11. To achieve all round socio economic development of the village by involving other line departments like Agriculture ,Horticulture, Soil Conservation, Veterinary, Health, Mass Education etc.

1.3.9 Allocation of area to different Working Circles

Stock mapping has been done for all the compartments/blocks included in the plan and duly incorporated in the respective history files. Even enumeration data has also been reflected for those blocks where such an exercise has been carried out. It is hoped that these files shall be posted in time and maintained properly hereafter so that proper records are available in future.

Sl. No	Working Circles	RANGES						
		Angul	Bantala	Chhendipada	Jarapada	Kaniha	Talcher	TOTAL WP Area
1	Impv. W.C	7032.2010	0	5612.4640	6691.9180	4315.825	3934.27	**27586.6780**
2	Rehab WC	4352.938	269.875	5112.709	4243.945	5769.7806	2836.9917	**22586.2393**
4	Plantation WC	1820.792	98.67	1491.392	1678.52	1824.09	1228.642	**8142.106**
5	Protection WC	1595.1000	1371.499	2590.8510	422.6650	0	314.912	**6295.0270**
6	Bamboo (O) WC	1933.2080	1437.499	0.0000	3142.4940	0	0	**6513.2010**
7	Wild Life (O) WC	14801.0310	1740.044	14807.4160	13037.0480	11909.7	8314.816	**64610.0503**
8	NTFP (O) WC	14801.0310	1740.044	14807.4160	13037.0480	11909.7	8314.816	**64610.0503**
9	JFM (O) WC	9775.6790	1670.84	12093.3310	9043.8320	8529.482	6303.159	**47416.3230**

1.4 Period of The Working Plan and necessity for intermediate revision.

1.4.1 This Working Plan has been prepared for a period of 10 years i.e. from 2020-2021 to 2030-31. It is unlikely that prescriptions made in this Plan will need any major alteration during the Plan period. However, the prescriptions may be reviewed after five years and if so required, the Regional Chief Conservator of Forests, Angul in consultation with Conservator of Forests, Working Plan, shall submit a proposal to that effect for approval of the competent authority.

1.4.2 The working plan year shall be reckoned from 1st July to 30th June of the following calendar year.

CHAPTER - 2

Name of the Working Circle

2General Constituion of Working Circle

1. The Improvement Working Circle. - 27586.678 ha.
2. The Rehabilitation Working Circle. - 22586.239 ha.
3. The Plantation Working Circle. - 8142.106 ha.
4. The Protection Working Circle. - 6295.027 ha.
5. The Bamboo (Overlapping) Working Circle. - 6513.201 ha.
6. The Wild life (Overlapping) Working Circle. - 64610.0503 ha.
7. The NTFP (Overlapping) Working Circle. - 64610.0503 ha.
8. The JFM (Overlapping) Working Circle. - 47416.323 ha.

2.1The Improvement Working Circle

2.2General Constitution.

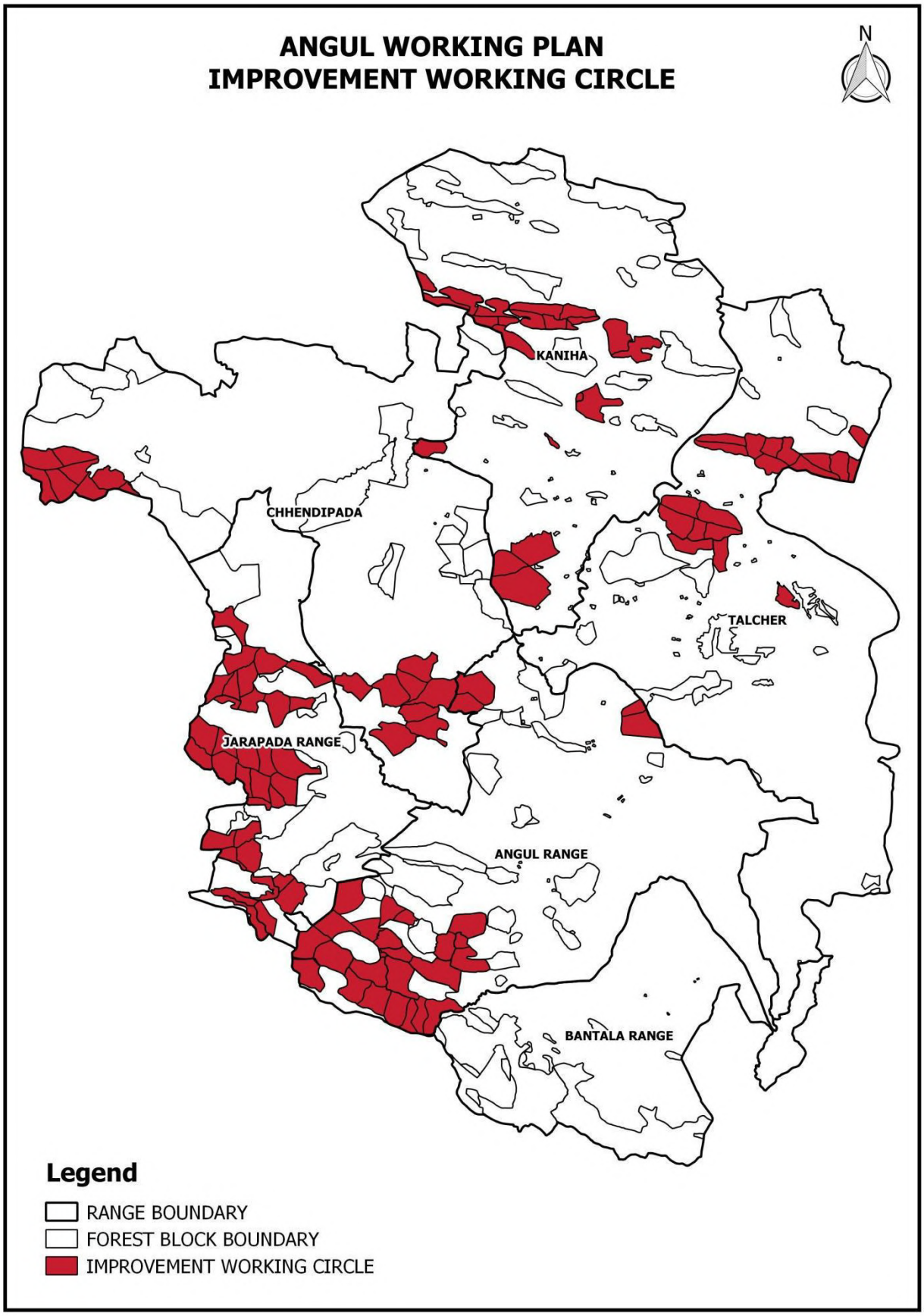
This Working Circle possesses mostly pole crop of Sal and other miscellaneous species like Buchnania lanzan, Lagerstroemia parviflora, Lannea grandis, Terminalia tomentosa, Anogeisus latifolia, etc. The vegetation characteristics differ considerably in most of the forest blocks. High proportion of Sal with a good number of pure patches of Sal occurs in Similipathar and Bulajhar forest blocks. In Kanloi, Bolanga, Antulia-Tabada, Nialu-Lodhajhari, Sapakata, Phuljhari, Katada, Durgapur, Kandhal and Kanheijena block, the proportion of Sal is less in comparison to that of the above mentioned forest blocks. In rest of the forest blocks the crop is mostly miscellaneous.

Table No 2.1 Improvement working circle of Angul Forest Division for the revised Working Plan

SL No.	Name of Improvement Series	Name of the Range	Name of the Forest Block	Compartment No	GIS area in ha.
1	Durgapur	Chhendipada	Durgapur RF	1 to 8	2778.112
		Angul	Durgapur RF	9 & 10	653.439
			Total		**3431.551**
2	Kanaloi	Chhendipada	Kanloi RF	1 to 8	2045.12
			Kosala RF		179.127
			Similisahi RF		307.148
			Brahmanbil RF		201.108
			Bahianali RF		33.69
			Putagadia RF		68.159

			Total		**2834.352**
3	Antulia Tabeda	Jarapada	Antulia Tabeda RF	1 to 10	1119.611
			Tabeda PRF		155.582
			Dandasinga Bhagatpur PRF		210.38
			Total		**1485.573**
4	Similipathar	Jarapada	Similipathar RF	1 to 4 , 5(p), 6(p), 7 & 8	2201.903
			Kandhkurudu RF		98.948
			Total		**2300.851**
5	Katada	Jarapada	Katada RF	1(p), 2,3(p), 4, 5(p), 6(p), 7	2905.494
			Total		**2905.494**
6	Bulajhara	Talcher	Bulajhara RF	1 to 10	1876.852
			Langalakhol RF		125.123
			Total		**2001.975**
7	Kanheijena	Talcher	Kanheijena RF		1258.382
			Sibarampur RF		240.559
			Kanteikulia RF		259.493
			Kandhal RF		173.861
		Kaniha	Dhanakoili RF		680.905
			Patakhaman RF		301.4
			Kukurkhai RF		16.735
			Santarabandha RF		134.556
			Gohiradanda RF		19.755
			Total		**3085.646**
8	Phuljhari	Kaniha	Phuljhari RF		933.211
			Nialu Lodhajhari		1201.276

			Sapakata RF		
			Badakatia RF		1027.987
			Total		**3162.474**
9	Krushnachakra	Angul	Krushnachakra PRF	2, 1(p), 3(p), 4(p)	2005.881
			Kurudu PRF	1	380.235
			Kulasinga PRF	1 & 2	411.715
			Chandanpur PRF		411.364
			Total		**3209.195**
10	Burti	Angul	Burti PRF	1, 2 , 3(p), 4(p), 5, 6, 7	2511.852
			Kurudu PRF	2	156.386
			Kuio RF		501.329
			Total		**3169.567**
			Grand Total		**27586.678**


ANGUL WORKING PLAN
IMPROVEMENT WORKING CIRCLE
N
KANIHA
CHHENDIPADA
TALCHER
JARAPADA RANGE
ANGUL RANGE
BANTALA RANGE
Legend
RANGE BOUNDARY
FOREST BLOCK BOUNDARY
IMPROVEMENT WORKING CIRCLE

2.3 General Character of Vegetation

The forest types occurring in the area of the Working Circle are Moist Peninsular Sal Forests (3C/C2) and Northern Dry Mixed Deciduous Forests (5B/C2). Almost entire area is dry and due to repeated forest fires the dryness of site has further aggravated resulting decrease in proportion of Sal in the crop composition. Other biotic factors like heavy grazing, browsing and illicit felling in these blocks along with repeated forest fire in summer, has reduced the crown density considerably. Crop has become open at places. The regeneration status in this working circle is adequate. Site quality has deteriorated and the trees have become unsound at smaller girth. The factors responsible for deterioration of site, crop density and composition are still not under complete arrest and further deterioration is continuing.

2.4Felling series, cutting sections and JFM areas

No felling series cutting sections assigned to this working circle during the plan period.

2.5Block, compartment and JFMs area (marked on GIS based maps)

In the revised working plan 25 Reserve Forest Block and 8 proposed Reserve Forest block has been allotted to the improvement working circle the total area allotted to the working circle is 27586.678 ha. This constituted 42.696 % of the total working plan management area of the division.

Table No. 2.2 Durgapur Improvement series

Name of the Range	Year of working	Name of the Forest Block	Improvement Coupe No	Compartment No	Area in Ha	Total Area adopted
1	2	3	4	5	6	7
Chhendipada	2021-22	Durgapur RF	DGP-IMP-I	1	299.56	299.56
Chhendipada	2022-23	Durgapur RF	DGP-IMP-II	2	349.978	349.978
Chhendipada	2023-24	Durgapur RF	DGP-IMP-III	3	336.862	336.862
Chhendipada	2024-25	Durgapur RF	DGP-IMP-IV	4	252.383	252.383
Chhendipada	2025-26	Durgapur RF	DGP-IMP-V	5	288.362	288.362
Chhendipada	2026-27	Durgapur RF	DGP-IMP-VI	6	472.174	472.174
Chhendipada	2027-28	Durgapur RF	DGP-IMP-VII	7	291.155	291.155
Chhendipada	2028-29	Durgapur RF	DGP-IMP-VIII	8	487.638	487.638
Angul	2029-30	Durgapur RF	DGP-IMP-IX	9	422.228	422.228
Angul	2030-31	Durgapur RF	DGP-IMP-X	10	231.211	231.211
		Total			**3431.551**	**3431.551**

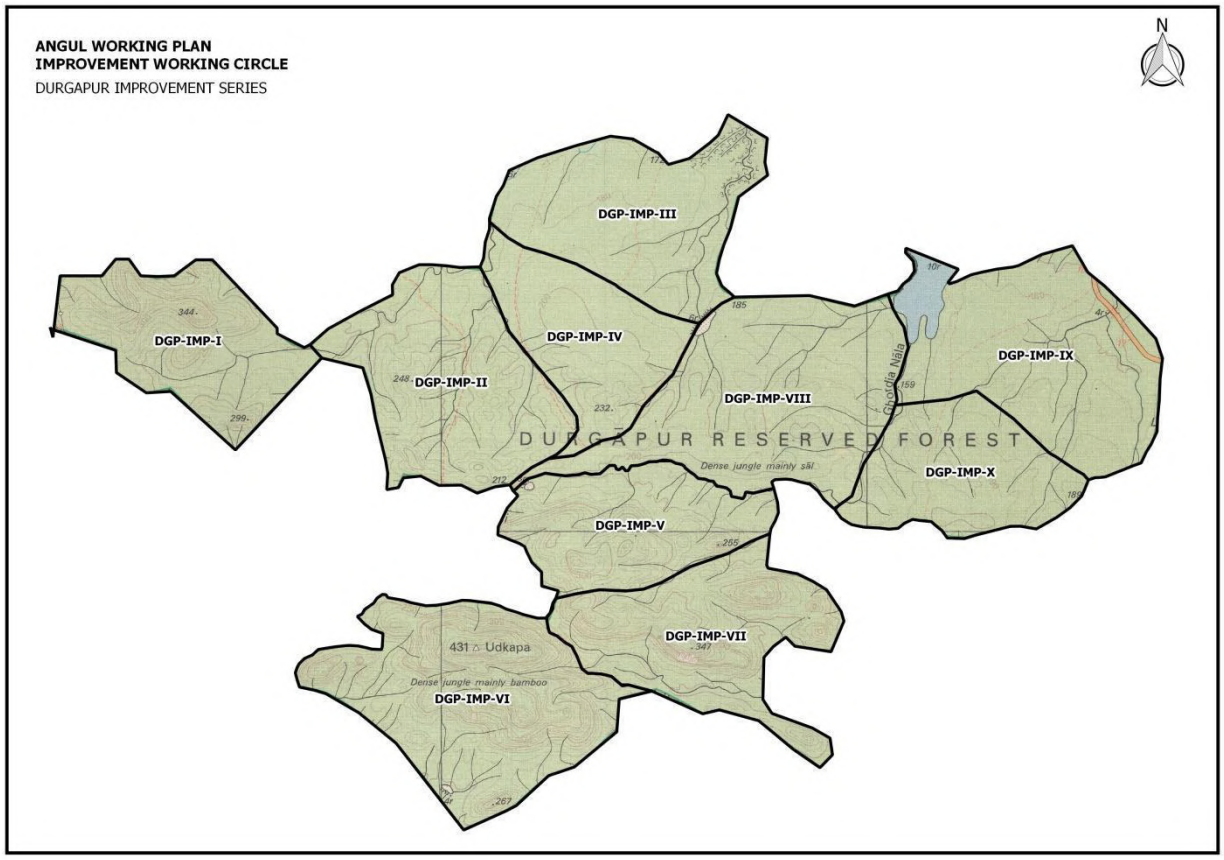


Table No. 2.3 Kanaloi Improvement series

Name of the Range	Year of working	Name of the Forest Block	Improvement Coupe No	Compartment No	Area in Ha	Total Area adopted
1	2	3	4	5	6	7
Chhendipada	2021-22	Kanaloi RF	KNL-IMP-I	1	333.103	333.103
Chhendipada	2022-23	Kanaloi RF	KNL-IMP-II	2	251.632	251.632
Chhendipada	2023-24	Kanaloi RF	KNL-IMP-III	3	268.214	268.214
Chhendipada	2024-25	Kanaloi RF	KNL-IMP-IV	4	332.124	332.124
Chhendipada	2025-26	Kanaloi RF	KNL-IMP-V	5	281.701	281.701
Chhendipada	2026-27	Kanaloi RF	KNL-IMP-VI	6	217.458	217.458
Chhendipada	2027-28	Kanaloi RF	KNL-IMP-VII	7	287.424	287.424
Chhendipada	2028-29	Kanaloi RF	KNL-IMP-VIII	8	73.464	252.591
Chhendipada		Kosala RF		Nil	179.127	
Chhendipada	2029-30	Similisahi RF	KNL-IMP-IX	Nil	307.148	307.148
Chhendipada	2030-31	Brahmanbil RF	KNL-IMP-X	Nil	201.108	302.957
Chhendipada		Bahianali RF		Nil	33.69	
Chhendipada		Putagadia RF		Nil	68.159	
		Total			**2834.352**	**2834.352**

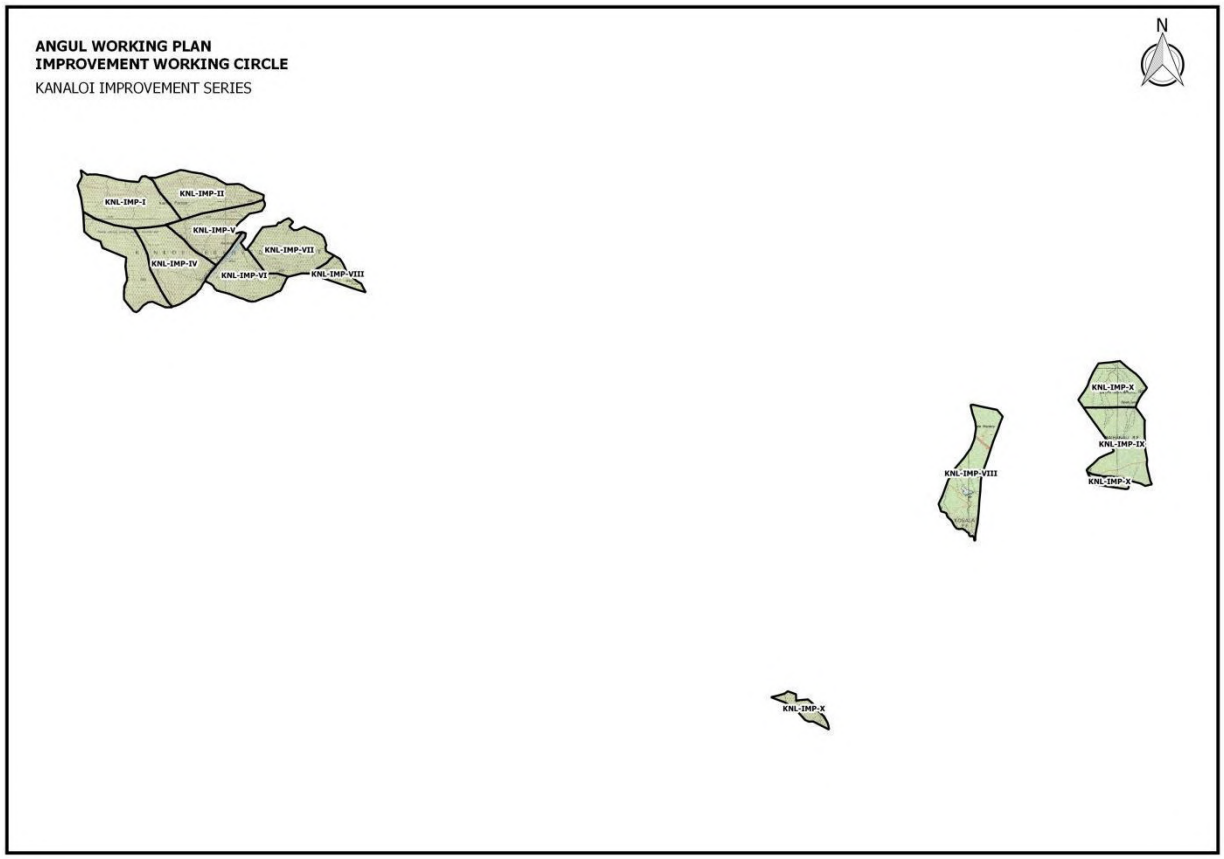


Table No. 2.4 Antulia Tabeda Improvement series

Name of the Range	Year of working	Name of the Forest Block	Improvement Coupe No	Compartment No	Area in Ha	Total Area adopted
1	2	3	4	5	6	7
Jarapada	2021-22	Antulia Tabada RF	ANT-IMP-I	1	207.516	207.516
Jarapada	2022-23	Antulia Tabada RF	ANT-IMP-II	2	179.546	179.546
Jarapada	2023-24	Antulia Tabada RF	ANT-IMP-III	3	27.535	98.613
Jarapada		Antulia Tabada RF	ANT-IMP-III	5	71.078	
Jarapada	2024-25	Antulia Tabada RF	ANT-IMP-IV	4	188.439	188.439
Jarapada	2025-26	Antulia Tabada RF	ANT-IMP-V	6	210.606	210.606
Jarapada	2026-27	Antulia Tabada RF	ANT-IMP-VI	9	136.558	136.558
Jarapada	2027-28	Antulia Tabada RF	ANT-IMP-VII	10	98.333	98.333
Jarapada	2028-29	Tabada PRF	ANT-IMP-VIII	Nil	155.582	155.582
Jarapada	2029-30	Dandasinga Bhagatpur PRF	ANT-IMP-IX	Nil	105.38	105.38
Jarapada	2030-31	Dandasinga Bhagatpur PRF	ANT-IMP-X	Nil	105	105
		Total			**1485.573**	**1485.573**

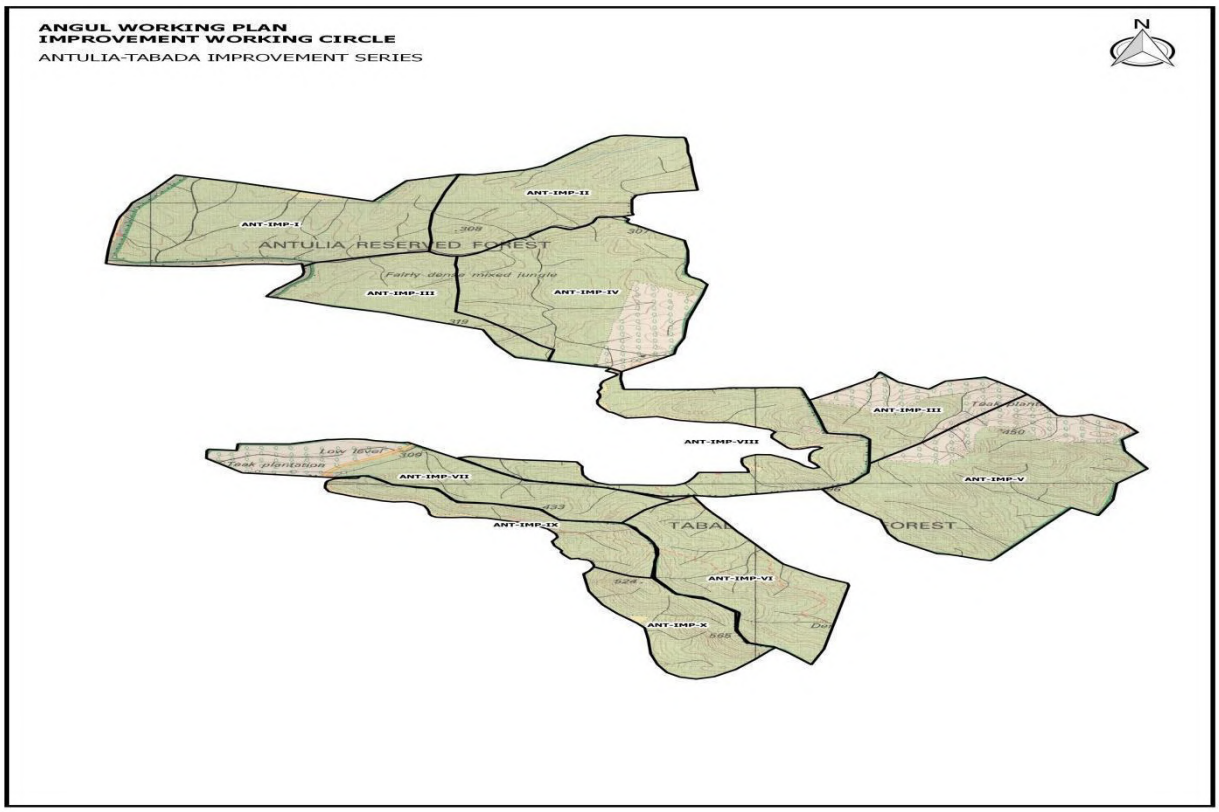


Table No. 2.5 Similipathar Improvement series

Name of the Range	Year of working	Name of the Forest Block	Improvement Coupe No	Compartment No	Area in Ha	Total Area adopted
1	2	3	4	5	6	7
Jarapada	2021-22	Similipathar RF	SPT-IMP-I	1	313.66	313.66
Jarapada	2022-23	Similipathar RF	SPT-IMP-II	2	205.646	205.646
Jarapada	2023-24	Similipathar RF	SPT-IMP-III	3	303.819	303.819
Jarapada	2024-25	Similipathar RF	SPT-IMP-IV	4	237.18	237.18
Jarapada	2025-26	Similipathar RF	SPT-IMP-V	5(P)	169.91	268.858
Jarapada		Kandhakurudu RF	NIL	SPT IMP-V	98.948	
Jarapada	2026-27	Similipathar RF	SPT-IMP-VI	5(P)	204.166	204.166
Jarapada	2027-28	Similipathar RF	SPT-IMP-VII	6(P)	207.77	207.77
Jarapada	2028-29	Similipathar RF	SPT-IMP-VIII	6(P)	180.572	180.572
Jarapada	2029-30	Similipathar RF	SPT-IMP-IX	7	224.393	224.393
Jarapada	2030-31	Similipathar RF	SPT-IMP-X	8	154.787	154.787
		Total			**2300.851**	**2300.851**

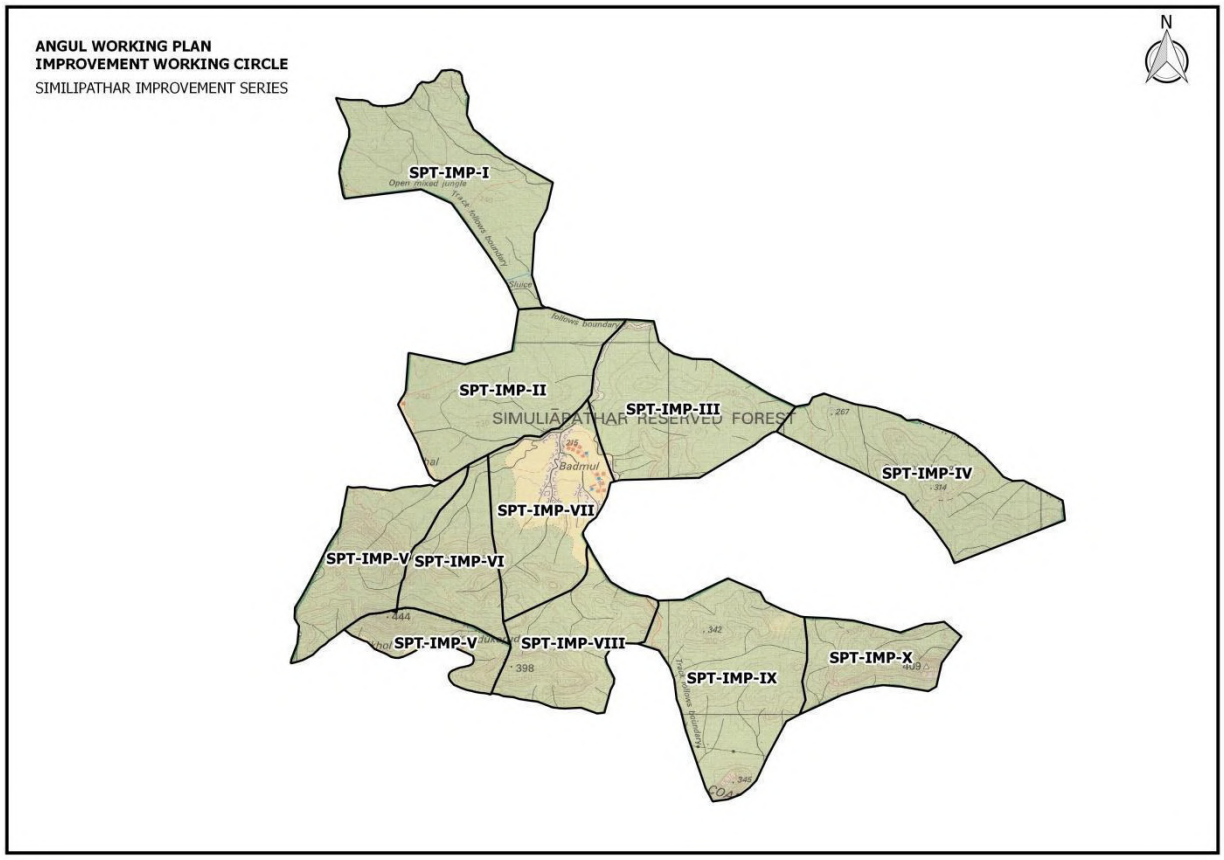


Table No. 2.6 Katada Improvement series

Name of the Range	Year of working	Name of the Forest Block	Improvement Coupe No	Compartment No	Area in Ha	Total Area adopted
1	2	3	4	5	6	7
Jarapada	2021-22	Katada RF	KTD-IMP-1	1(P)	321.276	321.276
Jarapada	2022-23	Katada RF	KTD-IMP-II	1(P)	244.16	244.16
Jarapada	2023-24	Katada RF	KTD-IMP-III	7	331.117	331.117
Jarapada	2024-25	Katada RF	KTD-IMP-IV	2	172.684	172.684
Jarapada	2025-26	Katada RF	KTD-IMP-V	3(P)	223.386	223.386
Jarapada	2026-27	Katada RF	KTD-IMP-VI	3(P)	212.34	318.4
Jarapada		Katada RF	KTD-IMP-VI	6(P)	106.06	
Jarapada	2027-28	Katada RF	KTD-IMP-VII	6(P)	337.682	337.682
Jarapada	2028-29	Katada RF	KTD-IMP-VIII	4	390.559	390.559
Jarapada	2029-30	Katada RF	KTD-IMP-IX	6(P)	111.92	253.7
Jarapada		Katada RF	KTD-IMP-IX	5(P)	141.78	
Jarapada	2030-31	Katada RF	KTD-IMP-X	5(P)	312.53	312.53
		Total			**2905.494**	**2905.494**

Table No. 2.7 Bulajhara Improvement series

Name of the Range	Year of working	Name of the Forest Block	Improvement Coupe No	Compartment No	Area in Ha	Total Area adopted
1	2	3	4	5	6	7
Talcher	2021-22	Bulajhara RF	BL J-IMP-I	1	204.976	204.976
Talcher	2022-23	Bulajhara RF	BL J-IMP-II	2	188.876	188.876
Talcher	2023-24	Bulajhara RF	BL J-IMP-III	3	168.441	168.441
Talcher	2024-25	Bulajhara RF	BL J-IMP-IV	4	185.603	185.603
Talcher	2025-26	Bulajhara RF	BL J-IMP-V	5	224.452	224.452
Talcher	2026-27	Bulajhara RF	BL J-IMP-VI	6	186.914	186.914
Talcher	2027-28	Bulajhara RF	BL J-IMP-VII	7	208.648	208.648
Talcher	2028-29	Bulajhara RF	BL J-IMP-VIII	8	150.795	150.795
Talcher	2029-30	Bulajhara RF	BL J-IMP-IX	9	246.941	246.941
Talcher	2030-31	Bulajhara RF	BL J-IMP-X	10	111.206	236.329
Talcher		Langalkhol RF	BL J-IMP-X	Nil	125.123	
		Total			**2001.975**	**2001.975**

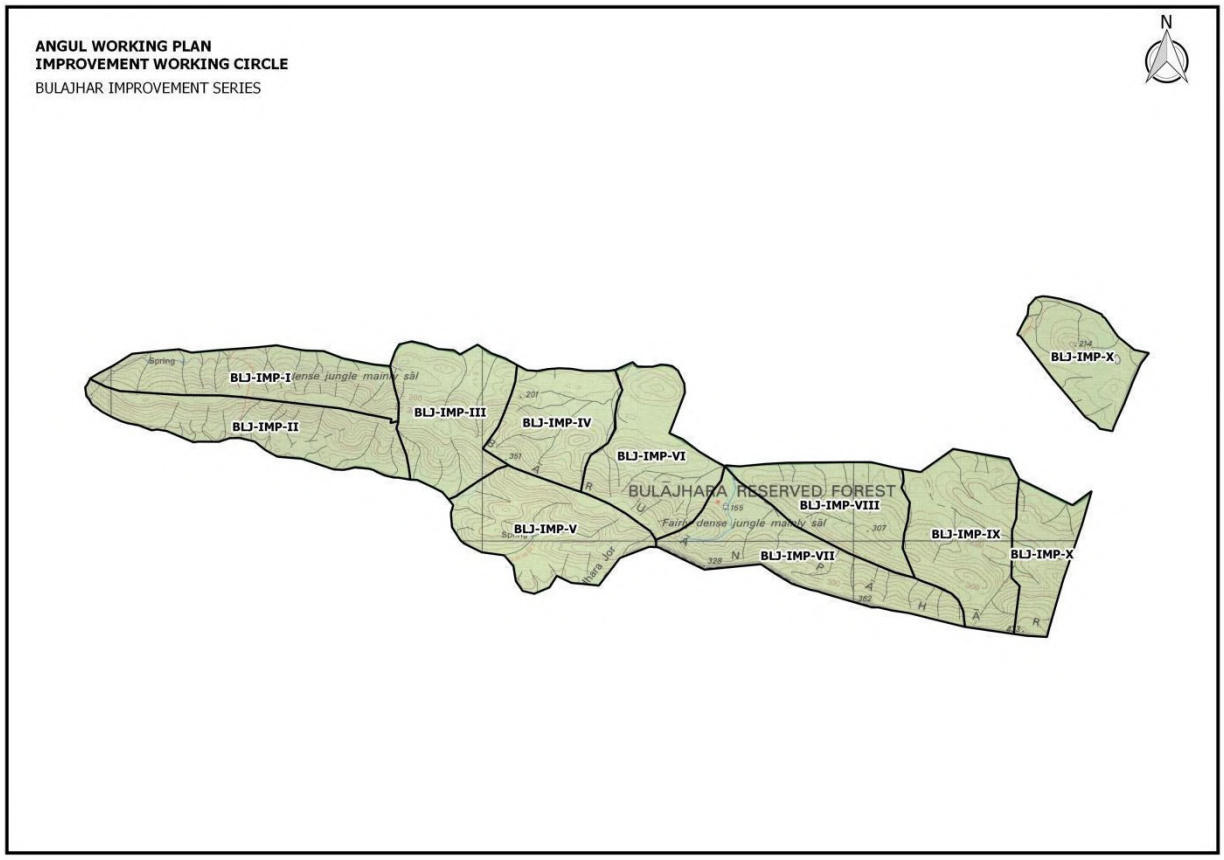


Table No. 2.8 Kanheijena Improvement series

Name of the Range	Year of working	Name of the Forest Block	Improvement Coupe No	Compartment No	Area in Ha	Total Area adopted
1	2	3	4	5	6	7
Talcher	2021-22	Kanheijena RF	KNJ-IMP-I	Nil	321	321
Talcher	2022-23	Kanheijena RF	KNJ-IMP-II	Nil	347	347
Talcher	2023-24	Kanheijena RF	KNJ-IMP-III	Nil	365	365
Talcher	2024-25	Kanheijena RF	KNJ-IMP-IV	Nil	112	352.559
Talcher		Shibarampur RF	KNJ-IMP-IV	Nil	240.559	
Talcher	2025-26	Kanheijena RF	KNJ-IMP-V	Nil	113.382	372.875
Talcher		Kanteikulia RF	KNJ-IMP-V	Nil	259.493	
Talcher	2026-27	Kandhal RF	KNJ-IMP-VI	Nil	173.861	173.861
Kaniha	2027-28	Dhanakoili RF	KNJ-IMP-VII	Nil	326.389	326.389
Kaniha	2028-29	Dhanakoili RF	KNJ-IMP-VIII	Nil	354.516	354.516
Kaniha	2029-30	Patakhaman RF	KNJ-IMP-IX	Nil	301.4	318.135
Kaniha		Kukurkhai RF	KNJ-IMP-IX	Nil	16.735	
Kaniha	2030-31	Santarabandha RF	KNJ-IMP-X	Nil	134.556	154.311
Kaniha		Gohiradanda RF	KNJ-IMP-X	Nil	19.755	
		Total			**3085.646**	**3085.646**

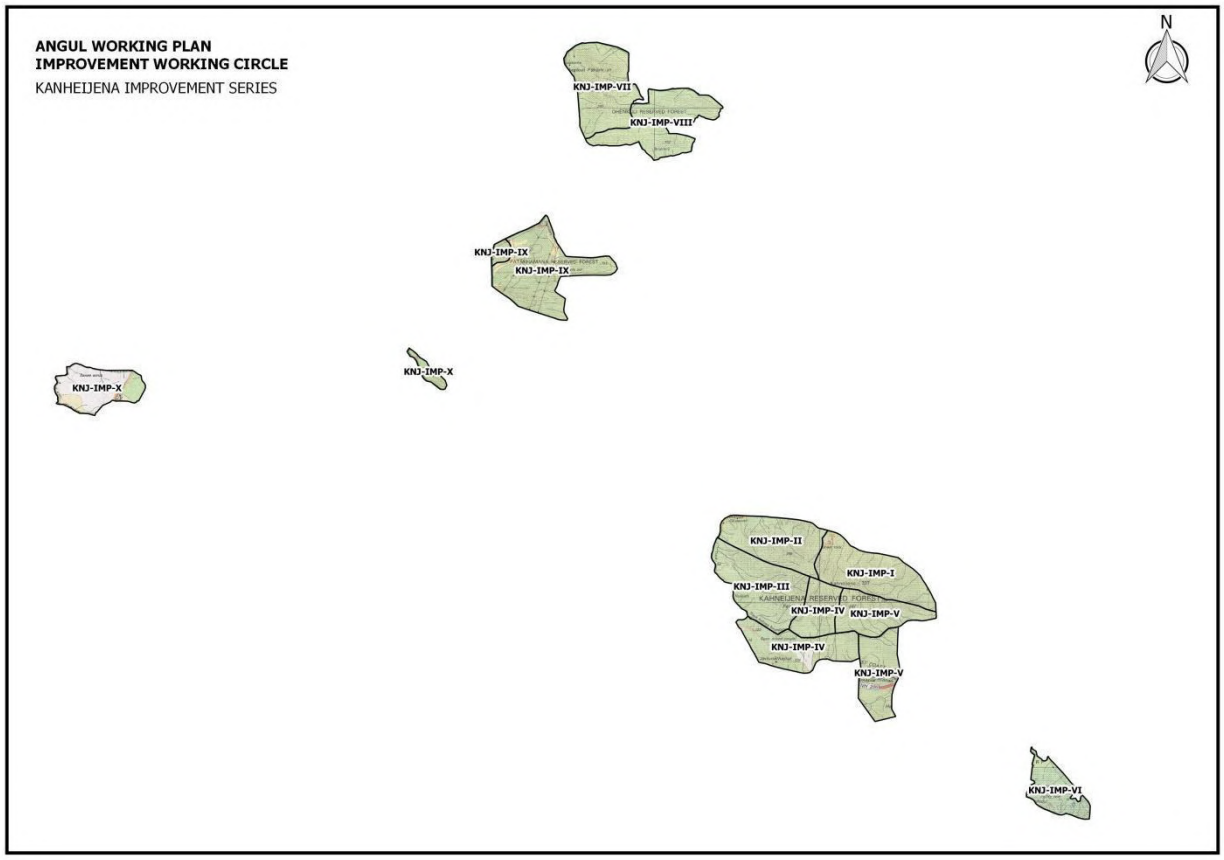


Table No. 2.9 Phuljhari Improvement series

Name of the Range	Year of working	Name of the Forest Block	Improvement Coupe No	Compartment No	Area in Ha	Total Area adopted
1	2	3	4	5	6	7
Kaniha	2021-22	Phuljhari RF	PL J-IMP-I	2	184.37	313.21
Kaniha		Phuljhari RF	PL J-IMP-I	3	128.84	
Kaniha	2022-23	Phuljhari RF	PL J-IMP-II	3(P)	60.13	369.451
Kaniha		Phuljhari RF	PL J-IMP-II	4	120.107	
Kaniha		Phuljhari RF	PL J-IMP-II	5	189.214	
Kaniha	2023-24	Phuljhari RF	PL J-IMP-III	1	250.55	250.55
Kaniha	2024-25	Nialu Lodhajhari Sapakata RF	PL J-IMP-IV	5	221.225	297.015
Kaniha		Nialu Lodhajhari Sapakata RF	PL J-IMP-IV	4(P)	75.79	
Kaniha	2025-26	Nialu Lodhajhari Sapakata RF	PL J-IMP-V	3	275.991	376.598
Kaniha		Nialu Lodhajhari Sapakata RF	PL J-IMP-V	4(P)	100.607	
Kaniha	2026-27	Nialu Lodhajhari Sapakata RF	PL J-IMP-VI	2	284.086	284.086
Kaniha	2027-28	Nialu Lodhajhari Sapakata RF	PL J-IMP-VII	1	243.577	243.577
Kaniha	2028-29	Badakathia	PL J-IMP-VIII	Nil	350.671	350.671
Kaniha	2029-30	Badakathia	PL J-IMP-IX	Nil	349.225	349.225
Kaniha	2030-31	Badakathia	PL J-IMP-X	Nil	328.091	328.091
		Total			**3162.474**	**3162.474**

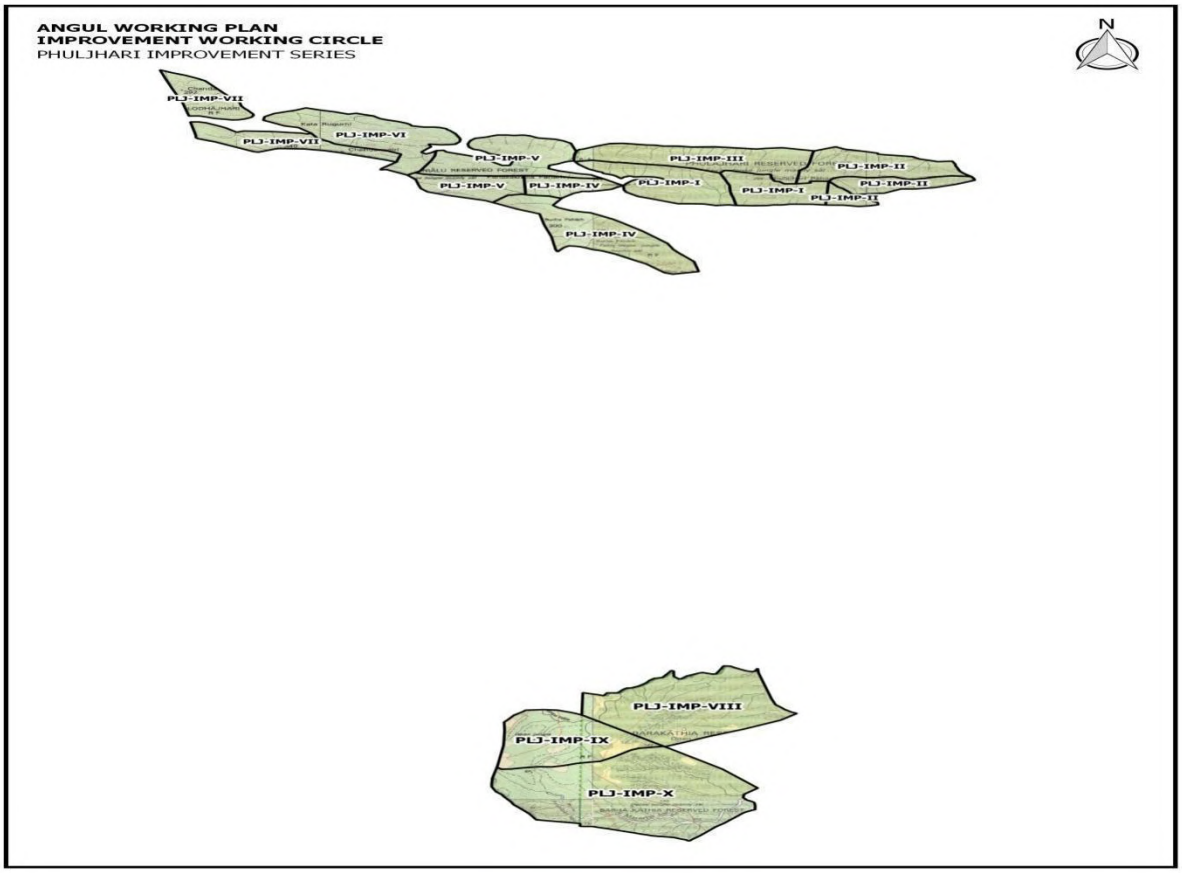


Table No. 2.10 Krushnachakra Improvement series

Name of the Range	Year of working	Name of the Forest Block	Improvement Coupe No	Compartment No	Area in Ha	Total Area adopted
1	2	3	4	5	6	7
Angul	2021-22	Krushnachakra PRF	KCH-IMP-I	2	362.237	362.237
Angul	2022-23	Krushnachakra PRF	KCH-IMP-II	1(P) west	338.231	338.231
Angul	2023-24	Krushnachakra PRF	KCH-IMP-III	1(P) East	356.405	356.405
Angul	2024-25	Krushnachakra PRF	KCH-IMP-IV	3(P) west	325.514	325.514
Angul	2025-26	Krushnachakra PRF	KCH-IMP-V	3(P) East	166.789	320.714
Angul		Krushnachakra PRF	KCH-IMP-V	4(P) West	153.925	
Angul	2026-27	Krushnachakra PRF	KCH-IMP-VI	4(P) East	302.78	302.78
Angul	2027-28	Kurudu PRF	KCH-IMP-VII	1	380.235	380.235
Angul	2028-29	Kulasinga PRF	KCH-IMP-VIII	1	156.579	238.899
Angul		Chandanpur PRF	KCH-IMP-VIII	North	82.32	
Angul	2029-30	Kulasinga PRF	KCH-IMP-IX	2	255.136	255.136
Angul	2030-31	Chandanpur PRF	KCH-IMP-X	South	329.044	329.044
		Total			**3209.195**	**3209.195**

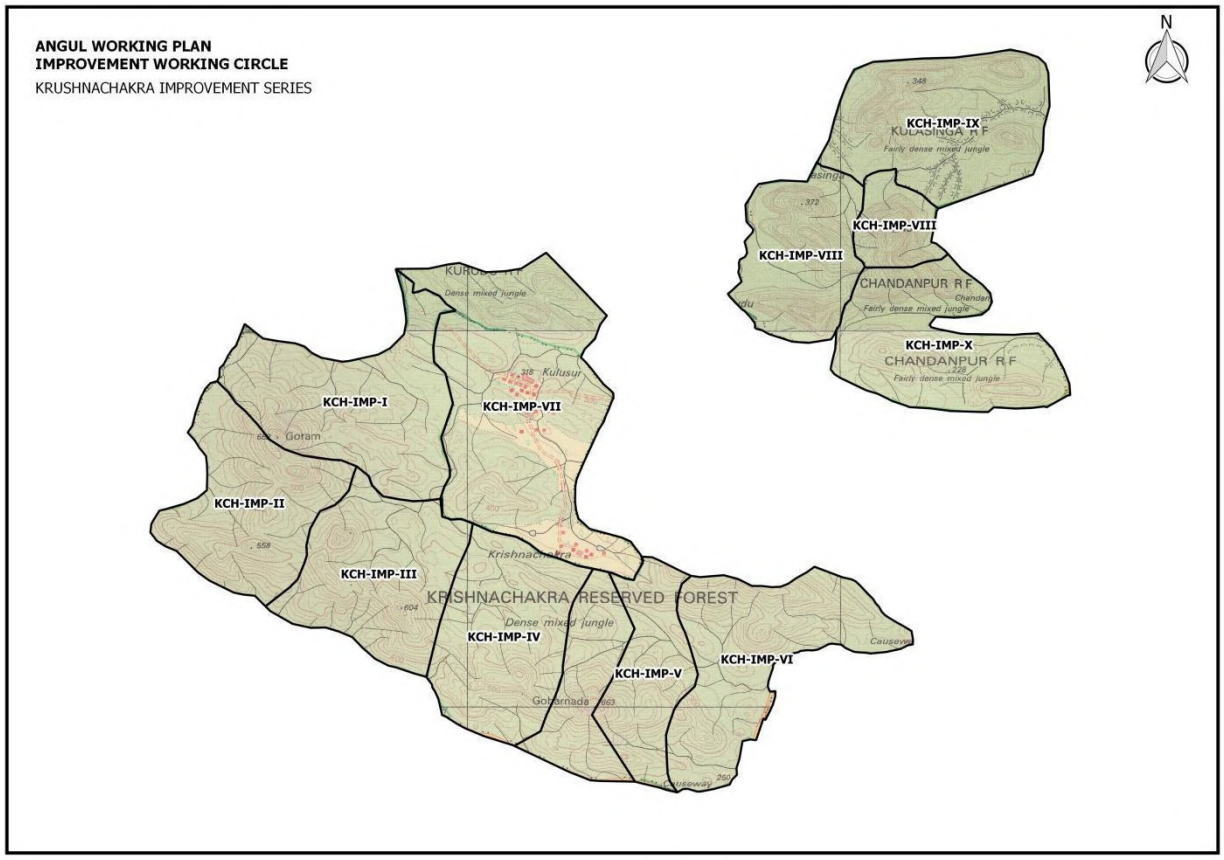
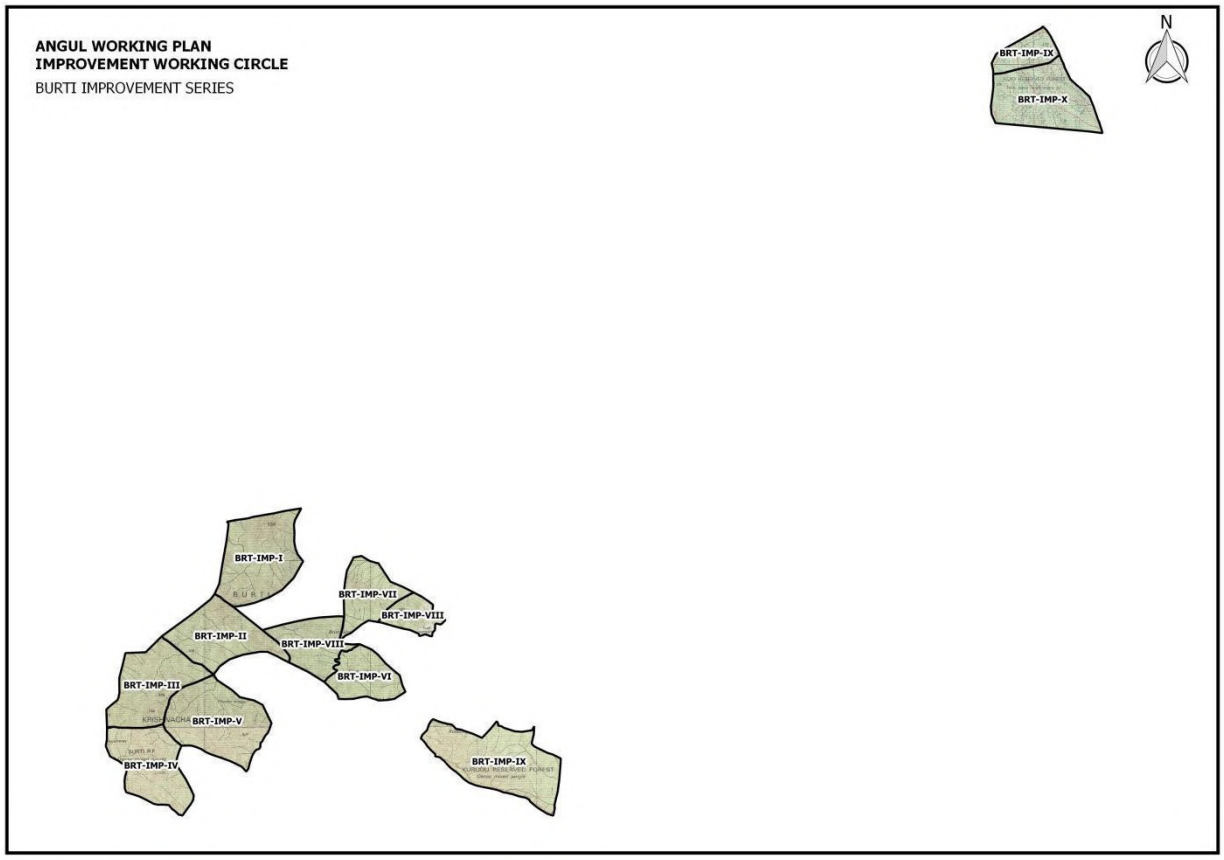


Table No. 2.11 Burti Improvement series

Name of the Range	Year of working	Name of the Forest Block	Improvement Coupe No	Compartment No	Area in Ha	Total Area adopted
1	2	3	4	5	6	7
Angul	2021-22	Burti PRF	BRT-IMP-I	2	334.314	334.314
Angul	2022-23	Burti PRF	BRT-IMP-II	1	318.421	318.421
Angul	2023-24	Burti PRF	BRT-IMP-III	7	356.24	356.24
Angul	2024-25	Burti PRF	BRT-IMP-IV	6	399.054	399.054
Angul	2025-26	Burti PRF	BRT-IMP-V	5	393.082	393.082
Angul	2026-27	Burti PRF	BRT-IMP-VI	3(P) West	237.658	237.658
Angul	2027-28	Burti PRF	BRT-IMP-VII	3(P) West	260.572	260.572
Angul	2028-29	Burti PRF	BRT-IMP-VIII	3(P) South	120.358	212.511
Angul		Burti PRF	BRT-IMP-VIII	4(P) East	92.153	
Angul	2029-30	Kurudu PRF	BRT-IMP-IX	2	156.386	332.187
Angul		Kuio RF	BRT-IMP-IX	Nil	175.801	
Angul	2030-31	Kuio RF	BRT-IMP-X	Nil	325.528	325.528
		Total			**3169.567**	**3169.567**



2. 6 Special Objectives of Management:-

1. To improve the density, condition and composition of forest cover.
2. To ensure appropriate soil and moisture conservation measures on watershed basis for improvement of site condition and eco-restoration.
3. To maintain and improve the biodiversity of the forest blocks.
4. To build up the growing stock and improve stand structure by adopting suitable silvicultural operations.
5. To establish natural regeneration of indigenous species.

2.6.1 Analysis of the Crop

The entire working circle has been stock mapped based on reconnaissance survey and satellite imagery. Stock maps have been attached to the respective compartment history files. The average density of the crop included in this working circle is 0.4 though it varies from 0.3 to above 0.5.

The entire forest area of the division was stratified on the basis of the forest type layer prepared from multi-spectral IRS LISS-III data and forest canopy density developed from panchromatic IRS PAN data. The two input layers were integrated along with the layer containing the administrative boundaries and forest blocks of the division. Based on the stratified layer sample points were allotted in compartments and blocks for carrying out 0.1ha field inventory. Inventory points were located on the ground by using GPS receivers. At first, field work for pre-inventory sample points were taken up. Based on the results of pre-inventory and reconnaissance survey, allotment of blocks and compartment to the Improvement WC was carried out. The 2nd and 3rd set of sample points were taken up in the

blocks allotted to the Improvement Working Circle on the basis of the results obtained. Sampling intensity varied form 0.25 to 0.4 % in the blocks depending on the crop composition and density. The field inventory data was analyzed by segregating the areas into Sal dominated (75%) and mixed Sal strata (25%) and based on the result stand density, basal areas and volumes for blocks and compartment were computed.

2.6.2 Silvicultural System

Improvement system will be adopted with maximum emphasis to improve the crop condition. The aim is to encourage natural regeneration to the maximum extent and where ever necessary, it will be supplemented artificially to preserve and nurse the crop for regulation of maximum growth. Only dead and uprooted trees will be harvested for utilization after considering prescriptions of wild life management on removal of dead/uprooted trees.

2.6.3 Rotation period

It is practically of no consequence in the present system.

2.6.4 – Harvestable diameters

In the outgoing plan prepared by Sri Arjun Behera, OFS – I, WPO for the period 2007-08 to 2016-17 had not recommended for selection Working Circle. Because of no exploitable girth of the trees reached for felling.

In the current revised Working Plan no felling is recommended as the trees off exploitable girth of some species are to be retained as mother tress for natural regeneration.

2.6.5 – Reducing factors and reduced areas.

There is no reducing factors for reduce of forest area except quality and density of the vegetation due to excess biotic pressure, repeated fire and soil erosion in the area having crop density .1 to .4.

2.6.6 Felling cycle.

The entire forest area of this division is under Improvement Working Circle , Rehabilitation Working Circle, Protection Working Circle and Plantation Working Circle, so table of felling is not necessary as no selection working circle has been recommended in the revised Working Plan.

2.6.7 Division into periods and allotment to periodic block (PB)

As no selection system adopted in the working circle no allotment of periods blocks for felling.

2.6.8 Calculation of the yield.

There is no proposal for felling. It is not necessary for yield calculation.

2.6.9 Table of felling.

2.6.10 Method of executing the felling.

2.6.10.1 Demarcation of Annual Coupes/Treatment Area

i) The annual coupes shall be demarcated in the winter season (October to December) in the year preceding to 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 lines by putting double white paint rings.

iii) The other portion of coupe line shall be laid down by clearance of 1.5 m. width along with stone cairns (white painted) at visible distance. Clearance shall be restricted for the purpose of identification and visibility. No felling of any kind shall be done on the strip. Double coal tar rings shall be given on trees standing on coupe line..

iv) In case, a coupe overlaps two or more compartments, each portion shall be treated as separate lot. This will ensure the proper maintenance of compartment history. In all these cases, the lot 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 point of intersection with roads, inspection paths, boundary lines of R.F. The signboards should contain the name of improvement series, the serial number of the coupe, its area, year of working and number of the compartment.

vi) Coupe shall be demarcated by a trained Forester and shall be checked by Range Officer before marking starts.

2.6.10.2 Marking Rules

After demarcation of improvement coupe area, marking shall be done in accordance with the following rules. All trees to be marked for felling will be given two blazes opposite to each other of size 15 cm x 15 cm, one at breast height and the other as close to the ground as possible and marked with departmental hammer and numbered serially.

i) Only the dead and uprooted trees shall be marked.

ii) All climbers shall be cut at the time of marking (climbers shall be cut at two places, one near the ground and other 2 m above the ground).

iii) On completion of marking, inspection shall be done by the A.C.F. and defect, if any shall be rectified. Marking Officer (not below the rank of a Range Officer) shall submit marking list within a week of inspection.

2.6.10.3. Execution of Improvement Felling

i) Method of disposal of marked trees shall be in accordance with Chapter XIV of Forest Department Code 1979 as modified by Govt. from time to time.

ii) Felling and extraction in any annual coupe shall be allowed from 1st October to 31st May.

iii) Trees shall be lopped before felling to avoid damage to the regeneration and the standing crop. The trees should be felled towards upper hill slope in hilly coupes.

iv) Works undertaken, number of lots formed, detailed passing list, deviations if any must be mentioned in the compartment history and control forms.

2.6.11 Subsidiary silvicultural operation cleaning and thinning.

Subsidiary silvicultural operation shall be done in the year following the main felling. This operation shall be done over the entire coupe area except in very degraded areas and steep slopes. The following operations are prescribed.

(i) All dead marked trees left standing by the coupe purchaser (the OFDC Ltd) shall be felled and removed from annual coupes/treatment areas.

(ii) All these trees damaged in the main felling and does not have any scope for survival shall be felled and removed from annual coupes.

(ii) All high stumps shall be cut.

(iii) All climbers left per chance during marking shall be cut back.

(iv) All fallen pieces of branches, small wood left during the main felling which could cause fire hazard shall be removed.

(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.

(v) The blank areas created due to shifting cultivation 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.

2.6.12 Regeneration.

Sowing and Planting:-

i) The identified blank patches shall be taken under sowing and planting. One year old seedlings of indigenous species like Jamun, Harida, Bahada, Gambhari, Asan, Sissoo, Piasal, Mitkunia, etc. shall be preferred.

ii) Teak plantations shall be managed as prescribed under plantation overlapping working circle. But small patches of teak plantations (less than 4 ha. in extent) shall be managed according to prescriptions of this working circle. The D.F.O. shall inspect those teak plantations for finding out any important treatment such as thinning, pruning, climber cutting etc. to be carried out and accordingly works shall be executed.

2.6.13 Associated Regulations and measures.

2.6.13.1 Grazing: The coupes shall be closed for grazing for five years including the year of working. Grazing shall be regulated in other area on the basis of rotation. Lopping is strictly prohibited.

2.6.13.2 Fire Protection: The coupes shall be protected against fire for five years after the completion of main felling. The OrissaForest (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.

2.6.13.3 Rights and concessions: Rights and concessions shall be regulated as per the provisions of the Orissa Forest Act and Rules made there under and relevant Government policies in force.

CHAPTER - 3

The Rehabilitation Working Circle

3.1 General Constitution.

3.1.1 The forest blocks allotted to this working circle are those whose forest crops are in various stages of degradation. Degradation of these forests is due to the unrelenting biotic interference such as illicit felling, repeated fires, grazing and encroachments. These adverse biotic conditions have led to the top soil being washed away in some places resulting in the exposure of rocks. On the other hand, these forest blocks still contain enough potential in terms of sufficient rootstock and natural regeneration, which if tended and protected could convert these degraded forests to high forests. Most of these blocks are in urgent need of attention to arrest the process of degradation. The area allotted to this Working Circle is 22586.239 ha. Attempt is to be made to involve the local villagers in rehabilitation of these forests by the formation of Vana Samrakshayna Samities (VSS) as per the JFM Resolution of the Govt. In most of the forest blocks the VSS members have started protecting the forests, and as a result the crop condition has improved.

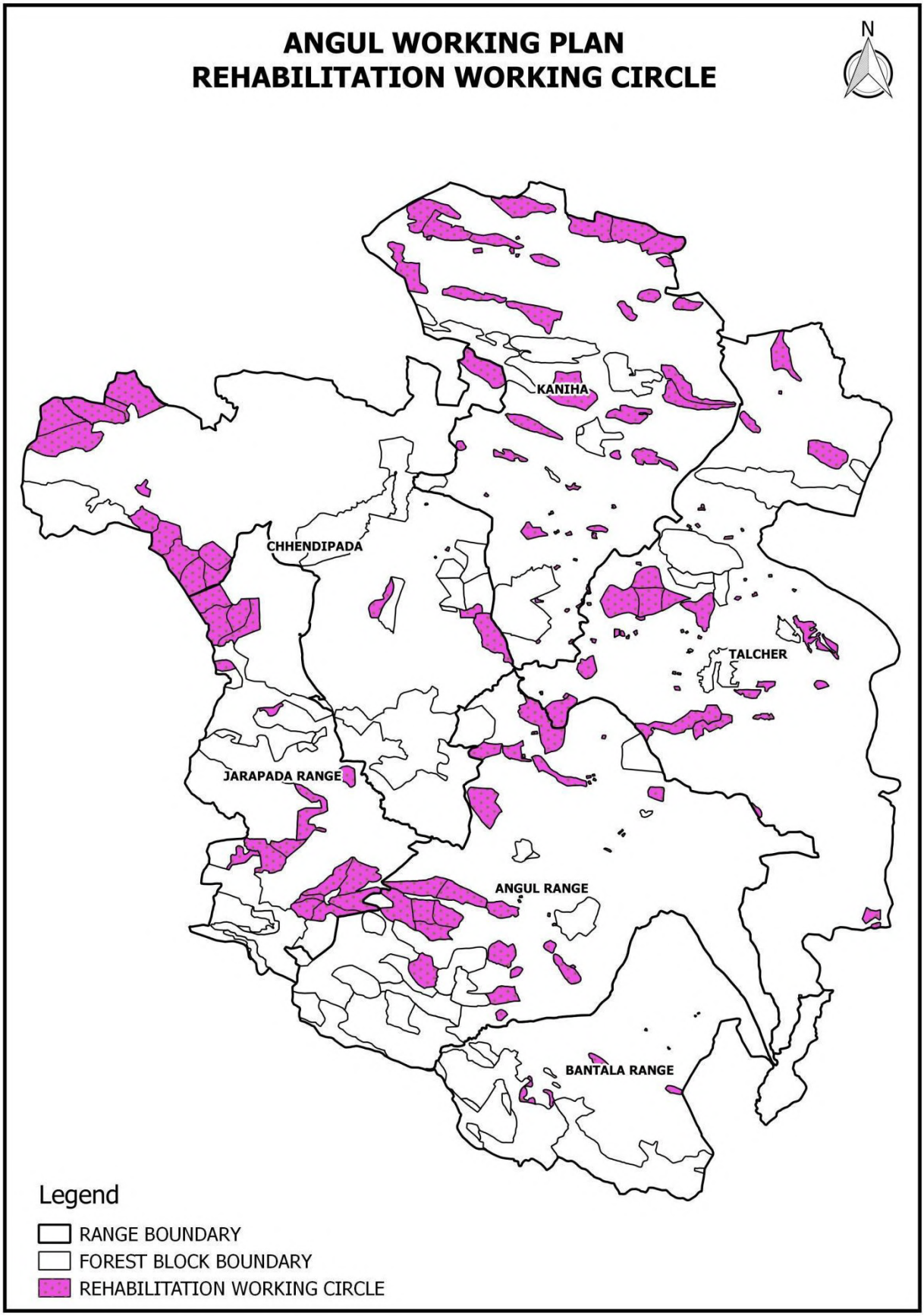
3.1.2 The forest blocks allotted to this working circle arefurnished in **Table No. 3.1**. Portion of some of these forest blocks have been allotted to VSS and during the course of implementation of this plan it is expected that further areas will be allotted to VSS for joint protection and management.

Table No. 3.1 Treatment Series (T.S) wise area of Rehabilitation Working Circle

SL No.	Treatment Series (T.S)	Range	Block	Compartment	Area of Treatment (GIS area in ha.
1	Chhendipada	Angul	Malibrahmani RF		102.541
			Paranga RF		166.387
			Kuio Sakosinga RF		68.722
			Kaliakata RF		180.241
			Nisha RF		444.93
		Chhendipada	Sunarijharan PRF		450.817
			Jayapur RF		347.263
			Khalpal RF		101.698
			Chakundapal DPF		178.821
			Dangapal PRF		667.242
			Nunmati PRF		398.62
			Marudhip PRF		1192.149
			Total		**4299.431**
2	Kaniha	Kaniha	Matharagadi RF		45.855
			Saradhapur RF		50.89
			Jaghani RF		38.856
			Bhana RF		62.608
			Pital Ragadi RF		27.903

			Chandrapada RF		303.143
			Durgapur Danda RF		169.963
			Gumpha Hill RF		37.359
			Kiajhara RF		272.197
			Dalak Poipal Danda RF (P) S		573.413
			Arakhadahi RF		305.496
			Godigotha RF		321.45
			Pedi RF		392.464
			Tangiri RF		254.847
			Total		**2856.444**
3	Rengali	Kaniha	Sadarkhole RF		956.737
			Rameswar Hill		74.033
			Saleimada RF		326.095
			Biripal RF (P) West		1147.18
			Bandhuli RF		65.361
			Sachi RF		91.13
			Budhia RF		116.725
			Khajuria RF		136.076
		Talcher	Seepur RF		107.085
			Silling RF		39.003
			Mankadachua RF		339.188
			Total		**3398.613**
4	Pathargarh	Jarapada	Pathargarh PRF	1, 3(P) & 4(p)	917.513
			Para PRF		358.16
			Arisuliasulia RF		122.044
			Para PRF (P)		551.614
			Roadsinga PRF		116.939
		Bantala	Baragounia RF		55.634
			Kangulei PRF		46.009
		Angul	Hinsar Sorispal PRF (P) W		685.699
			Total		**2853.612**
5	Purunagarh	Angul	Kerjang PRF		421.011
			Jukub - PF		4.86
			Nanda - RF		55.408
			Saharagoda RF		159.713
			Badadandasahi RF		196.631
			Guranga RF		59.007
			Nandapur Berhampur RF		40.975
			Pokunda PRF		290.976
			Kalapata PRF	1, 4	598.575
			Sorispal RF		191.207
			Kalapata PRF	2	512.138

			Madhapur RF		173.917
		Bantala	Kantamegha PRF		168.232
		Jarapada	Pathargarh PRF	2. 3(p)	620.555
			Total		**3493.205**
6	Devinagar	Chhendipada	Devinagar PRF		1718.33
			Kanaloi PRF		57.769
		Jarapada	Devinagar PRF		1325.6
			Durgapur PRF		45.305
			Durgapur ARF		35.486
			Sudagoleswar PRF		89.876
			Pitachari PRF		60.853
			Total		**3333.219**
7	Talcher	Talcher	Rabipur RF		1052.799
			Kandhabereni PRF		219.576
			Pathuria Petachira RF		289.763
			Gengutia RF		30.834
			Dera PRF		76.229
			Makundanali RF		32.66
			Baistambaragadi RF		12.194
			Hirapur RF		168.007
			Kauchiakhole RF		146.215
			Gopalprasad RF		102.254
			Mallibandha RF		114.766
			Balaramprasad RF		51.421
			Ganthigadia (A) DPF		33.738
			Ganthigadia (B) DPF		21.259
			Total		**2351.715**
			G. Total		**22586.239**


ANGUL WORKING PLAN
REHABILITATION WORKING CIRCLE
N
KANIHA
CHHENDIPADA
TALCHER
JARAPADA RANGE
ANGUL RANGE
BANTALA RANGE
Legend
RANGE BOUNDARY
FOREST BLOCK BOUNDARY
REHABILITATION WORKING CIRCLE

3.2 General Character of Vegetation

3.2.1 The areas included in this Working Circlecan be improved by proper treatment and cultural operations. These forests are mostly open mixed miscellaneous forest in various stages of degradation. The crop density would vary from 0.1 to 0.4 and these forest blocks are generally found in close proximity to human habitation. Mature trees may be available in a scattered manner in some of these forest blocks interspersed with pole crop and bushy growth. The regeneration study reveals that the regeneration of few species like Sal, Kendu, Asan, etc is moderate to good in majority of the blocks. But the young shoots are affected due to frequent fires.

3.2.2 The detailed description of the vegetation has been dealt in Chapter 2 of Part 1 of this plan. The forest blocks of this working circle are spread over all the ranges. The forests are mainly of two types.

(1) North Indian moist Deciduous Forests – 3C

(2) Northern Dry mixed Deciduous Forests – 5B/ C_2

3.2.2.1 The main species present in the North Indian Moist Deciduous Forests are *Shorea robusta, Terminalia tomentosa, Anogeissus latifolia, Adina cordifolia, Mitragyna parvifolia, Buchanania lanzan, Lannea coroman-delica, Boswellia serrata, Dalbergia paniculata, Diospyrus melanoxylon, Cleistanthes collinus, Embilca officinalis, Aegle maruselos, Stereospermum suaveolens, Pterocarpus marsupium, Lagerstroemia parviflora, Cassia fistula, Gardenia species, Hollarhena antidysentrica, Ixora arborea, Cloroxylon swietenia, Butea monosperma, Bursera serrata, Schleichera oleosa, Diospyros sylvatica, Strychnos potatorum, Sterculia urens, Semicarpus annacardium, Sterculia urens, Dendrocalamus strictus*(only in Archean group formation)

3.2.2.2 The important species ofNorthern Dry Mixed Deciduous Forests are *Anogeissus latifolia, Terminalia tomentosa, Lannea coromandelica, Pterocarpus marsupium, Bombax ceiba, Dalbergia paniculata,, Terminalia bellirica, Madhuca indica, Adina cordifolia, Albizia species, Terminalia chebula, Mitragyna parvifolia, Shorea robusta* (less than 5%) *Dalbergia latifolia, agerstroemia parviflora, Diospyrus melanoxylon, Bursea serrata, Acacia leucopholia, Hollarhena antidysentrica, Cloroxylon swietenia, Gardenia latifolia, Ixora arborea, Schleichera oelosa,* etc.

3.2.3 The vegetation is mostly open with sufficient root stock and some natural regeneration. These blocks are found in close proximity to human inhabitation and hence involvement of the forest fringe dwellers through JFM is of paramount importance in this circle.

3.3 Felling series, cutting sections and JFM areas

The forest areas under the management of the JFM will be treated as per the prescribed approved Micro Plan. Only NTFP minor forest produce and other usufruct harvested during intermediate operations. Emphasis will be provided for protection activities.

3.4 Block, compartment and JFMs area (marked on GIS based maps)

In the revised working plan 52 Reserve Forest Block, 19 proposed Reserve Forest block, 3 nos. Demarcated Protect Forest& 2 nos. Protect Forest has been allotted to the Rehabilitation working circle the total area allotted to the working circle is 23280.239 ha. This constituted 34.957 % of the total working plan management area of the division.

Table No. 3.2 Chhendipada Rehabilitation Treatment Series (CDP) for the revised Working Plan of Angul Forest Division for the period 2021-22 to 2030-31

Range	Name of the Forest Block	Annual Treatment coupe No	Compt. No	Area	Total Area adopted	Year
Purunagarh	Malibrahmani RF	CDP-I	Nil	102.541	102.541	2021-22
Purunagarh	Paranga RF	CDP - II	Nil	166.387	235.109	2022-23
	Kuio Sakosinga RF	CDP - II	Nil	68.722		
Purunagarh	Kaliakata RF	CDP - III	Nil	180.241	180.241	2023-24
Purunagarh	Nisha RF	CDP - IV	Nil	444.93	444.93	2024-25
Chhendipada	Sunarijharan PRF	CDP - V	Nil	450.817	450.817	2025-26
Chhendipada	Jayapur RF	DDV- VI	Nil	347.263	627.782	2026-27
	Khalpal RF	CDP - VI	Nil	101.698		
	Chakundapal DPF	CDP - VI	Nil	178.821		
Chhendipada	Dangapal PRF	CDP - VII	Nil	521.405	521.405	2027-28
Chhendipada	Dangapal PRF	CDP VIII	Nil	145.837	544.457	2028-29
	Nunmati PRF	CDP - VIII	Nil	398.62		
Chhendipada	Marudhip PRF	CDP - IX	Nil	594.369	594.369	2029-30
Chhendipada	Marudhip PRF	CDP - X	Nil	597.78	597.78	2030-31
Total				**4299.431**	**4299.431**	

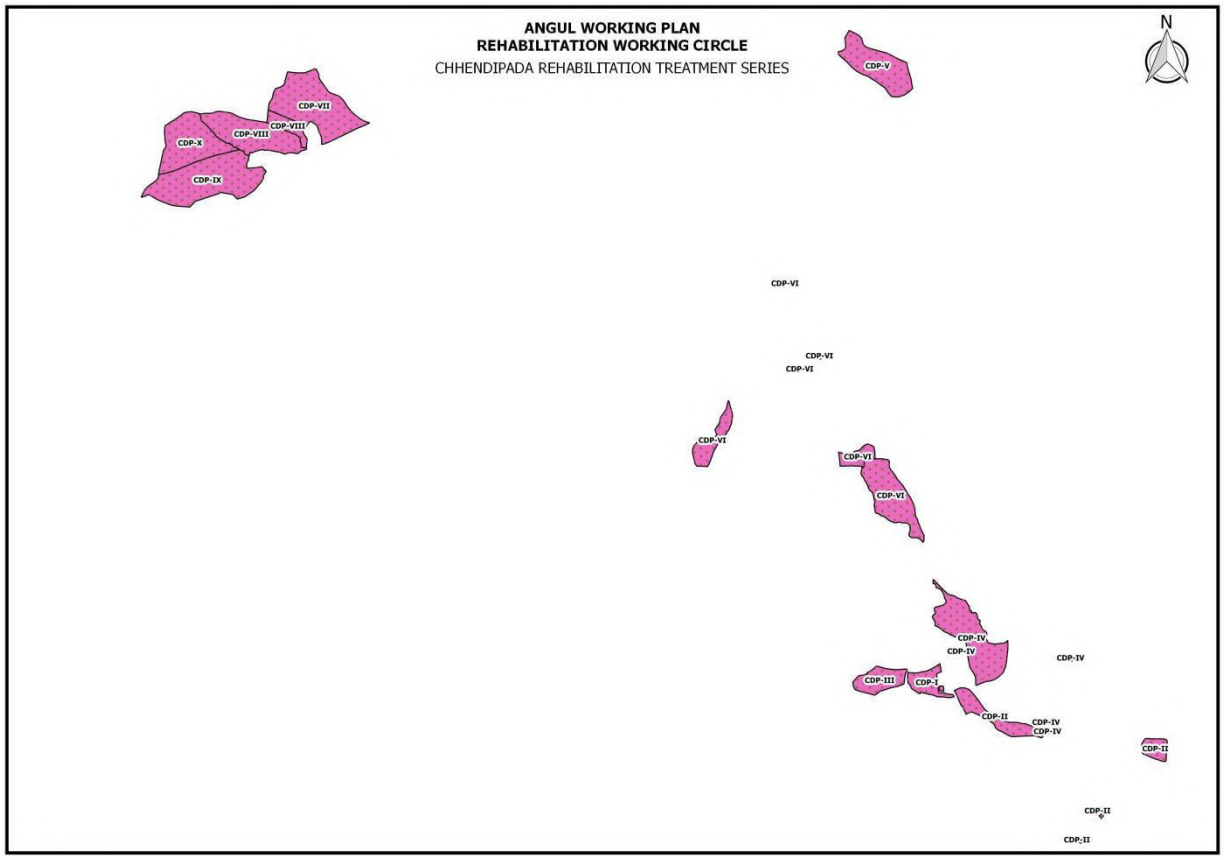


Table No. 3.3 Kaniha Rehabilitation Treatment Series (KNH) for the revised Working Plan of Angul Forest Division for the period 2021-22 to 2030-31

Range	Name of the Forest Block	Annual coupe No	Compt. No	Area	Total Area adopted	Year
Kaniha	Matharagadi RF	KNH - I		45.855	226.112	2021-22
	Saradhapur RF	KNH - I		50.89		
	Jaghani RF	KNH - I		38.856		
	Bhana RF	KNH - I		62.608		
	Pital Ragadi RF	KNH - I		27.903		
Kaniha	Chandrapada RF	KNH - II		303.143	303.143	2022-23
Kaniha	Durgapur Danda RF	KNH - III		169.963	207.322	2023-24
	Gumpha Hill RF	KNH - III		37.359		
Kaniha	Kiajhara RF	KNH - IV		272.197	272.197	2024-25
Kaniha	Dalak Poipal Danda RF (P) S	KNH - V		365.048	365.048	2025-26
Kaniha	Dalak Poipal Danda RF (P) N	KNH - VI		208.365	208.365	2026-27
Kaniha	Arakhadahi RF	KNH - VII		305.496	305.496	2027-28
Kaniha	Godigotha RF	KNH - VIII		321.45	321.45	2028-29
Kaniha	Pedi RF	KNH - IX		392.464	392.464	2029-30
Kaniha	Tangiri RF	KNH - X		254.847	254.847	2030-31
Total				**2856.444**	**2856.444**	

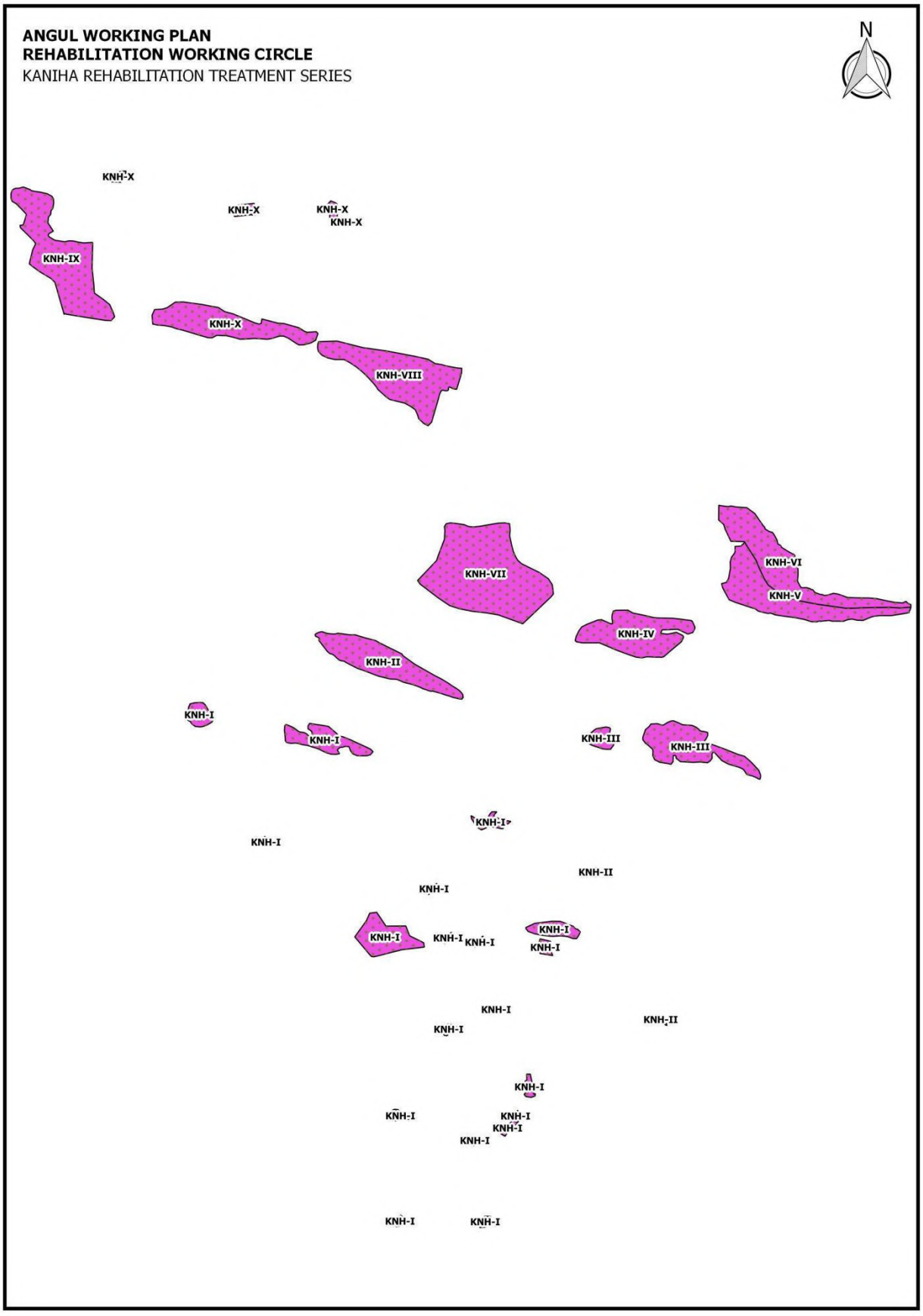

ANGUL WORKING PLAN
REHABILITATION WORKING CIRCLE
KANIHA REHABILITATION TREATMENT SERIES
N
KNH-X
KNH-X
KNH-X
KNH-X
KNH-IX
KNH-X
KNH-VIII
KNH-VII
KNH-VI
KNH-V
KNH-IV
KNH-II
KNH-I
KNH-I
KNH-III
KNH-III
KNH-I
KNH-I
KNH-II
KNH-I
KNH-I
KNH-I
KNH-I
KNH-I
KNH-I
KNH-II
KNH-I
KNH-I
KNH-I
KNH-I
KNH-I
KNH-I
KNH-I

Table No. 3.4 Rengali Rehabilitation Treatment Series (RGL) for the revised Working Plan of Angul Forest Division for the period 2021-22 to 2030-31						
Range	**Name of the Forest Block**	**Annual coupe No**	**Compt. No**	**Area**	**Total Area adopted**	**Year**
Kaniha	Sadarkhole RF (P) west	RGL - I		330.197	330.197	2021-22
Kaniha	Sadarkhole RF (P) mid	RGL - II		368.111	368.111	2022-23
Kaniha	Sadarkhole RF (P) East	RGL - III		258.429	332.462	2023-24
	Rameswar Hill	RGL - III		74.033		
Kaniha	Saleimada RF	RGL - IV		326.095	326.095	2024-25
Kaniha	Biripal RF (P) West	RGL - V		383.39	383.39	2025-26
Kaniha	Biripal RF (P) Mid	RGL - VI		420.65	420.65	2026-27
Kaniha	Biripal RF (P) East	RGL - VII		343.14	408.501	2027-28
	Bandhuli RF	RGL - VII		65.361		
Kaniha	Sachi RF	RGL - VIII		91.13	343.931	2028-29
	Budhia RF	RGL - VIII		116.725		
	Khajuria RF	RGL - VIII		136.076		
Talcher	Seepur RF	RGL - IX		107.085	146.088	2029-30
	Silling RF	RGL - IX		39.003		
Talcher	Mankadachua RF	RGL - X		339.188	339.188	2030-31
Total				**3398.613**	**3398.613**	

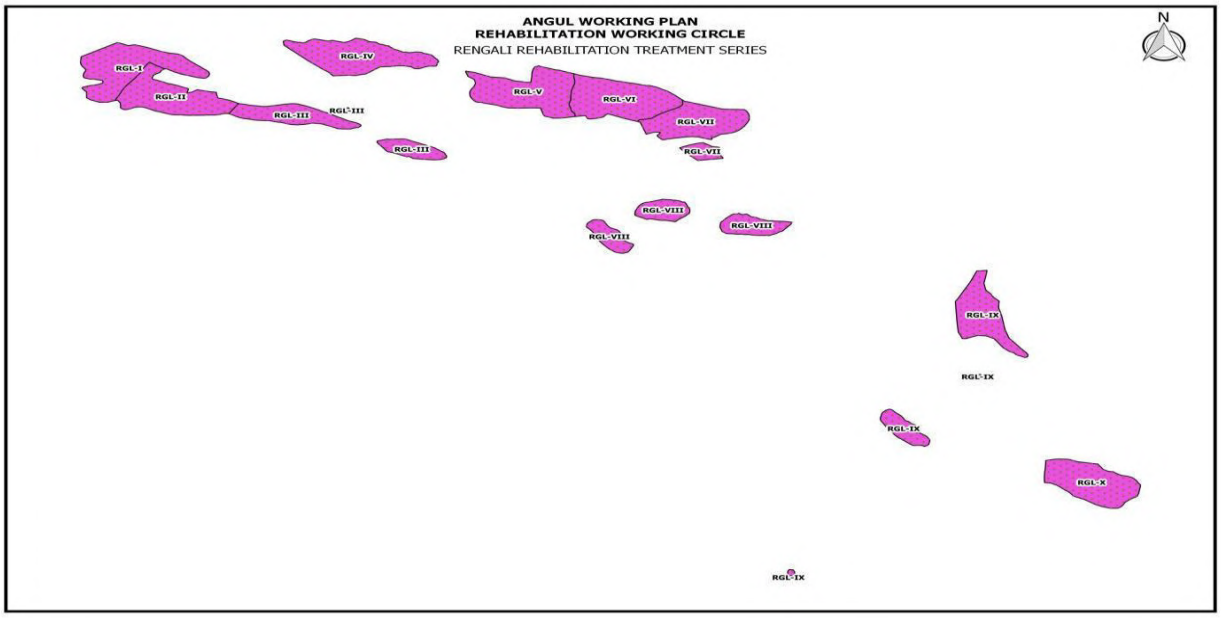


Table No. 3.5 Pathargarh Rehabilitation Treatment Series (PTG) for the revised Working Plan of Angul Forest Division for the period 2021-22 to 2030-31

Range	Name of the Forest Block	Annual coupe No	Compt. No	Area	Total Area adopted	Year
Durgapur	Pathargarh PRF	PTG - I	3(P)	207.219	286.777	2021-22
	Pathargarh PRF	PTG - I	4(P)	79.558		
Durgapur	Pathargarh PRF	PTG - II	4(P)	260.125	260.125	2022-23
Durgapur	Pathargarh PRF	PTG - III	1	370.611	370.611	2023-24
Durgapur	Para PRF	PTG - IV		358.16	480.204	2024-25
	Arisuliasulia RF	PTG - IV		122.044		
Durgapur	Para PRF (P)	PTG - V		228.834	228.834	2025-26
Durgapur	Para PRF (P)	PTG - VI		322.78	322.78	2026-27
Durgapur	Roadsinga PRF	PTG - VII		116.939	116.939	2027-28
Raigoda	Baragounia RF	PTG - VIII		55.634	101.643	2028-29
	Kangulei DPF	PTG - VIII		46.009		
Purunagarh	Hinsar Sorispal PRF (P) W	PTG - IX		363.02	363.02	2029-30
Purunagarh	Hinsar Sorispal PRF (P) E	PTG - X		322.679	322.679	2030-31
Total				**2853.612**	**2853.612**	

Table No. 3.6 Purunagarh Rehabilitation Treatment Series (PNG) for the revised Working Plan of Angul Forest Division for the period 2021-22 to 2030-31

Range	Name of the Forest Block	Annual coupe No	Compt. No	Area	Total Area adopted	Year
Purunagarh	Kerjang PRF	PNG - I		421.011	425.871	2021-22
	Jukub - PF	PNG - I		4.86		
Purunagarh	Nanda - RF	PNG - II		55.408	411.752	2022-23
	Saharagoda RF	PNG - II		159.713		
	Badadandasahi RF	PNG - II		196.631		
Purunagarh	Guranga RF	PNG - III		59.007	390.958	2023-24
	Nandapur Berhampur RF	PNG - III		40.975		
	Pokunda PRF	PNG - III		290.976		
Raigoda	Kantamegha PRF	PNG - IV		168.232	168.232	2024-25
Purunagarh	Kalapata PRF	PNG - V	1	435.13	435.13	2025-26
Purunagarh	Kalapata PRF	PNG - VI	4	163.445	354.652	2026-27
	Sorispal RF	PNG - VI		191.207		
Purunagarh	Kalapata PRF	PNG - VII	2	211.2	385.117	2027-28
	Madhapur RF	PNG - VII		173.917		
Purunagarh	Kalapata PRF	PNG - VIII	3	300.938	300.938	2028-29
Durgapur	Pathargarh PRF	PNG - IX	2	332.775	332.775	2029-30
Durgapur	Pathargarh PRF	PNG - X	3(P)	287.78	287.78	2030-31
Total				**3493.205**	**3493.205**	

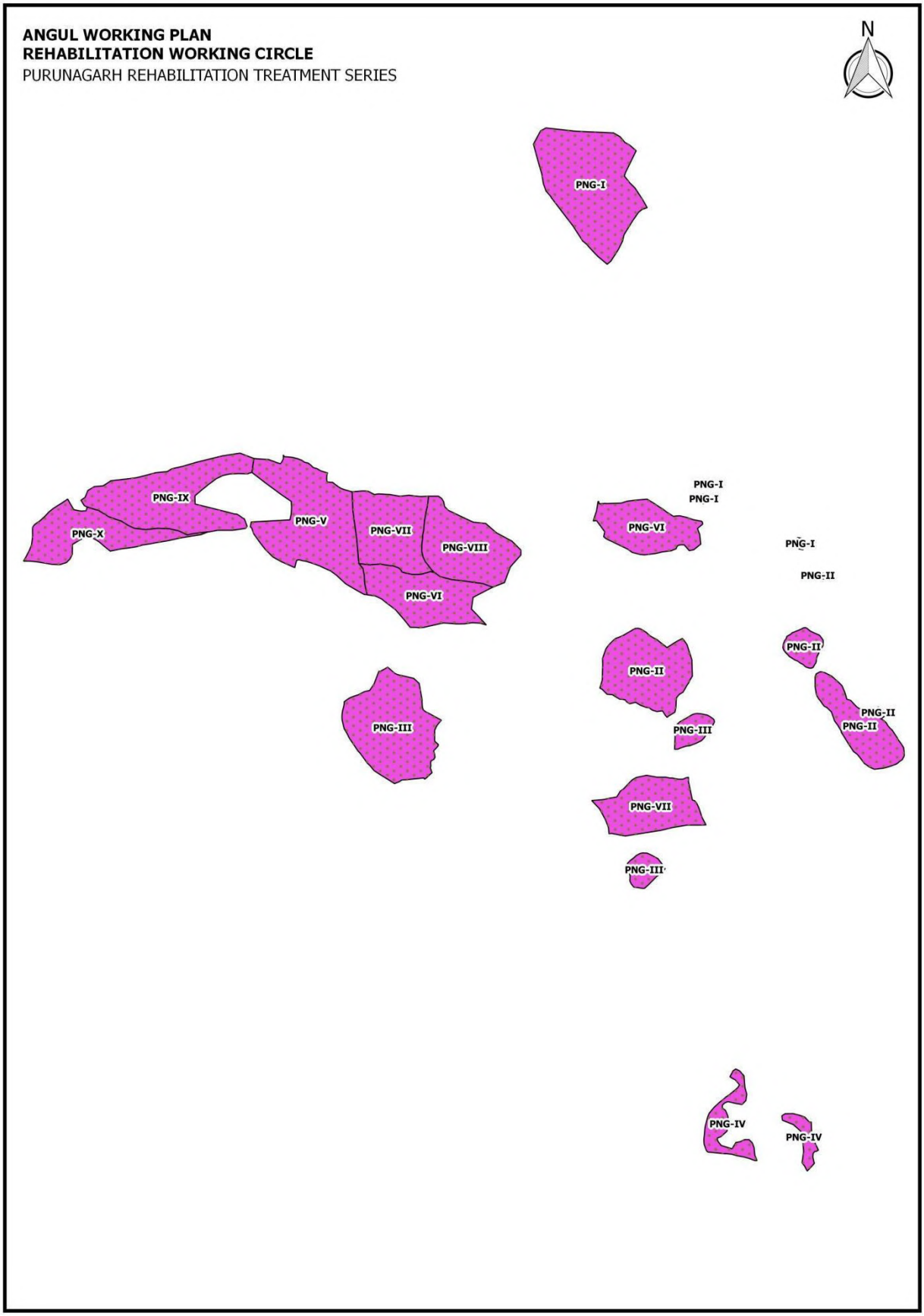

ANGUL WORKING PLAN
REHABILITATION WORKING CIRCLE
PURUNAGARH REHABILITATION TREATMENT SERIES
N
PNG-I
PNG-IX
PNG-X
PNG-V
PNG-VII
PNG-VIII
PNG-VI
PNG-III
PNG-I
PNG-I
PNG-VI
PNG-I
PNG-II
PNG-II
PNG-II
PNG-II
PNG-III
PNG-VII
PNG-III
PNG-IV
PNG-IV

Table No. 3.7 Devinagar Rehabilitation Treatment Series (DVN)for the revised Working Plan of Angul Forest Division for the period 2021-22 to 2030-31

Range	Name of the Forest Block	Annual coupe No	Compt. No	Area	Total Area adopted	Year
Chhendipada	Devinagar PRF	DVN - I		258.812	316.581	2021-22
Chhendipada	Kanaloi PRF	DVN - I		57.769		
Chhendipada	Devinagar PRF	DVN - II		308.23	308.23	2022-23
Chhendipada	Devinagar PRF	DVN - III		314.58	314.58	2023-24
Chhendipada	Devinagar PRF	DVN - IV		275.17	275.17	2024-25
Chhendipada	Devinagar PRF	DVN - V		320.78	320.78	2025-26
Chhendipada	Devinagar PRF	DVN - VI		240.758	240.758	2026-27
Durgapur	Devinagar PRF	DVN - VII		339.93	339.93	2027-28
	Devinagar PRF	DVN - VIII		362.28	452.156	2028-29
	Sudagoleswar PRF	DVN - VIII		89.876		
	Devinagar PRF	DVN - IX		284.19	364.981	2029-30
	Durgapur ARF	DVN - IX		35.486		
	Durgapur PRF	DVN - IX		45.305		
	Devinagar PRF	DVN - X		339.2	400.053	2030-31
	Pitachari PRF	DVN - X		60.853		
Total				**3333.219**	**3333.219**	

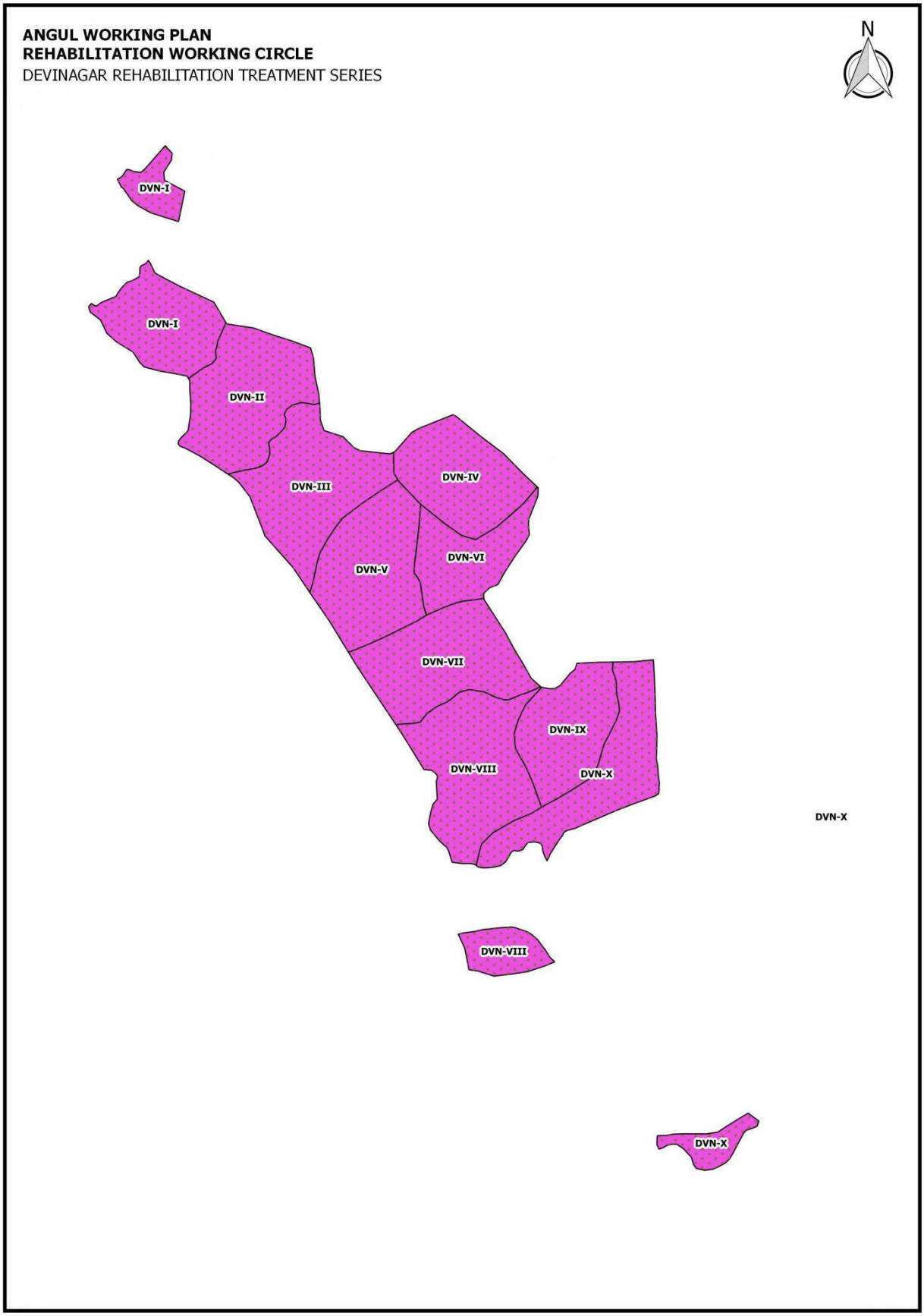
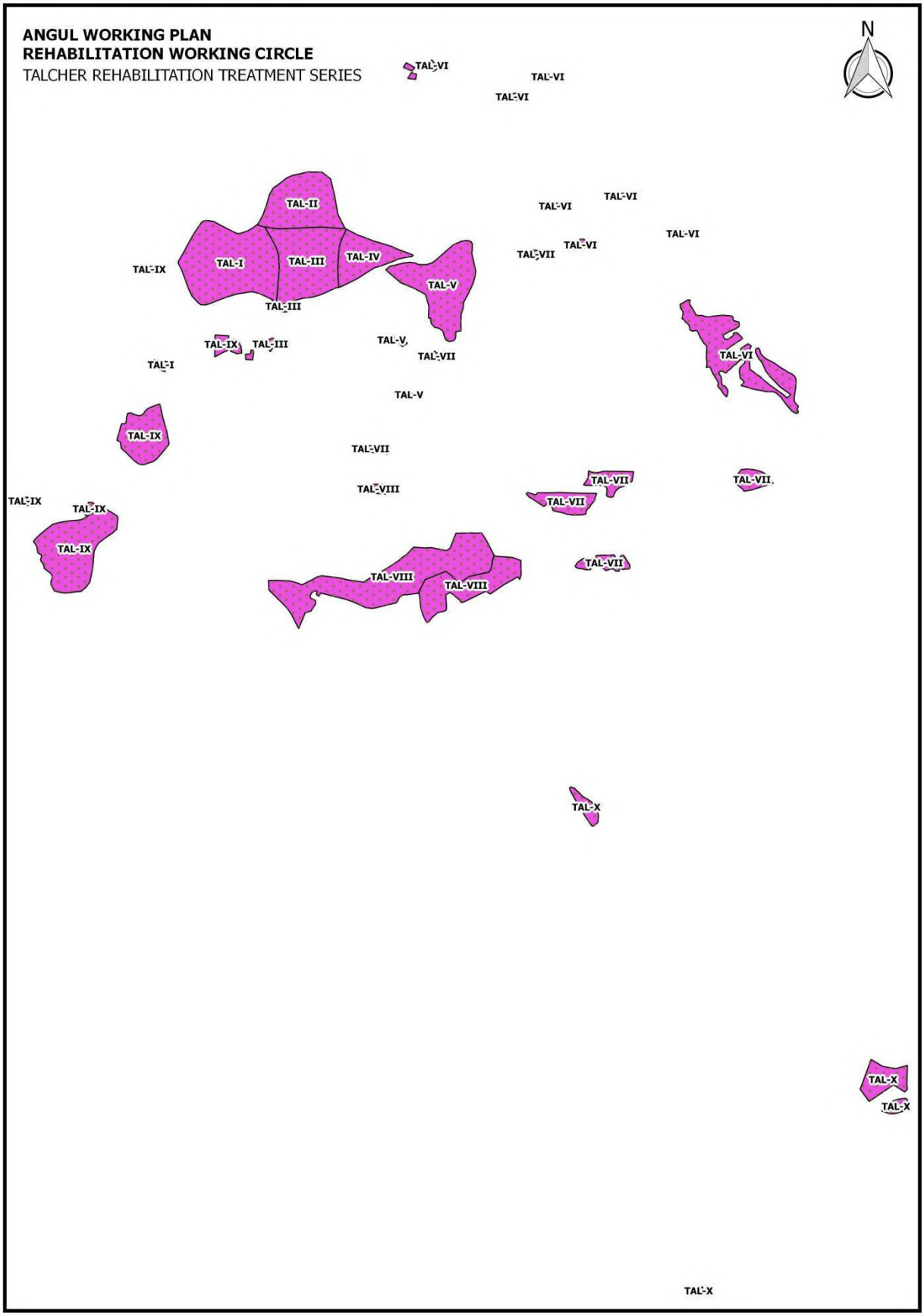

ANGUL WORKING PLAN
REHABILITATION WORKING CIRCLE
DEVINAGAR REHABILITATION TREATMENT SERIES
N
DVN-I
DVN-I
DVN-II
DVN-III
DVN-IV
DVN-V
DVN-VI
DVN-VII
DVN-IX
DVN-VIII
DVN-X
DVN-X
DVN-VIII
DVN-X

Table No. 3.8 Talcher Rehabilitation Treatment Series (TAL) for the revised Working Plan of Angul Forest Division for the period 2021-22 to 2030-31

Range	Name of the Forest Block	Annual Treatment coupe No	Compt. No	Area	Total Area adopted	Year
Talcher	Rabipur RF (P) (West)	TAL - I		284.269	284.269	2021-22
Talcher	Rabipur RF (P) (North)	TAL - II		280.769	280.769	2022-23
Talcher	Rabipur RF (P) M	TAL - III		289.806	289.806	2023-24
Talcher	Rabipur RF (P) (East)	TAL - IV		197.955	197.955	2024-25
Talcher	Kandhabereni PRF	TAL - V		219.576	219.576	2025-26
Talcher	Pathuria Petachira RF	TAL - VI		289.763	289.763	2026-27
Talcher	Gengutia RF	TAL - VII		30.834	151.917	2027-28
	Dera PRF	TAL - VII		76.229		
	Makundanali RF	TAL - VII		32.66		
	Baistambaragadi RF	TAL - VII		12.194		
Talcher	Hirapur RF	TAL - VIII		168.007	314.222	2028-29
	Kauchiakhole RF	TAL - VIII		146.215		
Talcher	Gopalprasad RF	TAL - IX		102.254	217.02	2029-30
	Mallibandha RF	TAL - IX		114.766		
Talcher	Balaramprasad RF	TAL - X		51.421	106.418	2030-31
	Ganthigadia (A) DPF	TAL - X		33.738		
	Ganthigadia (B) DPF	TAL - X		21.259		
Total				**2351.715**	**2351.715**	


ANGUL WORKING PLAN
REHABILITATION WORKING CIRCLE
TALCHER REHABILITATION TREATMENT SERIES
N
TAL-I
TAL-II
TAL-III
TAL-IV
TAL-V
TAL-VI
TAL-VII
TAL-VIII
TAL-IX
TAL-X

3.5 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.

(i) To improve quality and stocking of the existing crop through silvicultural operation..

(ii) To rehabilitate the area and improve soil condition by taking suitable soil and moisture conservation measure.

(iii) To restock the barren and under stocked area by raising plantation with suitable species.

(iv) To encourage natural regeneration.

(v) To provide protection against illicit removal, grazing and fire so as to check further destruction of left over forest growth.

(vi) To provide adequate rehabilitation measure to protect hill slopes, nallah bank and ecofragile area.

3.5.1 Analysis of the Crop

In all the blocks allotted to this Working Circle, the study on vegetation, crop condition and extent of erosion, degradation has been conducted. Detailed assessment of growing stock, biodiversity and regeneration study was carried out in all these blocks. As already mentioned, there exists variation in the crop condition in the various blocks included in this circle. These blocks require treatment to promote natural regeneration and also artificial regeneration in areas where there are permanent blanks. Simultaneously appropriate treatment will be required to conserve the soil and moisture. The growing stock of trees available in the various blocks allotted to this working circle as estimated from sample point inventory.

3.5.2 Silvicultural System

The prime objective is to restock these forest blocks and to reduce the biotic pressure due to which these blocks have become degraded. There will be no exploitation of mature trees except for removal of dead and uprooted trees. No formal silvicultural system is prescribed. However to achieve the major objectives, operations like regeneration cleaning, soil and moisture conservation, gap planting, block planting along with tending will be carried out. In addition steps will have to be taken to protect the area from grazing, theft and fire with the active support of the people wherever possible.

3.5.2.1 Method of Execution of Operations

3.5.2.1.1 The site specific treatment plan will be prepared by the Range Officer in the year preceding the year in which the work is to be executed. This eco-restoration work will be done with a watershed approach preferably with the active participation of the local people. The following steps shall be taken for treatment under this working circle.

3.5.3.1.2 Demarcation of Annual Rehabilitation Coupe Areas

(i) The annual treatment areas will be demarcated on the ground in the preceding season of treatment with small stone cairns of the half-meter height erected at visible distance on its periphery in case of blank patches or by the painting Coal tar rings on trees at breast height standing on the coupe line. 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.

3.5.3.1.3 Rehabilitation Operations

(i) Once the treatment plan has been prepared and approved, the works shall be carried out as per the requirement without any major deviation. As far as possible operations will be carried out in the JFM mode.

(ii) Silvicultural operations shall be carried out in the year of creation and preferably before the onset of monsoon. These operations will include singling out of the coppice shoots, retaining the most promising ones, rectification of the high stumps to encourage coppice shoots and climber cutting. Clearing out of invasive weeds and cleaning out of congestion and some light thinning may be carried subject to restrictions prescribed in Para 3.9.4. In addition dead and fallen trees shall be removed from the annual coupe, if such trees are not required for wildlife purposes.

(iii) Artificial regeneration in the form of gap and block plantation shall be carried out after meticulous planning. Quality seedling shall be raised followed by other operations in accordance with the prescription of the Orissa Plantation Manual and stipulations in 3.9.4 above.

3.5.3 Rotation period

3.6.3.1 As timber production is not a consideration in this working circle, no rotation period or conversion period is prescribed. However as part of the rehabilitation treatment removal of dead, fallen trees and thinning in very congested pole crop as per site specific treatment plan is prescribed.

3.5.4 Harvestable diameters

No Trees are available for harvesting as those are not at or above the harvestable girth. Matured trees like Sal, Kendu, Asana available in scattered manner inter spread with pole crop, bushi growth and are kept as source of mother trees for natural regeneration.

3.5.5. Reducing factors and reduced areas.

There is no reducing factors for reduce of forest area except quality and density of the vegetation due to excess biotic pressure, repeated fire and soil erosion in the area having crop density .1 to .4.

3.5.6 Felling cycle

The entire forest area of this division is under Improvement Working Circle , Rehabilitation Working Circle, Protection Working Circle and Plantation Working Circle, so table of felling is not necessary as no selection working circle has been recommended in the revised Working Plan.

3.5.7 Division into periods and allotment to periodic block (PB)

As no selection system adopted in the working circle no allotment of periods blocks for felling.

3.5.8 Calculation of the yield

3.5.9 Table of Felling

3.5.10 Method of execution the felling

Not applicable, only uprooted (wind fallen trees) can be removed departmentally basing on the as per the instruction time to time heads of the department.

3.5.11 Subsidiary silvicultural operation cleaning and thinning along with SMC measures.

The following silvicultural operation will be carried out in the area as per requirements at the site.

- High stumps will be cut flush to the ground to encourage coppice shoots.
- Singling out of multiple coppice shoots to retain the most promising ones.
- Removal of congestion by cleaning operations aimed at encouraging the growth of locally desirable species.
- Adoption of few seedlings per ha of locally important and desirable species from the available natural regeneration by giving these species preferential treatment.
- Removal of invasive weeds.

Wherever there is heavy congestion in the forest crop, thinning operation shall be undertaken to encourage further growth. These operations will provide more growing space to the retained crop.These operations shall only be carried out if the condition of the crop warrants it and it will carried out under the supervision of the Range Officer. The following conditions would apply:

- It should be restricted to the congested pole crop only and limited to the species with girth at breast height less than or equal to 75cms.
- Marking shall be done on the lines of 'C' grade thinning.
- No thinning shall be carried out in open area nor any fruit bearing species shall be thinned out.
- Thinning markings are to be done very sparingly and will require the prior approval of the DFO.

3.5.12 Regeneration.

Each Rehabilitation treatment series has been divided in to 10 annual treatment areas or coupes and have been shown in the management maps. The sequence of treatment of the different blocks and compartments has been shown.Care has been taken to treat the rehabilitation area on a micro watershed basis and the blocks and compartment have been selected for treatment based on the micro watershed they occur in. The objective in doing so is to ensure that after treatment of the forest area of one micro-watershed then only the next is taken up. This GIS based selection of annual area has been based on the slope, contour, drainage, forest block and the administrative layers. The annual coupes shall be attended as per the sequence prescribed in the plan. The Tables gives the annual coupe for each rehabilitation series with its number and the year of treatment along with the name of the forest block, its compartment number and area included in the coupe.

3.5.13 Associated Regulations and measures.

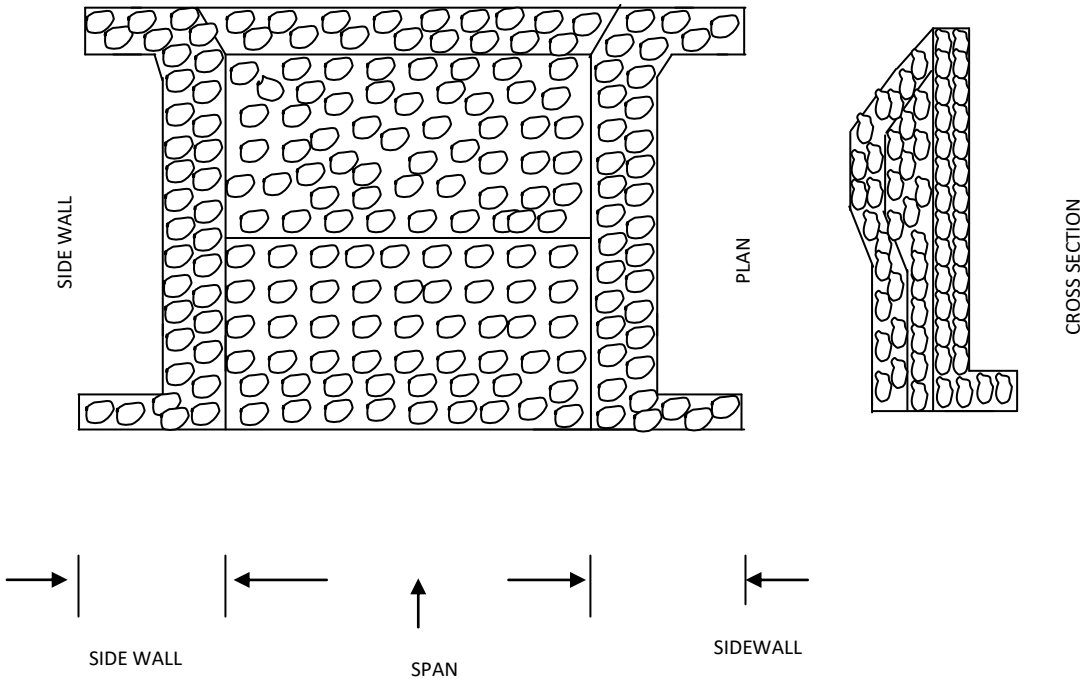
The Annual Rehabilitation journal in accordance with the provisions of the 'Orissa Forest Plantation Manual, 1977'. Annual Rehabilitation journal may be maintained at the Divisional level and Range level along with maintenance of compartment history of the corresponding forest block.

Soil and Moisture Conservation Measures:

Soil and Moisture conservation measures should form the main component of rehabilitation operations in Category II areas 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 surface 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 – X. 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.

CHAPTER - 4

The Plantation Working Circle

4.1 General Constitution

4.1.1 In Angul Forest Division, the Plantation Working circle was overlapped with rehabilitation working circle and Improvement working circle in current Working Plan. As per discussion by the committee held on 26.11.2015 the plantation working circle to be kept in independent working circle. Presently most of the blank patches have been covered up with vegetation due to intense plantation activities during the last working plan period. So it is very difficult to find out a completely blank patch inside the forest blocks for Block plantation. It is observed that due to proper protection and post planting care during the last working plan period a good no. of plantations are coming up successfully in different forests block of this division and those are included in this Working Circle for better improvement. The total area allotted to this Working Circle is **8142.106 Ha.** Considering the fact and vegetation condition of the plantations indipendent plantation working circle proposed as (a) Tending to the old teak plantation raised during and/ or prior to the out going plan period (b) Tending to the old existing MISC plantation, compensatory plantation, Fuel fodder plantation, NTFP plantation, Bamboo plantation, JVP plantation etc. raised during and/or prior to the out going plan. (c) Restocking of Village forest.

4.2 General Character of Vegetation

4.2.1 The areas included in this working circle are generally devoid of vegetation and are barren or have existing plantations raised during the period of previous plans. Artificial regeneration through plantations is comparatively expensive and is resorted to improve the forest/tree cover, extend the resource base and to meet the requirements of the people and forest based industries. Considerable environmental benefits like protection of top soil and conservation of moisture, recycling of nutrients etc also accrue due to these plantations. With the introduction of fast growing species including genetically improved planting stock, improved nursery and planting techniques management of plantations has become increasingly more intensive.

4.2.2 All the old plantations which are of extent more than 4 ha existing in the RFs/ PRFs/ D.P.Fs etc are included here. However, in most of such plantations, proper record of either the year in which these were created and whether operations like thinning etc have been carried out has not been maintained properly. In absence of any such records, it was not possible to identify the exact year of their formation in the field or the exact extent of many such existing plantations. However, said information on the year of formation and extent of their areas has been assessed basing on the records of the outgoing plan only and reflected in the respective compartment history files. The DFO shall endeavor to ascertain these details and incorporate it in the concerned files.

4.2.3 Only some prescriptions for plantationsin the outgoing plan could be carried out largely due to paucity of funds. Rather, large numbers of plantations have been raised by different planting agencies in and outside the working circle area during the previous plans period. These plantations have been subjected to grazing; illicit felling and removal. Thus, not only proper planning is a must but also strict adherence to the schedule of operations is essential to achieve the objectives of management.

4.2.4 The areas included in this Working Circle have hardly any forest growth except those blocks where plantations have been undertaken and have survived. The forest types that once existed in these areas have already been described in Chapter-II-of Part I but these have been destroyed due to severe biotic interference. However, the majority of the area under this circle as of now is of Dry Deciduous Scrub Forests ($5/DS_1$) though some NorthernDryMixedDeciduousForests (5B/ C2) and NorthIndianMoistDeciduous Forests(3C), are also found to be occurring in some blocks. These forests are mostly scrubby having mixed miscellaneous species composition. Natural forest has been destroyed giving place to scrub forest.

4.2.5 Most of the forest blocks included in this circle has moderately deep soil which is mineralogically a mixed soil. These soils once supported luxuriant forest growth and are therefore, potentially fit for raising plantations. Further details on soils of the division have already been discussed in Chapter-1 of Part I under paragraph 'Geology, Rock & Soils'. However, any plantation raised will require application of fertilizers for better growth as erosion and adverse biotic factors have led to loss of nutrients.

4.3 Felling series, cutting sections and JFM areas

In Angul, Bantala & Jarapada Range area teak plantation had been raised during 1933 to 1946. So the roatation year for harvesting has been already lapsed. Now the existing teak plants become polarading and top dying. So it is necessary to harvest the old teak plantation.

4.4 Block, compartment and JFMs area (marked on GIS based maps)

Table No. 4.1 Area adopted in Plantation Working Circle for for Revised Working Plan of Angul Forest Division period 2021-22 to 2030-31

Name of the Forest Block	Forest Block Area in Ha	Area adopted in Plantation WC from IWC Area in Ha	Area adopted in Plantation WC from RWC Area in Ha	Area adopted in Plantation WC from Newly added VF	Total area in Plantation working circle Area in Ha	Remarks
1	2	3	4	5	6	7
Antulia Tabada RF	2230.546	688.270	0	0	688.270	
Arakhadahi RF	679.496	0	374.000	0	374.000	
Arisulia Sulia RF	142.044	0	20.000	0	20.000	
Badadandasahi RF	284.431	0	87.800	0	87.800	

Badakathia RF	1580.345	0	552.358	0	552.358	
Baistamba Ragadi RF	32.194	0	20.000	0	20.000	
Balanga RF	3096.766	0.000	0	0	0.000	
Baragaunia RF	70.634	0	15	0	15.000	
Bhogapal RF	184.56	25.866	0	0	25.866	
Biripal RF	1235.18	0	88.000	0	88.000	
Brahmanabil RF	203.108	0	2.000	0	2.000	
Bulajhara RF	1947.852	71.000	0	0	71.000	
Chhendipada RF	1824.968	0	524.000	0	524.000	
Dalak Poipal Danda RF	645.413	0	72.000	0	72.000	
Derjang Golabandha RF	176.649	0	53.000	0	53.000	
Dhanakoili RF	686.405	0	5.500	0	5.500	
Durgapur Danda RF	227.963	0	58.000	0	58.000	
Durgapur A RF	55.486		20.000	0	20.000	
Durgapur RF	3609.371	0	177.820	0	177.820	
Gengutia RF	40.834	0	10.000	0	10.000	
Godigotha RF	346.45	0	25.000	0	25.000	
Gohiradanda RF	29.755	0	10.000	0	10.000	
Gopalprasad RF	153.427	0	51.173	0	51.173	
Jalatap RF	444.978	0	43.000	0	43.000	
Joyapur RF	478.263	0	131.000	0	131.000	
Kaliakata RF	205.691	0	25.450	0	25.450	
Kanaloi RF	2066.12	21.000	0	0	21.000	
Kandhal RF	189.7	0	15.839	0	15.839	
Kanehijena RF	1393.382	0	135.000	0	135.000	
Kankurpal RF	929.905	0	42.000	0	42.000	
Kanteikulia RF	299.493	0	40.000	0	40.000	
Katada RF	3142.494	237.000	0	0	237.000	
Kauchiakhol RF	146.215	0	0.000	0	0.000	
Kiajhar RF	274.197	0	2.000	0	2.000	
Kosala RF	243.127	0	64.000	0	64.000	
Kuio RF	534.329	0	33.000	0	33.000	
Kuio Sakasinga RF	88.722	0	20.000	0	20.000	
Kumanda Talataila RF	38.779	0	21.000	0	21.000	
Madhapur RF	221.793	0	47.876	0	47.876	
Makundanali RF	66.153	0	33.493	0	33.493	
Malibrahmani RF	142.541	0	40.000	0	40.000	
Mandargiri Kalima RF	606.995	0	163.000	0	163.000	
Mankadachua RF	402.188	0	63.000	0	63.000	
Nialu Lodhajhari Sapakata RF	1225.276	24.000	0	0	24.000	

Nisha RF	489.8	0	44.870	0	44.870	
Nuabhuin RF	114.766	0	0.000	0	0.000	
Nuakheta RF	2889.93	0.000	0	0	0.000	
Paranga RF	216.387	0	50.000	0	50.000	
Patakhamana RF	413.4	0	112.000	0	112.000	
Rabipur RF	1174.319	0	121.520	0	121.520	
Rakasha RF	314.912	0	0.000	0	0.000	
Rameswar Hill RF	84.033		10.000	0	10.000	
Sachi RF	97.13	0	6.000	0	6.000	
Sadarkhol RF	1057.737	0	101.000	0	101.000	
Saharagoda RF	184.713	0	25.000	0	25.000	
Saleimada RF	356.095	0	30.000	0	30.000	
Santarabandha RF	172.556	0	38.000	0	38.000	
Saradhapur RF	107.89	0	57.000	0	57.000	
Seepur RF	242.085	0	135.000	0	135.000	
Silling RF	106.47	0	67.467	0	67.467	
Similipathar RF	2524.903	323.000	0	0	323.000	
Sorishapal RF	211.207	0	20.000	0	20.000	
Tangiri RF	265.847	0	11.000	0	11.000	
Sibarampur PRF	290.559	0	50.000	0	50.000	
Kerjang PRF	466.011	0	45.000	0	45.000	
Balanga PRF	53.522	20.000	0	0	20.000	
Burti PRF	3135.584	204.850	0	0	204.850	
Chandanpur PRF	446.364	0	35.000	0	35.000	
Dandasinga Bhagatpur PRF	221.38	11.000	0	0	11.000	
Dangapal PRF	831.814	0	164.572	0	164.572	
Devinagar PRF	3202.93	0	159.000	0	159.000	
Durgapur PRF	56.305	11	0.000	0	11.000	
Kalapata PRF	1214.713	0	104.000	0	104.000	
Kanaloi PRF	69.769	0	12.000	0	12.000	
Kandhabereni PRF	243.076	0	23.500	0	23.500	
Krushana Chakra PRF	2489.598	79.460	0	0	79.460	
Kulasinga PRF	641.715	0	230.000	0	230.000	
Kurudu PRF	712.221	0	175.600	0	175.600	
Marudhipa PRF	1351.149	0	159.000	0	159.000	
Nunmati PRF	440.62	0	42.000	0	42.000	
Para PRF	1052.774	0	143.000	0	143.000	
Pathargarh PRF	1633.068	0	95.000	0	95.000	
Pokunda PRF	371.416	0	80.440	0	80.440	
Roadsinga PRF	143.939	0	27.000	0	27.000	
Sorishapal Hinsar PRF	763.359	0	77.660	0	77.660	
Sudagoleswar PRF	98.876	0	9.000	0	9.000	

Tabada PRF	210.582	55.000	0	0	55.000	
Ganthigadia A (DPF)	84.738	0	51.000	0	51.000	
Talasira DPF	49.564	46.000	0	0	46.000	
Baudabeda PF	33.722	0	33.722	0	33.722	
Atrapada VF	10	0	0	10	10.000	
Badagunduri VF	5	0	0	5	5.000	
Badahar VF	10	0	0	10	10.000	
Badahar VF	12.52	0	0	12.52	12.520	
Badahar VF	4.83	0	0	4.83	4.830	
Badatribida VF	5	0	0	5	5.000	
Balipata VF	0.25	0	0	0.25	0.250	
Banabaspur VF	14	0	0	14	14.000	
Barapali VF	4.55	0	0	4.55	4.550	
Barapali VF	3.84	0	0	3.84	3.840	
Bedasasan VF	1.38	0	0	1.38	1.380	
Belpada VF	5	0	0	5	5.000	
Bhagirathipur VF	13.5	0	0	13.5	13.500	
Bikisar VF	5	0	0	5	5.000	
Bilinda VF	30	0	0	30	30.000	
Brahmanbil VF	5	0	0	5	5.000	
Brahmanbil VF	5	0	0	5	5.000	
Budakera VF	5	0	0	5	5.000	
Chakundapal VF	5	0	0	5	5.000	
Chhelia VF	10	0	0	10	10.000	
Chitalpur VF	10	0	0	10	10.000	
Danara VF	6.78	0	0	6.78	6.780	
Dumduma VF	10	0	0	10	10.000	
Gopalprasad VF	2.13	0	0	2.13	2.130	
Gundurinali VF	6	0	0	6	6.000	
Gurjanga VF	5	0	0	5	5.000	
Inkarbandha VF	1.52	0	0	1.52	1.520	
Inkarbandha VF	0.71	0	0	0.71	0.710	
Jadunathpur VF	10	0	0	10	10.000	
Jadunathpur VF	10	0	0	10	10.000	
Jamunali VF	0.6	0	0	0.6	0.600	
Jamunali VF	17.57	0	0	17.57	17.570	
Jamunali VF	10	0	0	10	10.000	
Jarada VF	10	0	0	10	10.000	
Jarasingha VF	3	0	0	3	3.000	
Jarasingha VF	1.02	0	0	1.02	1.020	
Jhulakhuntia VF	10	0	0	10	10.000	
Joragadia VF	1.18	0	0	1.18	1.180	
Joragadia(kuria) VF	6.43	0	0	6.43	6.430	

Jukub VF	4	0	0	4	4.000	
Kaliakata VF	10	0	0	10	10.000	
Kandhabereni VF	10	0	0	10	10.000	
Katarapada VF	10	0	0	10	10.000	
Katrapalli VF	10	0	0	10	10.000	
Kuluma VF	20	0	0	20	20.000	
Kuluma VF	30	0	0	30	30.000	
Kumanda VF	5	0	0	5	5.000	
Kuruhuni VF	4.27	0	0	4.27	4.270	
Lodhabandha VF	5	0	0	5	5.000	
Lokeipasi VF	0.48	0	0	0.48	0.480	
Lokeipasi VF	0.58	0	0	0.58	0.580	
Mahuliapasi VF	8.66	0	0	8.66	8.660	
Malibandha VF	5.48	0	0	5.48	5.480	
Malibrahmani VF	10	0	0	10	10.000	
Mardharipur(kumunda) VF	8	0	0	8	8.000	
Natada VF	6	0	0	6	6.000	
Nisa VF	10	0	0	10	10.000	
Nisa VF	5	0	0	5	5.000	
Nua-Jarasingha VF	2.73	0	0	2.73	2.730	
Olanda VF	5	0	0	5	5.000	
Padmabatipur VF	4.43	0	0	4.43	4.430	
Padmabatipur VF	1.21	0	0	1.21	1.210	
Phulapada VF	5	0	0	5	5.000	
Phulpada VF	4	0	0	4	4.000	
Raghunathpur VF	20	0	0	20	20.000	
Ranjagola VF	12	0	0	12	12.000	
Ranjagola VF	15	0	0	15	15.000	
Rankasingha VF	4	0	0	4	4.000	
Rengali VF	8	0	0	8	8.000	
Rutubhuin Vf	8	0	0	8	8.000	
Rutubhuin VF	8	0	0	8	8.000	
Sahadagoda VF	3	0	0	3	3.000	
Samal VF	10	0	0	10	10.000	
Samal VF	5	0	0	5	5.000	
SamalVF	5	0	0	5	5.000	
Sanhar VF	10	0	0	10	10.000	
Santarabandha VF	5	0	0	5	5.000	
Santribida VF	15	0	0	15	15.000	
Santribida VF	8	0	0	8	8.000	
Sarangi VF	15	0	0	15	15.000	
Sibarampur VF	12.08	0	0	12.08	12.080	

Sibarampur VF	3	0	0	3	3.000	
Sibarampur VF	10	0	0	10	10.000	
Solada VF	5	0	0	5	5.000	
Solada VF	5.27	0	0	5.27	5.270	
Solada VF	29	0	0	29	29.000	
Sunakhani VF	5	0	0	5	5.000	
Surendrapur VF	1	0	0	1	1.000	
Susab VF	3	0	0	3	3.000	
Tubey VF	5	0	0	5	5.000	
Tumuni VF	3	0	0	3	3.000	
Total	**64651.766**	**1817.446**	**5630.66**	**694**	**8142.106**	

Total area of 8142.106 ha. is proposed for restocking through tending and SMC. The details of operation for restocking as under in **table no. 4.2**

Table No 4.2 Abstract of Plantation Working Circle

Old teak plantation in ha	Tending to teak plant in ha	Tending to MISC plantation in ha	Silvicultural Operation to Bamboo plantation in ha	Restock to JVP in ha	Restocking to Village Forest	Total in ha
74.39	2678.829	4092.887	488	114	694	8142.106

4.5 Special objectives of Management

The special objective of the management of the Working Circle is within the scope of general objective of the management for the entire Division. These are as follows.

- To restock the blank areas of forest blocks through artificial regeneration.
- To rehabilitate the degraded/eroded sites with green coverage by adopting special site specific method.
- To monitor and increase the biodiversity for improvement of local ecology.
- To address the biotic pressure with sustainable development of peripheral forest through community participation.
- To enrich the present crop with fodder species for improvement of Wild Life habitant.
- To encourage people for plantation in private land to reduce pressure on natural forest for timber and fuel wood by free distribution of seedling.
- To enhance the land productivity through soil & moisture conservation measures.
- To tend the existing plantations.
- To increase the production of biomass.
- To restock the JVP plantation through artificial regeneration in gaps.

4.5.1 Analysis of the Crop

The existing plantations included in the working circle have inadequate stocking but need only protection and tending operations (some natural growth has come up in between over the failure areas in some plantations), though the species planted and existing are Chakunda, Sissoo,Eucalyptus, Teak, Cashew,Acacia, Karanj, Siris, Semal, Gamhar, bamboo etc. These plantations are thinly populated and the main cause for it is the continued biotic interference coupled with neglect in general after the maintenance work of these plantations is over. Hence, all these plantations require complete protection measures coupled with tending operations to boost their growth.

4.5.2 Silvicultural System

Subsidiary silvicultural operations and replanting shall be done over the entire coupe areas as per the following operations prescribed.

i) All marked trees left standing by the coupe purchaser (the O.F.D.C.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) All climbers shall be cut.

v) All fallen pieces of branches, small wood left during main felling which could cause fire hazard shall be removed.

vi) The area shall be replanted with proper soil and moisture conservation measures like gully plugging, contour bunding, dry stone packing, construction of check dams etc. as per prescriptions given in the Orissa Plantation Mannual-1977.

4.5.2.1 Tending to Teak plantation

Tending to teak plantationhas been constituted the area of 1504.829ha raised upto last plan period & 1174 ha. raised during the current plan period. As such total area of 2678.829ha is proposed for tending in the revised working plan.

4.5.2.1.1 Purunagarh Teak Tending Series

Table No 4.3 : Purunagarh Teak Tending series

Name of Series	Range	Name of the Forest Block	Plantation raised up to last plan period	Plantation raised during current plan	Area in Ha	
Purunagarh Teak Tending Series		Mandargiri Kalima RF	50	14	64	
		Saharagoda RF	0	3	3	
		Kulasinga PRF	55	2	57	
		Pokunda PRF	15.44	37	52.44	
		Kurudu PRF	95.6	0	95.6	
		Kurudu PRF	0	80	80	
		Chandanpur PRF	0	12	12	
		Badadandasahi RF	14	32	46	
		Kalapata PRF	0	15	15	751.056
		Sorishapal Hinsar PRF	57.66	0	57.66	
		Kumanda Talataila RF	0	2	2	
		Paranga RF	10	0	10	
		Krushana Chakra PRF	76.64	0	76.64	
		Bhogapal RF	10.866	0	10.866	
		Burti PRF	80	0	80	
	Angul	Burti PRF	66.85	22	88.85	
		Baragaunia RF	0	2	2	
		Balanga PRF	0	20	20	52
	Bantala	Talasira DPF	0	30	30	
		Total	**532.056**	**271**	**803.056**	**803.056**

4.5.2.1.2Durgapur Teak Tending Series

Table No 4.4 : Durgapur Teak Tending series

Name of Series	Range	Name of the Forest Block	Plantation raised up to last plan period	Plantation raised during current plan	Area in Ha	
Durgapur Teak Tending series	Chhendipada	Durgapur RF	43.82	62	105.82	
		Kanaloi PRF	0	4	4	
		Nunmati PRF	0	8	8	
		Dangapal PRF	0	29	29	
		Marudhipa PRF	0	152	152	
		Joyapur RF	0	4	4	
		Brahmanabil RF	0	2	2	
		Kankurpal RF	0	8	8	
		Devinagar PRF	0	102	102	
		Jalatap RF	0	14	14	
		Chhendipada RF	0	49	49	
		Kosala RF	0	15	15	
		Kanaloi RF	0	8	8	500.82
	Jarapada	Pathargarh PRF	0	21	21	
		Para PRF	28	16	44	
		Roadsinga PRF	0	5	5	
		Sudagoleswar PRF	0	3	3	
		Antulia Tabada RF	140	0	140	
		Antulia Tabada RF	140	0	140	
		Antulia Tabada RF	140	0	140	
		Antulia Tabada RF	165.95	0	165.95	
		Antulia Tabada RF	0	26	26	
		Tabada PRF	0	34	34	
		Dandasinga Bhagatpur PRF	0	2	2	
		Similipathar RF	78.75	1	79.75	
		Similipathar RF	130	0	130	
		Katada RF	20	2	22	952.7
		Total	**886.52**	**567**	**1453.52**	**1453.52**

4.5.2.1.3 Talcher Teak Tending Series

Table No 4.5 :Talcher Teak Tending series

Name of Series	Range	Name of the Forest Block	Plantation raised up to last plan period	Plantation raised during current plan	Area in Ha	
Talcher Teak Tending Series	Kaniha	Arakhadahi RF	30	0	30	
		Arakhadahi RF	0	51	51	
		Arakhadahi RF	0	50	50	
		Arakhadahi RF	0	50	50	
		Badakathia RF	0	62	62	
		Biripal RF	0	9	9	
		Dhanakoili RF	0	1	1	
		Durgapur Danda RF	0	2	2	
		Dalak Poipal Danda RF	0	5	5	
		Godigotha RF	0	4	4	
		Patakhamana RF	20	6	26	
		Sadarkhol RF	0	3	3	
		Saleimada RF	0	2	2	
		Tangiri RF	0	5	5	
		Santarabandha RF	0	8	8	
		Saradhapur RF	0	3	3	
		Nialu Lodhajhari Sapakata RF	0	2	2	313
	Talcher	Bulajhara RF	21	0	21	
		Kandhal RF	15.253	0	15.253	
		Mankadachua RF	0	8	8	
		Seepur RF	0	40	40	
		Seepur RF	0	25	25	109.253
		Total	**86.253**	**336**	**422.253**	**422.253**

4.5.2.1.4 Abstract of Teak Tending Series

Table No. 4.6 Teak Tending Series Abstract

Sl No	Name of the Series	Area allotted in Ha
1	Purunagarh Teak Tending Series (PTS)	803.056
2	Durgapur Teak Tending Series (DTS)	1453.52
3	Talcher Teak Tending Series (TTS)	**422.253**
	Total	**2678.829**

4.5.2.2 Operations in Teak Tending Series

Since the teak plantations are varying in age, these are in need of appropriate silvicultural operations to further boost the growth. They require operations like pruning, thinning and climber cutting. However, the following shall be carried out in the annual coupes.

- All dead trees shall be removed departmentally.
- All climbers shall be cut.
- 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.
- Gap plantation shall be done where ever required.

4.5.2.2.1. Purunagarh Teak Tending Series

Table No.4.7 : Purunagarh Teak Tending series

Name of Series	Range	Series	Year Of Working	Name of the Forest Block	Plantation raised up to last plan period	Plantation raised during current plan	Area in Ha	
Purunagarh Teak Tending Series	Angul	PTTS I	2021-22	Mandargiri Kalima RF	50	14	64	67
				Saharagoda RF	0	3	3	
		PTTS II	2022-23	Kulasinga PRF	55	2	57	109.44
				Pokunda PRF	15.44	37	52.44	
		PTTS III	2023-24	Kurudu PRF	95.6	0	95.6	95.6
		PTTS IV	2024-25	Kurudu PRF	0	80	80	80
		PTTS V	2025-26	Chandanpur PRF	0	12	12	73
				Badadandasahi RF	14	32	46	
				Kalapata PRF	0	15	15	
		PTTS VI	2026-27	Sorishapal Hinsar PRF	57.66	0	57.66	69.66
				Kumanda Talataila RF	0	2	2	
				Paranga RF	10	0	10	
		PTTS VII	2027-28	Krushana Chakra PRF	76.64	0	76.64	87.506
				Bhogapal RF	10.866	0	10.866	
		PTTS VIII	2028-29	Burti PRF	80	0	80	80
		PTTS IX	2029-30	Burti PRF	66.85	22	88.85	88.85
	Bantala	PTTS X	2030-31	Baragaunia RF	0	2	2	52
				Balanga PRF	0	20	20	
				Talasira DPF	0	30	30	
				Total	**532.056**	**271**	**803.056**	**803.056**

4.5.2.2.1. Durgapur Teak Tending Series

Table No. 4.8 : Durgapur Teak Tending series

Name of Series	Range	Series	Year Of Working	Name of the Forest Block	Plantation raised up to last plan period	Plantation raised during current plan	Area in Ha	
Durgapur Teak Tending Series	Chhendipada	DDTS I	2021-22	Durgapur RF	43.82	62	105.82	146.82
				Kanaloi PRF	0	4	4	
				Nunmati PRF	0	8	8	
				Dangapal PRF	0	29	29	
		DDTS II	2022-23	Marudhipa PRF	0	152	152	152
		DDTS III	2023-24	Joyapur RF	0	4	4	130
				Brahmanabil RF	0	2	2	
				Kankurpal RF	0	8	8	
				Devinagar PRF	0	102	102	
				Jalatap RF	0	14	14	
		DDTS IV	2024-25	Chhendipada RF	0	49	49	137
				Kosala RF	0	15	15	
				Kanaloi RF	0	8	8	
	Jarapada			Pathargarh PRF	0	21	21	
				Para PRF	28	16	44	
		DDTS V	2025-26	Roadsinga PRF	0	5	5	148
				Sudagoleswar PRF	0	3	3	
				Antulia Tabada RF	140	0	140	
		DDTS VI	2026-27	Antulia Tabada RF	140	0	140	140
		DDTS VII	2027-28	Antulia Tabada RF	140	0	140	140
		DDTS VIII	2028-29	Antulia Tabada RF	165.95	0	165.95	165.95
		DDTS IX	2029-30	Antulia Tabada RF	0	26	26	141.75
				Tabada PRF	0	34	34	
				Dandasinga Bhagatpur PRF	0	2	2	
				Similipathar RF	78.75	1	79.75	
		DDTS X	2030-31	Similipathar RF	130	0	130	152
				Katada RF	20	2	22	
				Total	**886.52**	**567**	**1453.52**	**1453.52**

4.5.2.2.1. Talcher Teak Tending Series

Table No. 4.9 : Talcher Teak Tending series

Name of Series	Range	Series	Year Of Working	Name of the Forest Block	Plantation raised up to last plan period	Plantation raised during current plan	Area in Ha	
Talcher Teak Tending Series	Kaniha	TTTS I	2021-22	Arakhadahi RF	30	0	30	30
		TTTS II	2022-23	Arakhadahi RF	0	51	51	51
		TTTS III	2023-24	Arakhadahi RF	0	50	50	50
		TTTS IV	2024-25	Arakhadahi RF	0	50	50	50
		TTTS V	2025-26	Badakathia RF	0	62	62	62
		TTTS VI	2026-27	Biripal RF	0	9	9	47
				Dhanakoili RF	0	1	1	
				Durgapur Danda RF	0	2	2	
				Dalak Poipal Danda RF	0	5	5	
				Godigotha RF	0	4	4	
				Patakhamana RF	20	6	26	
		TTTS VII	2027-28	Sadarkhol RF	0	3	3	44
				Saleimada RF	0	2	2	
				Tangiri RF	0	5	5	
				Santarabandha RF	0	8	8	
				Saradhapur RF	0	3	3	
				Nialu Lodhajhari Sapakata RF	0	2	2	
	Talcher			Bulajhara RF	21	0	21	
		TTTS VIII	2028-29	Kandhal RF	15.253	0	15.253	23.253
				Mankadachua RF	0	8	8	
		TTTS IX	2029-30	Seepur RF	0	40	40	40
		TTTS X	2030-31	Seepur RF	0	25	25	25
				Total	**86.253**	**336**	**422.253**	**422.253**

4.5.2.2.1. Abstract of Teak Tending Series

Table No. 4.10 Year wise abstract of proposed for tending in Teak Plantation

Name of the Series	Year of Assignment										
	21-22	**22-23**	**23-24**	**24-25**	**25-26**	**26-27**	**27-28**	**28-29**	**29-30**	**30-31**	**Total**
PTTS	67.000	109.440	95.600	80.000	73.000	69.660	87.506	80.000	88.850	52.000	803.056
DTTS	146.820	152.000	130.000	137.000	148.000	140.000	140.000	165.950	141.750	152.000	1453.520
TTTS	30.000	51.000	50.000	50.000	62.000	67.000	44.000	23.253	40.000	25.000	442.253
Total	**243.820**	**312.440**	**275.600**	**267.000**	**283.000**	**276.660**	**271.506**	**269.203**	**270.600**	**229.000**	**2698.829**

4.5.2.3 Miscellaneous Tending Series & Compensatory tending series.

Under this MISC tending series all misc plantations, compensatory plantations, NTFP, Fuel and Fodder plantations over an area of 3839.143 ha has been included in future plan. Growth in the miscellaneous plantations tends to become bushy and branchy for want of pruning and thinning. This is more prevalent in case of miscellaneous plantations with species like Eucalyptus, Acacia, Chakunda, Siris, Gambhar, Amla, Bamboo etc which are in regular need of weeding; pruning and climber cutting. These operations are beneficial in the early years of the formation of the plantations.

The tending operations which shall be carried out in the miscellaneous plantation tending series & compensatory 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.
- 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.
- Intensive soil & moisture conservation works recommended for improving the stock.
- Apropriate protection measure shall be provided.

In case of existing cashew plantations, the gaps shall be gradually planted with species of choice. And, once the productivity of these plantations is gone, such areas shall be clear felled and replanted following the methodology prescribed for the planting series.

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 operation, all the growths including 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 thinning 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.
- As thinning are to be done very sparingly with meticulous reflection of mind and extreme silvicultural restraints, this will therefore need prior approval of the DFO.

4.5.2.4 Where ever prominent gaps of at least half an acre are existing, those shall be planted with teak intermixed with few Gambhar & Sisoo following the methodology already explained above for the planting series. Scattered planting in very small patches shall be avoided.

4.5.2.4.1 Purunagarh Miscellaneous Tending Series

Table No. 4.11 : Purunagarh Tending series

Name of the Tending Series	Range	Name Of the Forest Block	Plantation raised up to last plan period	Plantation raised during current plan	Plantation raised during current plan FF	NTFP	Area in Ha	
Purunagarh Tending Series (PTS)	Angul	Mandargiri Kalima RF	20	0	46	25	91	
		Derjang Golabandha RF	53	0	0	0	53	
		Kerjang PRF	0	25	0	0	25	
		Saharagoda RF	0	0	10	10	20	
		Kulasinga PRF	6	20	2	35	63	
		Pokunda PRF	0	0	2	25	27	
		Chandanpur PRF	0	0	2	10	12	
		Madhapur RF	22.876	15	0	0	37.876	
		Badadandasahi RF	18.3	0	0	12.5	30.8	
		Kalapata PRF	40	0	2	39	81	
		Sorishapal Hinsar PRF	20	0	0	0	20	698.996
		Sorishapal RF	20	0	0	0	20	
		Malibrahmani RF	40	0	0	0	40	
		Kaliakata RF	15.45	10	0	0	25.45	
		Kumanda Talataila RF	7	0	5	5	17	
		Kuio Sakasinga RF	0	20	0	0	20	
		Nisha RF	14.87	0	0	0	14.87	
		Paranga RF	0	20	0	0	20	
		Kuio RF	25	0	4	4	33	
		Krushana Chakra PRF	0	0	0	0	0	
		Bhogapal RF	15	0	0	0	15	
		Burti PRF	0	10	6	17	33	
	Bantala	Baragaunia RF	0	0	2	8	10	10
		Total	**317.496**	**120**	**81**	**190.5**	**708.996**	**708.996**

4.5.2.4.2Durgapur Miscellaneous Tending Series

Table No. 4.12 : Durgapur Tending series

Name of the Tending Series	Range	Name Of the Forest Block	Plantation raised up to last plan period	Plantation raised during current plan	Plantation raised during current plan FF	NTFP	Area in Ha	
Durgapur Tending Series (DTS)	Chhendipda	Durgapur RF	31	24	4	13	72	970.572
		Kanaloi PRF	0	0	4	2	6	
		Devinagar PRF	0	0	0	28	28	
		Marudhipa PRF	0	0	2	4	6	
		Nunmati PRF	0	0	16	15	31	
		Dangapal PRF	59.572	0	14	47	120.572	
		Joyapur RF	120	0	2	5	127	
		Kankurpal RF	0	0	13	19	32	
		Jalatap RF	0	0	4	21	25	
		Chhendipada RF	289	57	44	59	449	
		Kosala RF	28	0	6	10	44	
		Kanaloi RF	0	0	4	6	10	
		Arisulia Sulia RF	0	20	0	0	20	
	Jarapada	Durgapur A RF	20	0	0	0	20	530
		Durgapur PRF	11	0	0	0	11	
		Pathargarh PRF	25	20	0	28	73	
		Para PRF	25	0	5	67	97	
		Roadsinga PRF	0	0	15	3	18	
		Sudagoleswar PRF	0	0	0	5	5	
		Antulia Tabada RF	0	0	0	5	5	
		Tabada PRF	15	0	0	5	20	
		Dandasinga Bhagatpur PRF	0	0	3	0	3	
		Similipathar RF	63	10	0	20	93	
		Katada RF	148	32	0	5	185	
		Total	**834.572**	**163**	**136**	**367**	**1500.572**	**1500.572**

4.5.2.4.3Talcher Miscellaneous Tending Series

Table No. 4.13 : Talcher Tending series

Name of the Tending Series	Range	Name Of the Forest Block	Plantation raised up to last plan period	Plantation raised during current plan	Plantation raised during current plan FF	NTFP	Area in Ha	
Talcher Tending Series (TTS)	Kaniha	Arakhadahi RF	100	60	6	25	191	1228.58
		Badakathia RF	190.358	140	30	128	488.358	
		Biripal RF	0	0	14	55	69	
		Dhanakoili RF	0	2.5	2	0	4.5	
		Durgapur Danda RF	0	0	4	45	49	
		Dalak Poipal Danda RF	0	0	5	60	65	
		Godigotha RF	0	0	5	15	20	
		Gohiradanda RF	0	10	0	0	10	
		Kiajhar RF	0	0	2	0	2	
		Patakhamana RF	50	0	7	20	77	
		Sadarkhol RF	0	0	3	70	73	
		Saleimada RF	0	0	8	20	28	
		Sachi RF	0	0	1	5	6	
		Tangiri RF	0	0	6	0	6	
		Santarabandha RF	0	0	5	25	30	
		Saradhapur RF	35	0	4	15	54	
		Nialu Lodhajhari Sapakata RF	0	0	2	20	22	
		Baudabeda PF	0	33.722	0	0	33.722	
	Talcher	Baistamba Ragadi RF	0	20	0	0	20	654.739
		Gengutia RF	0	10	0	0	10	
		Ganthigadia A	30	0	0	0	30	
		Gopalprasad RF	1.173	50	0	0	51.173	
		Kandhal RF	0.586	0	0	0	0.586	
		Kanteikulia RF	0	40	0	0	40	
		Kandhabereni PRF	3.5	20	0	0	23.5	
		Kanehijena RF	130	5	0	0	135	
		Mankadachua RF	0	0	3	0	3	
		Makundanali RF	33.493	0	0	0	33.493	
		Rabipur RF	108.52	10	2	1	121.52	
		Sibarampur PRF	24	25	0	0	49	
		Seepur RF	70	0	0	0	70	
		Silling RF	47.467	20	0	0	67.467	
		Total	**824.097**	**446.222**	**109**	**504**	**1883.319**	**1883.319**

4.5.2.4.4Abstract of Miscellaneous Tending Series

Table No. 4.14 Miscelaneous Tending Series Abstract

Sl No	Name of the Series	Area allotted in Ha
1	Purunagarh Tending Series (PTS)	708.996
2	Durgapur Tending Series (DTS)	1500.572
3	Talcher Tending Series (TTS)	1883.319
	Total	**4092.887**

4.5.2.5 Operations in Miscellaneous Tending Series& Compensatory tending series.

4.5.2.5.1 Growth in the miscellaneous plantations tends to become bushy and branchy for want of pruning and thinning. This is more prevalent in case of miscellaneous plantations with species like Eucalyptus, Acacia, Chakunda, Siris, Gambhar, Amla, Bamboo etc which are in regular need of weeding; 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.

4.5.2.5.2 The tending operations which shall be carried out in the miscellaneous plantation tending series & compensatory 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.
- 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.

4.5.2.5.3 In case of existing cashew plantations, the gaps shall be gradually planted with species of choice. And, once the productivity of these plantations is gone, such areas shall be clear felled and replanted following the methodology prescribed for the planting series. (Only in case of existing cashew plantations)

4.5.2.5.3.1 Purunagarh Miscellaneous Tending Series

Table No 4.15 : Purunagarh Tending series

Name of Series	Range	Series	Year Of Working	Name of the Forest Block	Plantation raised up to last plan period	Plantation raised during current plan	Plantation raised during current plan FF	NTFP	Area in Ha	
Purunagarh Tending Series (PTS)	Angul	PTS I	2021-22	Mandargiri Kalima RF	20	0	46	25	91	91.00
		PTS II	2022-23	Derjang Golabandha RF	53	0	0	0	53	
				Kerjang PRF	0	25	0	0	25	78.00
		PTS III	2023-24	Saharagoda RF	0	0	10	10	20	
				Kulasinga PRF	6	20	2	35	63	83.00
		PTS IV	2024-25	Pokunda PRF	0	0	2	25	27	
				Chandanpur PRF	0	0	2	10	12	
				Madhapur RF	22.876	15	0	0	37.876	76.876
		PTS V	2025-26	Kalapata PRF	40	0	2	39	81	81.00
		PTS VI	2026-27	Badadandasahi RF	18.3	0	0	12.5	30.8	
				Sorishapal Hinsar PRF	20	0	0	0	20	
				Sorishapal RF	20	0	0	0	20	70.80
		PTS VII	2027-28	Malibrahmani RF	40	0	0	0	40	
				Kaliakata RF	15.45	10	0	0	25.45	65.45
		PTS VIII	2028-29	Kumanda Talataila RF	7	0	5	5	17	
				Kuio Sakasinga RF	0	20	0	0	20	
				Nisha RF	14.87	0	0	0	14.87	51.87
		PTS IX	2029-30	Paranga RF	0	20	0	0	20	
				Kuio RF	25	0	4	4	33	53.00
		PTS X	2030-31	Bhogapal RF	15	0	0	0	15	
				Burti PRF	0	10	6	17	33	
	Bantala			Baragaunia RF	0	0	2	8	10	58.00
				Total	**317.496**	**120**	**81**	**190.5**	**708.996**	**708.996**

4.5.2.5.3.2Durgapur Miscellaneous Tending Series

Table No. 4.16 : Durgapur Tending series

Name of Series	Range	Series	Year Of Working	Name of the Forest Block	Plantation raised up to last plan period	Plantation raised during current plan	Plantation raised during current plan FF	NTFP	Area in Ha	
		DTS I	2021-22	Nunmati PRF	0	0	16	15	31	151.572
				Dangapal PRF	59.572	0	14	47	120.572	
		DTS II	2022-23	Joyapur RF	120	0	2	5	127	159
				Kankurpal RF	0	0	13	19	32	
		DTS III	2023-24	Kanaloi PRF	0	0	4	2	6	139
				Devinagar PRF	0	0	0	28	28	
				Marudhipa PRF	0	0	2	4	6	
				Jalatap RF	0	0	4	21	25	
				Kosala RF	28	0	6	10	44	
				Kanaloi RF	0	0	4	6	10	
				Arisulia Sulia RF	0	20	0	0	20	
		DTS IV	2024-25	Chhendipada RF	0	57	44	59	160	160
		DTS V	2025-26	Chhendipada RF	149	0	0	0	149	149
		DTS VI	2026-27	Chhendipada RF	140	0	0	0	140	140
		DTS VII	2027-28	Durgapur RF	31	24	4	13	72	176
	Jarapada			Durgapur A RF	20	0	0	0	20	
				Durgapur PRF	11	0	0	0	11	
				Pathargarh PRF	25	20	0	28	73	
		DTS VIII	2028-29	Para PRF	25	0	5	67	97	145
				Roadsinga PRF	0	0	15	3	18	
				Sudagoleswar PRF	0	0	0	5	5	
				Antulia Tabada RF	0	0	0	5	5	
				Tabada PRF	15	0	0	5	20	
		DTS IX	2029-30	Dandasinga Bhagatpur PRF	0	0	3	0	3	96
				Similipathar RF	63	10	0	20	93	
		DTS X	2030-31	Katada RF	148	32	0	5	185	185
				Total	**834.572**	**163**	**136**	**367**	**1500.572**	**1500.572**

4.5.2.5.3.3Talcher Miscellaneous Tending Series

Table No. 4.17 : Talcher Tending series

Name of Series	Range	Series	Year Of Working	Name of the Forest Block	Plantation raised up to last plan period	Plantation raised during current plan	Plantation raised during current plan FF	NTFP	Area in Ha	
Talcher Tending Series (TTS)	Kaniha	TTS I	2021-22	Arakhadahi RF	100	60	6	25	191	191
		TTS II	2022-23	Badakathia RF	190.358	0	0	0	190.358	190.358
		TTS III	2023-24	Badakathia RF	0	140	30	0	170	170
		TTS IV	2024-25	Badakathia RF	0	0	0	128	128	197
				Biripal RF	0	0	14	55	69	
		TTS V	2025-26	Dhanakoili RF	0	2.5	2	0	4.5	150.5
				Durgapur Danda RF	0	0	4	45	49	
				Dalak Poipal Danda RF	0	0	5	60	65	
				Godigotha RF	0	0	5	15	20	
				Gohiradanda RF	0	10	0	0	10	
				Kiajhar RF	0	0	2	0	2	
		TTS VI	2026-27	Patakhamana RF	50	0	7	20	77	190
				Sadarkhol RF	0	0	3	70	73	
				Saleimada RF	0	0	8	20	28	
				Sachi RF	0	0	1	5	6	
				Tangiri RF	0	0	6	0	6	
		TTS VII	2027-28	Santarabandha RF	0	0	5	25	30	199.722
				Saradhapur RF	35	0	4	15	54	
				Nialu Lodhajhari Sapakata RF	0	0	2	20	22	
				Baudabeda PF	0	33.722	0	0	33.722	
	Talcher			Baistamba Ragadi RF	0	20	0	0	20	
				Gengutia RF	0	10	0	0	10	
				Ganthigadia A	30	0	0	0	30	
		TTS VIII	2028-29	Gopalprasad RF	1.173	50	0	0	51.173	186.759
				Kanehijena RF	130	5	0	0	135	
				Kandhal RF	0.586	0	0	0	0.586	

	TTS IX	2029-30	Kanteikulia RF	0	40	0	0	40	188.02
			Kandhabereni PRF	3.5	20	0	0	23.5	
			Rabipur RF	108.52	10	2	1	121.52	
			Mankadachua RF	0	0	3	0	3	
	TTS X	2030-31	Makundanali RF	33.493	0	0	0	33.493	219.96
			Sibarampur PRF	24	25	0	0	49	
			Seepur RF	70	0	0	0	70	
			Silling RF	47.467	20	0	0	67.467	
			Total	**824.097**	**446.222**	**109**	**504**	**1883.319**	**1883.319**

4.5.2.5.3.4 Abstract of Miscellaneous Tending Series

Table No. 4.18 Year wise abstract of proposed for tending in Miscallaneous

Name of the Tending Series	Year of Assignment										
	21-22	22-23	23-24	24-25	25-26	26-27	27-28	28-29	29-30	30-31	Total
PTS	91.000	78.000	83.000	76.876	81.000	70.800	65.450	51.870	53.000	58.000	708.996
DTS	151.572	159.000	139.000	160.000	149.000	140.000	176.000	145.000	96.000	185.000	1500.572
TTS	191.000	190.358	170.000	197.000	150.500	190.000	199.722	186.759	188.020	219.960	1883.319
Total	**433.572**	**427.358**	**392.000**	**433.876**	**380.500**	**400.800**	**441.172**	**383.629**	**337.020**	**462.960**	**4092.887**

4.5.2.5.4 Silvicultural operation in Bamboo

488.00 ha. of area have been taken in Bamboo plantation in different forest blocks, which needs to be tend for improvement of Bamboo clumps.

- Tending and cultural operation is recommended.
- The area shall be closed to grazing.
- Elaborate fire protection measure shall be taken.

4.5.2.5.4.1 Bamboo Improvement Series

Table No. 4.19 Bamboo Improvement Series

Name of the Series	Range	Name of the Forest Block	Silvicultural operation to Bamboo Plantation			
			Plantation raised up to last plan period	Plantation raised during current plan	Area in Ha	
Bamboo Improvement Series	Angul	Mandargiri Kalima RF	0	8	8	159
		Kerjang PRF	20	0	20	
		Saharagoda RF	0	2	2	
		Kulasinga PRF	0	53	53	
		Pokunda PRF	0	1	1	

		Chandanpur PRF	0	11	11	
		Madhapur RF	0	10	10	
		Badadandasahi RF	0	11	11	
		Kalapata PRF	0	8	8	
		Kumanda Talataila RF	0	2	2	
		Nisha RF	0	30	30	
		Burti PRF	0	3	3	
	Bantala	Baragaunia RF	0	3	3	3
	Chhendipada	Kanaloi PRF	0	2	2	90
		Devinagar PRF	0	29	29	
		Marudhipa PRF	0	1	1	
		Nunmati PRF	0	3	3	
		Dangapal PRF	0	15	15	
		Kankurpal RF	0	2	2	
		Jalatap RF	0	4	4	
		Chhendipada RF	0	26	26	
		Kosala RF	0	5	5	
		Kanaloi RF	0	3	3	
	Jarapada	Pathargarh PRF	0	1	1	65
		Para PRF	0	2	2	
		Roadsinga PRF	0	4	4	
		Sudagoleswar PRF	0	1	1	
		Antulia Tabada RF	0	5	5	
		Tabada PRF	0	1	1	
		Dandasinga Bhagatpur PRF	5	1	6	
		Similipathar RF	0	15	15	
		Katada RF	0	30	30	
	Kaniha	Arakhadahi RF	0	2	2	68
		Badakathia RF	0	2	2	
		Biripal RF	0	10	10	
		Durgapur Danda RF	0	7	7	
		Dalak Poipal Danda RF	0	2	2	
		Godigotha RF	0	1	1	
		Patakhamana RF	0	9	9	
		Rameswarhill RF	10	0	10	
		Sadarkhol RF	0	25	25	
	Talcher	Bulajhara RF	50	0	50	103
		Mankadachua RF	50	2	52	
		Sibarampur PRF	0	1	1	
		Total	**135**	**353**	**488**	**488**

4.5.2.5.4.2 Bamboo Improvement Series

Table No. 4.20 Bamboo Improvement Series

Name of the Series	Range	Series	Year Of Working	Name of the Forest Block	Silvicultural operation to Bamboo Plantation			
					Plantation raised up to last plan period	Plantation raised during current plan	Area in Ha	
Bamboo Improvement Series	Angul	BIS I	2021-22	Mandargiri Kalima RF	0	8	8	52
				Kerjang PRF	20	0	20	
				Saharagoda RF	0	2	2	
				Pokunda PRF	0	1	1	
				Chandanpur PRF	0	11	11	
				Madhapur RF	0	10	10	
		BIS II	2022-23	Kulasinga PRF	0	53	53	53
		BIS III	2023-24	Badadandasahi RF	0	11	11	51
				Kalapata PRF	0	8	8	
				Kumanda Talataila RF	0	2	2	
				Nisha RF	0	30	30	
		BIS IV	2024-25	Burti PRF	0	3	3	41
	Bantala			Baragaunia RF	0	3	3	
	Chhendipada			Kanaloi PRF	0	2	2	
				Devinagar PRF	0	29	29	
				Marudhipa PRF	0	1	1	
				Nunmati PRF	0	3	3	
		BIS V	2025-26	Dangapal PRF	0	15	15	47
				Kankurpal RF	0	2	2	
				Jalatap RF	0	4	4	
				Chhendipada RF	0	26	26	
		BIS VI	2026-27	Kosala RF	0	5	5	43
				Kanaloi RF	0	3	3	
	Jarapada			Pathargarh PRF	0	1	1	
				Para PRF	0	2	2	
				Roadsinga PRF	0	4	4	
				Sudagoleswar PRF	0	1	1	

				Antulia Tabada RF	0	5	5	
				Tabada PRF	0	1	1	
				Dandasinga Bhagatpur PRF	5	1	6	
				Similipathar RF	0	15	15	
		BIS VII	2027-28	Katada RF	0	30	30	51
	Kaniha			Arakhadahi RF	0	2	2	
				Badakathia RF	0	2	2	
				Biripal RF	0	10	10	
				Durgapur Danda RF	0	7	7	
		BIS VIII	2028-29	Dalak Poipal Danda RF	0	2	2	47
				Godigotha RF	0	1	1	
				Patakhamana RF	0	9	9	
				Rameswarhill RF	10	0	10	
				Sadarkhol RF	0	25	25	
	Talcher	BIS IX	2029-30	Bulajhara RF	50	0	50	50
		BIS X	2030-31	Mankadachua RF	50	2	52	53
				Sibarampur PRF	0	1	1	
				Total	**135**	**353**	**488**	**488**

4.5.2.5.5 Restocking of JVP plantation

114ha of JVP plantation has been created during 2002-03 to 2004-05. All the plantation having percentage of survival 60 to 70 percent at present, which needs to be restocked. The following tending operation shall be carried out in the plantation, preparing site specific plan for restocking the same.

Table No. 4.21 : Restocking of JVP Plantation Series

Name of the Series	Range	Name of the Forest Block	Area in Ha	
Restocking of JVP Plantation Series	Angul	Kulasinga PRF	57	77
		Paranga RF	20	
	Bantala	Talasira DPF	16	16
	Talcher	Ganthigadia A	21	21
		Total	**114**	**114**

4.5.2.5.5.1 Restocking of JVP plantation Series

Table No. 4.22 : Restocking of JVP Plantation Series

Name of the Series	Range	Series	Year Of Working	Name of the Forest Block	Area in Ha
Restocking of JVP Plantation Series		RJVP I	2021-22	NIL	NIL
		RJVP II	2022-23	NIL	NIL
	Angul	RJVP III	2023-24	Kulasinga PRF	20
		RJVP IV	2024-25	Kulasinga PRF	17
		RJVP V	2025-26	Kulasinga PRF	20
		RJVP VI	2026-27	Paranga RF	20
	Bantala	RJVP VII	2027-28	Talasira DPF	16
	Talcher	RJVP VIII	2028-29	Ganthigadia A	21
		RJVP IX	2029-30	NIL	NIL
		RJVP X	2030-31	NIL	NIL
				Total	**114**

- Demarcation shall be done referring to old maps with proper pillar posting.
- All dead trees shall be removed.
- All climbers shall be cut.
- Pruning shall be done in the plantation area that are bushy & branchy.
- All invasive weeds shall be uprooted.
- Singling out of shoot shall be done in the illicit felling stump where multiple shoots comes out.
- Gap plantation shall be done with phasi plants.
- Intensive soil & moisture conservation works recommended for improving the stock.
- Appropriate protection measure shall be provided.

4.5.2.5.6 Restocking of Village Forest

694ha of New creation of plantation has been created during the Plan period.. The following new creation plantation shall be carried out in the plantation, preparing site specific plan for New creation the same.

Table No. 4.23 Village Forest Series

Name of the Series	Range	Name of the Village Forest	Area in Ha	
Village Forest Planting Series	Angul	Badakera VF	5	100.92
		Jamunali VF	0.6	
		Jamunali VF	17.57	
		Jamunali VF	10	
		Jarasingha VF	3	
		Jarasingha VF	1.02	
		Jukub VF	4	
		Kaliakata VF	10	
		Malibrahmani VF	10	
		Natada VF	6	
		Nisa VF	10	
		Nisa VF	5	
		Nua-Jarasingha VF	2.73	
		Sahadagoda VF	3	
		Tubey VF	5	
		Tumuni VF	3	
		Kumanda VF	5	
	Bantala	Bedasasan VF	1.38	17.67
		Inkarbandha VF	1.52	
		Inkarbandha VF	0.71	
		Phulapada VF	5	
		Phulpada VF	4	
		Surendrapur VF	1	
		Surab VF	3	
		Lokeipasi VF	0.48	
		Lokeipasi VF	0.58	
	Chhendipada	Brahmanbil VF	5	20
		Brahmanbil VF	5	
		Chakundapal VF	5	
		Santarabandha VF	5	
	Jarapada	Balipata VF	0.25	0.25
	Kaniha	Badagunduri VF	5	214.51
		Badahar VF	10	
		Badahar VF	12.52	
		Badahar VF	4.83	
		Badatribida VF	5	
		Chhelia VF	10	
		Gundurinali VF	6	
		Jarada VF	10	
		Katrapalli VF	10	
		Kuluma VF	20	
		Kuluma VF	30	
		Lodhabandha VF	5	
		Mardharipur(kumunda) VF	8	
		Olanda VF	5	

		Rengali VF	8	
		Sanhar VF	10	
		Santribida VF	15	
		Santribida VF	8	
		Chitalpur VF	10	
		Bhagirathipur VF	13.5	
		Adeita Prasad & malapasi VF	8.660	
	Talcher	Katarapada VF	10	340.65
		Banabaspur VF	14	
		Barapali VF	4.55	
		Barapali VF	3.84	
		Belpada VF	5	
		Bikisar VF	5	
		Bilinda VF	30	
		Danara VF	6.78	
		Dumduma VF	10	
		Gopalprasad VF	2.13	
		Gurjanga VF	5	
		Jadunathpur VF	10	
		Jadunathpur VF	10	
		Jhulakhuntia VF	10	
		Joragadia VF	1.18	
		Joragadia(kuria) VF	6.43	
		Kandhabereni VF	10	
		Katarapada VF	10	
		Kuruhuni VF	4.27	
		Malibandha VF	5.48	
		Padmabatipur VF	4.43	
		Padmabatipur VF	1.21	
		Raghunathpur VF	20	
		Ranjagola VF	12	
		Ranjagola VF	15	
		Rutubhuin Vf	8	
		Rutubhuin VF	8	
		Samal VF	10	
		Samal VF	5	
		SamalVF	5	
		Surangi VF	15	
		Sibarampur VF	12.08	
		Sibarampur VF	3	
		Sibarampur VF	10	
		Solada VF	5	
		Solada VF	5.27	
		Solada VF	29	
		Sunakhani VF	5	
		Rankasingha VF	4	
		Total	**694**	**694**

4.5.2.5.6.1 Restocking of Village Forest

Table No. 4.24 Village Forest Planting Series

Name of the Series	Range	Series	Year Of Working	Name of the Village Forest	Area in Ha	
Village Forest Planting Series	Angul	VFPS I	2021-22	Badakera VF	5	67.19
				Jamunali VF	0.6	
				Jamunali VF	17.57	
				Jamunali VF	10	
				Jarasingha VF	3	
				Jarasingha VF	1.02	
				Jukub VF	4	
				Kaliakata VF	10	
				Malibrahmani VF	10	
				Natada VF	6	
		VFPS II	2022-23	Nisa VF	10	51.4
				Nisa VF	5	
				Nua-Jarasingha VF	2.73	
				Sahadagoda VF	3	
				Tubey VF	5	
				Tumuni VF	3	
				Kumanda VF	5	
	Bantala			Bedasasan VF	1.38	
				Inkarbandha VF	1.52	
				Inkarbandha VF	0.71	
				Phulapada VF	5	
				Phulpada VF	4	
				Surendrapur VF	1	
				Surab VF	3	
				Lokeipasi VF	0.48	
				Lokeipasi VF	0.58	
	Chhendipada	VFPS III	2023-24	Brahmanbil VF	5	73.6
				Brahmanbil VF	5	
				Chakundapal VF	5	
				Santarabandha VF	5	
	Jarapada			Balipata VF	0.25	
	Kaniha			Badagunduri VF	5	
				Badahar VF	10	
				Badahar VF	12.52	
				Badahar VF	4.83	
				Badatribida VF	5	
				Chhelia VF	10	
				Gundurinali VF	6	
		VFPS IV	2024-25	Jarada VF	10	75
				Katrapalli VF	10	
				Kuluma VF	20	

				Kuluma VF	30	
				Lodhabandha VF	5	
		VFPS V	2025-26	Mardharipur(kumunda) VF	8	64
				Olanda VF	5	
				Rengali VF	8	
				Sanhar VF	10	
				Santribida VF	15	
				Santribida VF	8	
				Chitalpur VF	10	
		VFPS VI	2026-27	Bhagirathipur VF	13.5	64.55
				Adeita Prasad & malapasi VF	8.660	
	Talcher			Katarapada VF	10	
				Banabaspur VF	14	
				Barapali VF	4.55	
				Barapali VF	3.84	
				Belpada VF	5	
				Bikisar VF	5	
		VFPS VII	2027-28	Bilinda VF	30	73.91
				Danara VF	6.78	
				Dumduma VF	10	
				Gopalprasad VF	2.13	
				Gurjanga VF	5	
				Jadunathpur VF	10	
				Jadunathpur VF	10	
		VFPS VIII	2028-29	Jhulakhuntia VF	10	73
				Joragadia VF	1.18	
				Joragadia(kuria) VF	6.43	
				Kandhabereni VF	10	
				Katarapada VF	10	
				Kuruhuni VF	4.27	
				Malibandha VF	5.48	
				Padmabatipur VF	4.43	
				Padmabatipur VF	1.21	
				Raghunathpur VF	20	
		VFPS IX	2029-30	Ranjagola VF	12	78
				Ranjagola VF	15	
				Rutubhuin Vf	8	
				Rutubhuin VF	8	
				Samal VF	10	
				Samal VF	5	
				SamalVF	5	
				Surangi VF	15	
		VFPS X	2030-31	Sibarampur VF	12.08	73.35
				Sibarampur VF	3	

				Sibarampur VF	10	
				Solada VF	5	
				Solada VF	5.27	
				Solada VF	29	
				Sunakhani VF	5	
				Rankasingha VF	4	
				Total	**694**	**694**

4.5.2.5.7 Harvest of old teak plantation.

As per prescription in current working plan harvesting of old teak plantation of 70 years & more age should be done on the basis of exploitable girth by preparing site specific scheme over an area of 97.813ha.

The schedule for harvesting of individual old teak plantation area to an extent of more than 4ha are furnished in table 3.8 and that of less than 4ha which will be managed in respective working plan for harvesting **in table 4.25.**

Table No. 4.25 Harvestable Teak Plantations (Individual plantations of 4 ha. and more)

Range	Year of harvesting	Year of plantation	Block/ Comptt.	Area in ha.	Coupe No.
1	**2**	**3**	**4**	**5**	**6**
Durgapur	2007-08	1936 1937	Antulia-Tabada-1 Antulia-Tabada Comptt.1	4.45 10.12	I
	2008-09	1938	Antulia-Tabada Comptt.- 10	5.26	II
	2009-10	1939	Antulia-Tabada Comptt.-10	7.68	III
	2010-11	1940	Antulia-Tabada Comptt.- 10	8.90	IV
	2011-12	-	-	-	-
	2012-13	-	-	-	-
	2013-14	1943	Antulia-Tabada Comptt.- 3	7.28	V
	2014-15	-	-	-	-
	2015-16	-	-	-	-
	2016-17	-	-	-	-
			Total:-	43.69	

Table No. 4.26 **HARVESTABLE TEAK PLANTATIONS**

(Individual plantations of less than 4 ha. area).

Range	Year of harvesting	Year of plantation	Block/ Comptt.	Area in ha.	Coupe No.
1	2	3	4	5	6
Durgapur	2007-08	1933	Antulia-Tabada- 3	1.21	
		1934	-do- - 3	1.82	
		1934	-do- - 5	3.44	I
		1935	-do-1	1.42	
		1934	Similipathar- 5	1.15	
		1935	-do- - 7	2.00	
		1937	-do- - 7	2.10	
	2008-09 to 2010-11	-	-	-	-
	2011-12	1941 1941	Antulia-Tabada- 3 Antulia-Tabada- 10	2.43 2.02	II
	2012-13	1942 1942	-do- - 3 -do- - 4	1.21 2.42	III
	2013-14	1943	-do- - 4	0.60	IV
	2014-15	1944	-do- - 5	0.40	V
	2015-16	-	-	-	-
	2016-17	1946	-do- - 3	0.60	
		1946	-do- - 3	2.63	VI
		1946	-do- - 1	2.03	
		1946	-do- - 3	0.40	
			Total:-	27.88	
Raigoda	2007-08	1919	Bolanga- 13	0.809	
		1923	-do- - 13	0.930	I
		1924	-do- - 13	0.815	I
		1929	-do- - 13	1.012	I

		1932	-do- - 13	1.416	I
		1933	-do- - 13	1.012	I
		1933	-do- - 10	0.404	I
		1934	-do- - 10	0.607	I
		1934	-do- - 13	0.809	I
		1935	-do- - 10	0.404	I
		1935	-do- - 13	1.618	I
		1936	-do- - 13	2.024	I
		1937	-do- - 13	2.024	I
		1937	-do- - 10	2.023	I
	2008-09	-	-	-	I
	2009-10	1939	-do- - 10	2.428	I
		1939	Nuakheta- 5	0.840	II
	2010-11	1940	Bolang- 10	2.225	III
	2011-12	1941	-do- - 10	2.023	IV
	2012-13 to 2016-17	-	-	-	-
			Total:-	23.423	
Purunagarh	2007-08 to 2009-10	-	-	-	
	2010-11	1940	Krishnachakra- 3 & 4	2.02	I
	2011-12	1941	-do- - 4	0.40	II
	2012-13	1942	-do- - 4	0.40	III
	2013-14 to 2016-17	-	-	-	-
			Total:-	2.82	
			G. Total:-	54.123	

4.5.2.5.7.1 Operaton in old teak plantation.

No harvesting of old teak plantation as per prescription laid down in current working plan has been achieved due to severe cyclonic storm occurred during the year 2013-14,2014-15 & 2019-20 like Phyilin, HudHud & Fani etc., by which maximum harvestable trees had been uprooted, broken, damaged and subsequently salvaged. Along with this these compartments having slope of 30 degree and above are left out as per the prescription. So many natural nalas also present in these plantation area. These compartments also coming within buffer area of Satkosia Tiger Reserve of Satkosia Tiger Landscape. Observing these facts and figure the harvesting of old teak plantation is not taken into consideration. In the last working plan 2007-08 to 2016-17 there is no provision of selection working circle.

4.5.3 Rotation period

As discussed above, the rotation of 70 years as in the last plan is retained for this plan.

4.5.4 Harvestable diameters

Not applicable

4.5.5 Reducing factors and reduced areas

Not applicable

4.5.6 Felling cycle.

Not applicable

4.5.7 Division into periods and allotment to periodic block (PB)

Not applicable

4.5.8 Calculation of the yield:

In the Teak Tending seriess Series, Miscellaneous Tending Series, Restocking of JVP Plantation, Bamboo Improvement Seriese and Old Teak Plantation no yield is expected. However in case of VillageForest planting series, there is harvest provision. It is expected to obtain about 10 Tons of Fire Wood. Hence the expected yield is calculated to be 6940 Tons of Fire wood within the plan period. The year wise yield is as follows.

Table No. 4.27 Projected Yeild from Village Forest

Name of the Planting Series	21-22	22-23	23-24	24-25	25-26	26-27	27-28	28-29	29-30	30-31	**Total**
Fire Wood in Ton	671.9	514	736	750	640	645.5	739.1	730	780	733.5	**6940**

4.5.9 Table of felling and planting:

The year wise area assigned for planting has been indicated in Table No 4.24These tables may be referred to.

4.5.10 Method of executing the felling & planting:

4.5.10.1Method of Executing Harvesting (Felling):

4.5.10.2 Demarcation of annual harvestable coupe area.

i) The annual harvestable coupe area shall be demarcated in Winter season (October to December) in the year preceding to the year of working.

ii) The area shall be demarcated as per plantation map or records by putting double white paint rings at visible distance and clearance of boundary line of 1 m. width. Clearance shall be restricted for the purpose of identification and visibility. No felling of any kind shall be done on the boundary line.

iii) Coupes shall be indicated by signboards at corners or at points of intersection with roads, inspection paths and boundary lines of R.F. The signboards should contain the name of the block, compartment number, year and area of teak plantation.

iv) 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 A.C.F. before the marking is taken up.

v) In case of RF / DPF, the area is to be demarcated on ground by putting RCC pillars, if the demarcating line coincides with the RF / PRF Boundary. In other cases, putting of Stone Cairns at a visible distance will be sufficient.

vi) In case of Village Forests, the area / boundary is not demarcated on ground . it is required to demarcate the village Forest as notified with the help of Revenue personal in presence of VFC members. RCC pillars of 20cm X 20cm X 120cm may be posted to keep the boundary line visible permanently. In all cases, the entire block is assigned for working in a single year ; in that case only boundary line is of importance. This demarcation process is to start at least from April – May of previous year . For keeping the boundary line naturally demarcated, it is proposed to put Palm Seeds on the boundary at an interval of 5 meters which will grow to a tree within 5 years.

4.5.10.3 Consultation with VSS / VFC:

Prior to taking of Operation like demarcation, marking etc, the VSS / VFC is required to be consulted, if the area is assigned to VSS / VFC. The process of harvesting and restocking is to be explained. The Mechanism of Usufruct Sharing is to be decided and resolution to be passed to that effect. Sharing of produce either in monetary term or in kind to be specifically discussed & decided. In case of village Forest the working cost is required to be adjusted against sale value / royalty of the produce so obtained. Voluntary contribution of labour by

villagers for operation may also be examined to reduce the cost of operation. After harvesting, the planting modality is also to be discussed at length.

4.5.10.4 Selection of Standard Trees:

As the system to be followed is **''Clear Felling with Standard''**, It is required to mark the standards initially. The criteria for selection of standards in general are furnished below.

- Timber species of greater importance,
- Fruit bearing trees like Mango, Jack Fruit, Barkoli (Zyziphus), Palm, Cashew,
- Any Plus tree Suitable for seed collection for raising plantations,
- Any Trees associated with sentiments of local Villagers are to be retained as standard.

The number of standard trees per hectare shall not be less than 25 and more than 75. A list of standard Trees to be prepared and will be a part of compartment History File. The information may be recorded in a standard format.

Suggested format:

1. Name of Range
2. Name of Forest Block / Coupe :
3. Area under marking in Ha:
4. Year of Marking:
5. Name of Marking Officer & Designation.

List of Standard Trees selected for retention					
Sl No	Name of Species	GBH in cm	Latitude / Longitude	Crown width in meter	Remark
				Signature of marking Officer .	

4.5.10.5 Marking of Trees for felling:

After selection of Standard Trees, all remaining trees above exploitable girth are marked for felling. However marking on sensitive areas, the following marking rules are to be followed.

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.
ii. All trees of exploitable girth and above shall be marked.
iii. All trees to be marked for felling shall be given two blazes approximately of size 15cm.x 15cm., one at the breast height and the other as close to the ground as possible and marked with a departmental marking hammer and numbered serially with paint.
iv. Marking shall not be done within 10 meters of either side of nallah, stream, river

banks and in areas where the slope of terrain is more than 30 degree except for dead and uprooted trees.

v. A tree forked at the breast height and above shall be treated as two tree and forked below breast height shall be treated as one trees.

vi. Trees near to perennial nala / river banks to a width of 40cm measured from High Flood level are not to be marked.

vii. Tree on which bird's nests is observed is to be retained.

viii. Trees having cavity, suitable for nocturnal birds habitation up to five numbers per hectares is to be retained.

ix. Trees on rocky surface / above 30^{o} slope / High erosion prone area are not to be marked for felling.

4.5.10.6 Execution of marking and felling.

i) The marking shall be done by an officer not below the rank of Forest Ranger and shall be checked as per provisions of the O.F.D. Code, 1979 as modified by the Govt. from time to time.

ii) The method of disposal of trees marked for felling shall be as per Chapter-XIV of the O.F.D.Code, 1979 as modified by the Govt. from time to time.

iii) Felling and extraction in any annual coupe shall be allowed from 1^{st} October to 30^{th} June. No felling, logging, passing and dragging shall be allowed between the period of 1^{st} July to 30^{th} September. The D.F.O. shall allow extension of time only after 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 areas.

v) Works undertaken, number of lots formed, detailed passing list, deviations if any must be mentioned in the compartment history and control forms.

4.5.10.7 Delivery of Coupes for Harvesting:

The coupe are to be delivered to OFDC Ltd for harvesting and marketing thereof. In case the VSS is willing to participate in harvesting operation, they may be engaged by the OFDC Ltd for felling / logging & conversion operations. The coupe working may be allowed normally for nine months. Any extension of working period may be allowed as per administrative instruction / Odisha Forest Contract Rules, 1966.

The VSS may take up the harvesting operation as the yield expected will not be economical of OFDC Ltd. In that case, the removal of trees and sharing will be under supervision of Range Officer / Forest Department.

4.5.10.8 Felling of trees & Removal thereof:

The marked trees may be felled, converted and removed as per modern logging practices and the Odisha Timber and other forest produce transit Rules, 1980 and up to date amendments thereof. The trees felled by axe and saw do not produce coppice shoots. As most of the species are good coppice, it is suggested to fell the trees with axe only. Subsequent logging may be taken up by saw or as convenient to OFDC Ltd / VFC as per modern logging practices.

4.5.10.9 Sharing of produce in case of VSS/VFC area:

Sharing of forest produce, in case of VSS area will be regulated as per **Para 11 of Joint Forest Management Resolution, 2011.** In case of village Forests, the sharing of forest produce will be regulated as per **Rule 9 of the Odisha Village Forest Rules, 1985.**

4.5.10.10 Surrender of Coupe Area:

After harvesting the marked trees and removal thereof, the Coup area shall be surrendered by OFDC Ltd as soon as possible so as take subsidiary silvicultural operation / planting activities on the same area. In case harvesting by VFC, preliminary operation for planting may be taken up simultaneously.

4.5.11 Subsidiary Silvicultual Operation, Cleaning and Thinning

Subsidiary silvicultural operations and replanting shall be done over the entire coupe areas as per the following operations prescribed.

i) All marked trees left standing by the coupe purchaser (the O.F.D.C.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) All climbers shall be cut.

v) All fallen pieces of branches, small wood left during main felling which could cause fire hazard shall be removed.

vi) The area shall be replanted with proper soil and moisture conservation measures like gully plugging, contour bunding, dry stone packing, construction of check dams etc. as per prescriptions given in the Orissa Plantation Mannual-1977.

4.5.11.1 Cleaning:

As the silvicultural system adopted is clear felling, the cleaning operation involves

- Removal of debris from the coupe and either buried under ground with a purpose to allow left over materials decompose and enrich soil organic content.
- Fell & Remove the marked trees, if not removed by the OFDC Ltd.
- Remove all weeds by cutting mechanically.
- Make the coupe area suitable for taking up plantation.

4.5.11.2 Thinning:

In the coupe area, if any advance growth is left unmarked / not removed for any consideration and the advance growth is at pole stage, it is required to take up thinning. In this case no thinning will be required as the felling cycle is ten year and clear felling with standard system is adopted.

4.5.12 Regeneration:

The area assigned for fresh plantation is to be covered up through artificial Regeneration i.e. Block Planting. The standard procedure for planting is to be followed as per Approved Cost Norm. The standard procedure is described below for general reference.

The assigned area is to be restocked through Artificial Regeneration i.e. by planting of seedlings with adequate Soil & Moisture Conservation measures.

4.5.12.1 Survey, demarcation, site preparation, alignment & stacking:

The assigned area has been well demarcated and pillars posted during coupe marking and described. In case of fresh area, the assigned area is required to be demarcated and pillars posted. In case of Block plantation @ 1600 trees per hectare spacing of 2.5m X 2.5m is to be adopted. The approved cost norm is to be followed.

4.5.12.2 Pitting:

The areas under consideration are mostly stony / alluvial soil. A pit size of 30cm X 30cm X 30cm is recommended. Though pitting is generally carried out during January - March, there is possibility of refilling of pits during per-monsoon due to rain water. It is normally recommended to carryout pitting in March - May and allows weathering at least for one month before planting.

4.5.12.3 Choice of Species & Nursery:

It is recommended to plant species matching to the vegetation of the forest. Government has also suggested not planting Acacia, Eucalyptus, Sana Chakunda, Teak in natural forests. The species recommended are

i) Acacia catechu (Khair),
ii) Anogeissus latifolia (Dhaura),
iii) Bahunia purpuria (Kanchan),
iv) Bahunia Vahilii (Siali),
v) Bombax ceiba (Simili),
vi) Dalbegia Sisoo (Bali Sisso),
vii) Dalbergia latifolia (Pahadi Sisso),
viii) Emblica occicinalis (Anla),
ix) Erithrina indica / suberosa (Paladhua),
x) Gmelina arborea (Gamhar),
xi) Melia azadirachta (Maha Neema),
xii) Samania saman (Bada chakunda),

xiii) Syzygium cumini (Jamu),
xiv) Terminalia belerica (Bahada),
xv) Terminalia chebula (Harida),
xvi) Terminalia tomentosa (Asan),

Nursery for required species and number may be raised in permanent nursery or in a temporary nursery as convenient. The standard nursery technique found in any silviculture text or standard practices may be followed. The recommended height of seedling before planting is 60cm to 75cm in case of six month old seedlings and 100cm in case of one year old seedlings. For seed collection & use, plus trees available in the locality or brought from known source of origin may only be utilized. Unknown source should be strictly avoided to have a better plantation.

4.5.12.4 Planting:

Planting of seedlings shall be taken up during last week of June / 1st week of July. During planting, application of Chemical fertilizer is recommended at sites away from water sources. Near water source application of FYM / Organic fertilizer is recommended. In no case chemical insecticides should be applied.

After planting followed Post care is recommended.

a) Causality Replacement.

After planting, some planted seedlings may get damaged. These dead / defective seedlings are required to be replaced within 15 days of planting or as soon as possible with better seedlings.

b) Weeding & Soil Working:

After 30 days of planting, the planted seedlings start bearing new leaf. From 30 days to 45 days soil working around the plant along with application of fertilizer is recommended. Weeding around the plant i.e. patch weeding is to be taken up. In case of area with heavy weeds or grasses strip weeding proves beneficial. Number of weeding in a year may be decided as per cost norm provision. Two weeding in 1st year is always prescribed.

c) Mulching:

In sandy / refractory soil mulching by grasses from February to June helps in retaining soil moisture. Hence it is recommended in case of sand or refractory soil with complete open areas.

d) Fire Protection / watch & ward:

Fire protection measures and watch & ward against grazing are strictly to be implemented.

4.5.12.5 Soil & Moisture Conservation:

To improve the vegetation and ensure a good plantation role of Soil & Moisture Conservation is crucial. As the selected site is mostly of degraded soil, it is recommended to have contour bonding, percolation pits, contour trenches and half moon trench in all plantations within cost norm provided. In case of eroded soil, gully plugging is also to be executed on priority.

4.5.13 Associated Regulations and Measures:

In case of plantations the plantation journal, Nursery journal is to be maintained. The details of operation, yield, year of working etc along with the photographs are to be recorded / placed in the Compartment history. Each plantation site may be given a Identification number to be maintained at Division level for ease identification.Fire protection through awareness creation & by VSS members.

4.5.13.1 Grazing:

The area planted is to be closed to Grazing for at least for 5 years. The VFC / VSS may be allowed to cut and take grasses from plantations to encourage stall feeding.

In this Division the exsiting plantations were raised by the Territorial DFOs, Deputy Director, Social Forestry Project, as well as DFO Afforestation, Dhenkanal and Divisional Manager, OFDC Ltd, Angul. After the reorganization, now only the territorial DFO, Angul shall take up plantation activity.

All the annual coupes/treatment area under different series shall be strictly protected from grazing and fires. In suitable areas adjacent to these coupes silvipasture plantation shall be developed to encourage stall feeding thereby diverting the grazing pressure from the annual coupes. The people in the adjoining areas of the plantations should be formally or informally associated in the plantation works and they should be asked to prevent their cattle entering the plantation area. Simultaneously incentive provision for the VSS / village committee shall be introduced.

Plantation Journal and Nursery Journal shall be maintained for every plantation as per Orissa Plantation Manual, 1977. Further, the Compartment history files and Control forms besides other records shall be maintained for each Coupe/Compartment including that of Tending Series in accordance with the Management Plan Procedure, 1991

4.5.13.2 Map on Topo Sheet:

The planted up area is required to be marked / depicted on Survey of India topo map either 1:50000 scale of 1:25000 scale for future management and next plan preparation.

4.5.13.3 Plantation Control Form:

After completion of planting, a plantation control form is required to be submitted by the Range Officer to regulate activities as per Working Plan prescription.

Table No 4.28 Plantation Control Form No-3

Name of Planting Series	Year of Working	Area assigned in ha	No of Standard Trees marked	Quantum of Timber / F.W obtained	Area actually planted up	Reason of Deviation if any.

CHAPTER - 5

The Protection Working Circle.

5.1 General Constitution

5.1.1 The forest protection is the prerequisite of any effective management of forest. This working circle taken as independent when there is need special protection measures. The forest blocks of Angul Forest Division are in various stages of degradation due to heavy illicit felling, quarry activities, industrial operation, widening of road, urbanization, causing of forest fire. The biotic pressure from human along with bovine population plays a pivotal role in the process of degradation. This working circle taken into consideration looking over a. Elephant Habitat Area b. Mining Area c. Theft Prone Area d. Satkosia Tiger Landscape e. Biodiversuty Conservation f. Protection to Catchment of Derjang MIP g. Eco Frigile and Theft prone area.

5.2 General Character of Vegetation

5.2.1 The forests of this division are subjected to continuous biotic pressure. Incidences of encroachments for agriculture or illegal mining are also on the rise. Rural population collects their daily / annual requirement of fire wood, small timber, leaves, bamboos and NTFPs from nearby forests. These regular and continuous biotic interferences as discussed has led to decrease in vegetative cover and opening of canopy at places resulting on high run-off, rapid soil erosion and even flash floods in low lying areas. Majority of the forest blocks included in this working circle are those forest blocks which have been badly affected due to regular removal of biomass and also those blocks having valuable high forests which are now becoming targets of timber smugglers. Both these type of blocks need intensive protection measures so that pressure of biomass removal is reduced substantially. This will help to yield desired results through implementation of prescriptions of silvicultural operations of the main working circle.

5.2.2 After field survey and discussion with the Divisional Forest Officer and his field functionaries, the forest blocks lying south of Cuttack-Sambalpur (NH-42) road, coming under the jurisdiction of Angul, Bantala and Jarapada Range are kept in the purview of this working circle. The type and classification of forests included in this circle has already been dealt in Chapter-II of Part – I. However, majority of the area under this circle is of Northern Tropical Dry Deciduous Forests (5B) with subtypes of Dry Deciduous &Scrub Forests ($5/DS_1$). The Dry Peninsular Sal Bearing Forests (5B/C1c) and Northern Dry Mixed Deciduous Forests (5B/C2) are also found in some of the blocks. The principal species in these forests are Sal, Asan, Dhaura, Kurum, Kasi, Char, Moi and Sidha etc.

5.3 Felling series, cutting sections and JFM areas

NA

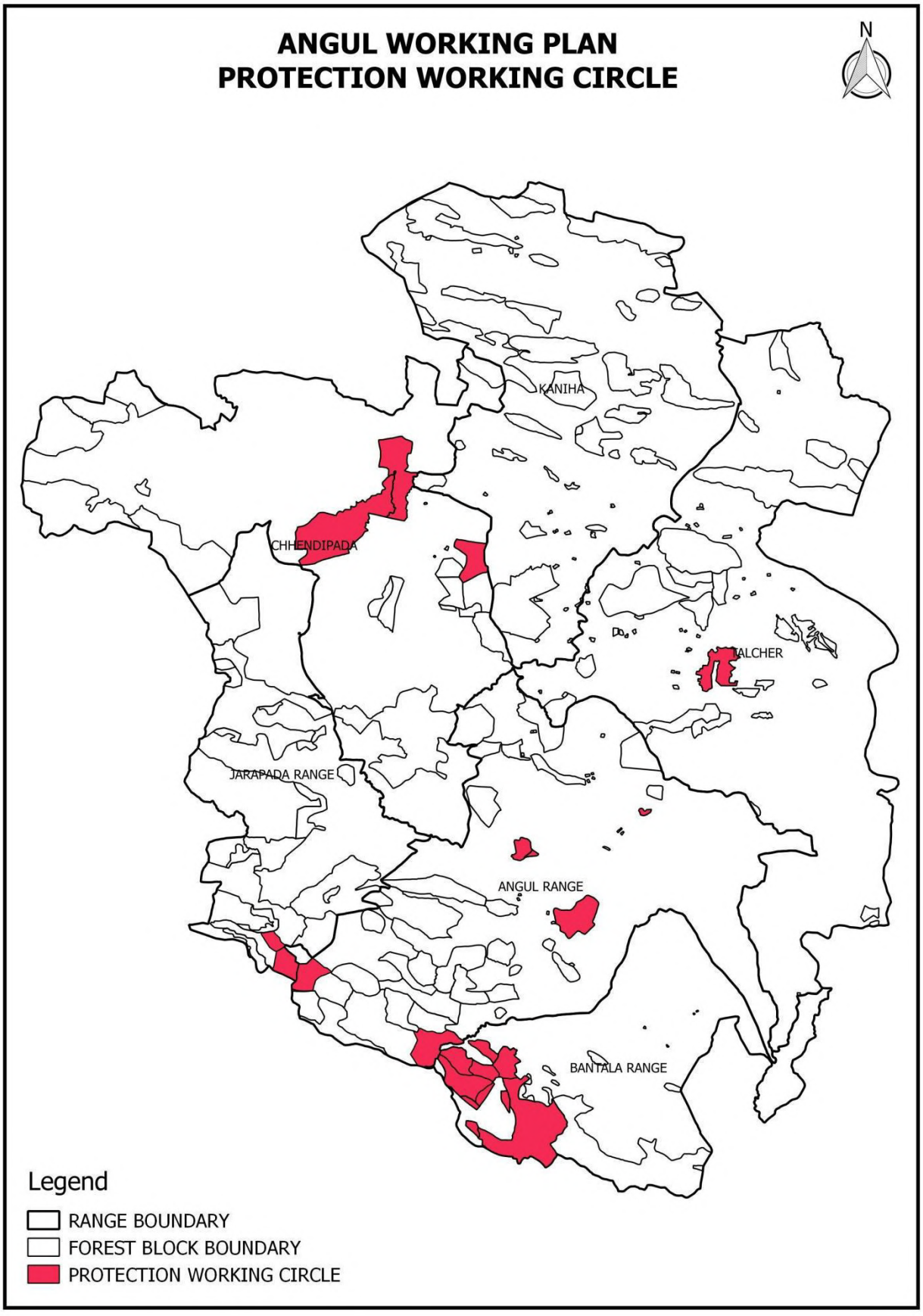
5.4 Block, compartment and JFMs area (marked on GIS based maps)

All areas of forest blocks required for protection measures with special protection measure over 14 forest blocks covering 6295.027 ha engaging 6 units anti smuggling squads.

All the Forest Blocks of this Division need intensive protection activities and proposed to include in this Circle. The total area allotted is 6295.027ha, in 6(six) protection units is in **Table no. 5.1**

Table No. 5.1Area adopted in protection working circle for Working plan of Angul Forest Division

Name of the Forest Block	Forest Block Area in Ha	Area adopted in Protection WC Area in Ha		Protection working Circle Area in Ha	Remarks
Chhendipada Range		From RWC	From IWC		
Kankurpal RF	929.905	887.905	0	887.905	Elephant Habitat Area
Jalatap RF	444.978	401.978	0	401.978	
Chhendipada RF	1824.968	1280.968	0	1300.968	
Talcher Range					
Rakasha RF	314.912	288.862	0	314.912	Mining Area
Jarapada Range					
Antulia Tabada RF	2230.546	0	422.665	422.635	Theft prone area
Bantala Range					
Balanga RF	3096.766	0	2573.038	1264.453	Tiger conservation Landscape area
Nuakheta RF	2889.93	0	2502.160	0.000	
Balanga PRF	53.522	0	33.522	33.522	
Talasira DPF	49.664	0	3.564	3.564	
Labangi DPF	69.96	0	69.960	69.960	
Angul Range					
Mandargiri Kalima RF	606.995	443.995	0	443.995	Near to Angul Town for aesthetic and Biodiversity conservation
Kumanda Talataila RF	38.779	0.000	17.779	17.779	
Derjang Golabandha RF	176.649	123.649	0	123.649	Catchment Area of Derjang MIP
Derjang Golabandha PRF	27.844	27.844	0	27.844	
Krushana Chakra PRF	2489.598	0	404.257	404.257	Eco fragile and Theft prone Area
Bhogapal RF	184.56	0	158.694	158.694	
Burti PRF	3135.584	0	502.265	418.912	
Total	**18565.160**	**3455.201**	**6687.904**	**6295.027**	


ANGUL WORKING PLAN
PROTECTION WORKING CIRCLE
N
KANIHA
CHHENDIPADA
TALCHER
JARAPADA RANGE
ANGUL RANGE
BANTALA RANGE
Legend
RANGE BOUNDARY
FOREST BLOCK BOUNDARY
PROTECTION WORKING CIRCLE

5.5 Special Objectives of Management

1. To increase the natural regeneration by adopting strong protection measure.
2. To minimize biotic pressures like illicit felling, fire, grazing, etc.
   The forest protection is to be improved by developing forest road network, constitution of protection unit, improving VHF coverage, infrastructure developments and communication network.
3. To prevent further degradation of forest by adopting suitable planting models in order to increase vegetative cover and to stable the degraded area.
4. To protect the area from massive quarrying of granite and laterite stones, removal of boulders, moorums and soil.
5. To evict the persons from encroached forest area and restock the encroachment area by massive plantation with strong administrative measures.
6. To develop infrastructure in the remote areas to provide shelter to forest protection staff.
7. To protect the forest from biotic pressures like illicit felling, fire, grazing and poaching.
8. Keeping delicate and eco-fragile area undisturbed

5.5.1 Analysis of the Crop

As stated above, the blocks included in this circle have either degraded forest or high forest which needs intensive protection measures. The growing stock and stem density. It is expected that with proper protection and stoppage of illegal removal of biomass from these degraded blocks, the area will quickly rejuvenate and regain its original status. Protection to high forest blocks will ensure check on depletion in forest cover and environmental degradation. Protection from grazing and fire will ensure improvement in the regeneration status of these blocks. All these observations advocate strongly in favour of protection of these forests.

5.5.2 Silvicultural System

No Silvicultural system has been prescribed, but following operations are prescribed for the better forest management.

1. The area should be protected from grazing & fire.
2. Boundary of forest is to be maintained properly.
3. Forest road map will be developed with communication network system like

5.5.3 Rotation period

5.5.3.1 PROTECTION UNIT AND CYCLE

The principal aim and objective of this circle is to provide special protection to all its constituent blocks. It is therefore required to create different protection units in the Division to achieve the desired end results. Formation of protection units will facilitate implementation of operations like maintenance of boundary to prevent encroachments, repair of existing roads and creation of new road network to ensure regular patrolling in vulnerable and theft-prone forest blocks/compartments, action of anti-smuggling squads to check all illegal activities in a planned and systematic way. It is expected that the aforesaid arrangement will definitely help in tackling protection 'hotspots'. Since all forest blocks to be needed protection so six protection unit have been constituted for protection from illegal felling, fire and encrochment within the plan period.

5.5.3.2 METHODOLOGY AND EXECUTION OF OPERATIONS

i) In order to exercise stringent protection measures, all forest block need special protection measure. The forest block of Angul Forest Division are in various stages of degradation due to heavy illicit felling, quary activities, industrial operation, widening of road, urbanization etc. So accordingle one protection unit constitute of 10 squad member with mobility facility to each range should be provided to six ranges of angul Forest Division. The protection unit look over protection of the said area throughout the year for Plan period.

5.5.3.3 Demarcation of Annual Coupes and preparation of Annual Plan of Action

i) The annual coupes shall be demarcated in the preceding season of treatment. Since each coupe overlaps two or more compartments, each compartment shall be treated as a separate treatment area. This will ensure proper maintenance of compartment histories. Signboards, showing details of the forest block, working circle, compartment no., area and year of treatment shall be displayed at suitable places on prominent and easily identifiable trees.

ii) The Divisional Forest Officer shall ensure preparation of an annual action plan with a calendar of operations before execution of works. The guiding factors for incorporation of different components shall be as per the activities stipulated above at paragraph - 7.6

5.5.3.4 Forest Protection Measures:

i. The protection coupes shall be strictly closed for grazing and illegal removal of forest produce.

ii. All the forest blocks of this working circle shall be strictly protected against illicit felling, forest fires and all other biotic interferences. Anti-smuggling squads at vulnerable points in every Protection Unit shall be created by deployment of manpower from other less important areas besides engagement of protection (anti-smuggling/fire) watchers. The Divisional Forest Officer shall evolve the modalities for its effective functioning.

iii. All the check gates shall be strengthened with adequate staff. The staff at the check gates shall not be posted for more than a year. Similarly, in theft prone and problematic beats/sections, the staff shall be rotated on yearly basis. The forest cases shall be dealt with firmly. Soon after detection, the cases shall be investigated thoroughly and charges framed as per the Act/Rule with no loss of time. The case records should not be kept pending at the FG/Forester/Range Officer level.

iv. The concerned Range Officer/ACF shall periodically monitor the performance of each Beat Forest Guard and Section Forester. The DFO shall review the performance of each Range/Section/ Beat at least once in six months with regard to the protection efforts, monitor illicit felling and take required remedial measures as are considered necessary and feasible. For better coordination, the communication network including VHF network shall be strengthened and made effective.

v. The field forest staff shall also take steps to control encroachment in the forests and take suitable steps for eviction of the same in the treatment area. Resurvey & demarcation of forest blocks and construction/repair of boundary pillars according to provisions of Rule 168 and 169 of O.F.D. Code, 1979 is absolutely necessary to control this growing problem. The location (latitude & longitude) of boundary pillars through GPS shall be recorded and kept at Range / Division level. The cases of encroachment shall firmly be dealt with. The prosecution cases filed in the court shall be pursued regularly.

vi. The success of protection efforts should be monitored with regard to the number and nature of forest offence cases, encroachers evicted, timber and vehicle seized and the manner in which the booked offence cases are investigated and contested in the appropriate courts of law.

vii. The DFO and his subordinate officers shall constantly pursue the offence cases in the competent courts of law so as to ensure higher rate of conviction. More conviction will dissuade the offenders and this will have long lasting effect even on the over all protection in the entire Division as well.

viii. A fully functional 'Divisional Mobile Squad' with vehicle, required staff and arms shall be constituted. The divisional mobile will be deployed by the DFO for regular patrolling and for supporting field staff as and when required in emergencies.

ix. The DFO shall review forest offence cases in every Protection Unit at the Divisional level regularly in every month besides detailed review in the field during his routine inspections. The outcome of such reviews shall invariably find place even in his monthly tour diaries.

x. The forest cases detected shall not be compounded as a matter of routine. Proper investigation shall be conducted to convert the UD cases to PR cases so that the accused are brought to the books. Further, the PR cases shall be submitted in time duly following the procedure stipulated in the Orissa Forest Offence (Detection, Enquiry & Disposal) Rules'1980. The PR cases filed in the court shall be regularly pursued through the Public Prosecutor/Assistant Public Prosecutors. More over, the technical issues and bottlenecks may be brought for discussion/ redressal in the Senior Officers' Meeting at the District level.

5.5.3.5 Forest Road Network:

i. The existing forest roads as per details at Table No.3.28 (chapter-III) of Part- I are not properly maintained due to poor allocation of funds. The forest field staff mostly use these roads for transportation of forest produce, for supervision of forestry operations and for patrolling to check smuggling, illicit felling and poaching. The forest fringe villagers also use these forest roads as a major network for their transportation and communication. Hence, these roads are required to be improved and maintained properly as all weather roads.

ii. These forest roads/ tracks shall be provided drains on either side. The side drains shall be periodically cleared to allow surface runoff without any blockade. Cross-drains across the roads shall be provided on hill slopes. Existing causeways and temporary bridges shall be improved. Light morrum topping of road should be done periodically so as to prevent soil loss and erosion because of surface runoff and constant use. Roads should be repaired during November and December.

iii. Attempt should be made to develop the existing important forest roads up to grade-II metalling and then black topping in a phased manner. All other roads /tracks shall be developed as all weather roads connecting vulnerable forest blocks so as to intensify patrolling during the rainy season.

iv. The concerned Range Officer shall prepare plan and estimates for annual repair/special repair after physical verification of forest roads and obtain approval of the competent authority prior to execution of the work. In case of any new construction, detailed investigation shall be undertaken and prior approval of competent authority shall be obtained before execution of any such project.

5.5.3.6 Forest Fire Protection

i. In Part- I, analysis of the extent, causes of forest fire and damage caused to forests has been explained. Forest blocks vulnerable to fire, based on satellite imageries have been identified in Chapter II. Protection against fire requires concerted effort of the field staff and the forest fringe dwellers during the period February to May.

ii. Fire continues to be the major threat to forest regeneration and establishment. Almost every square meter of forest floor gets affected by it causing severe damage to forest and wildlife resources. Fire Watcher system needs to be strengthened in the identified vulnerable areas. Depending upon the requirement and availability of funds, fire watchers shall be provided to every Protection Unit.

iii. The VSS should be involved in containing forest fires. Incidence of annual fire should be entered in the compartment history. Fire prone areas should be identified and adequate precautionary measures taken in time. Every year fire maps need to be prepared block wise. Fire protection incentive schemes may be developed.

iv. Annual fire line clearance of 1 to 2-chain width in fire sensitive areas, coupled with controlled burning shall be done under the personal supervision of the Forester/Range Officer. Moreover, old fire lines, forest roads, boundary lines, village ring shall be kept clean by taking up control burning in 1-chain strip on both sides of it.

v. Field staff should be equipped with modern fire fighting tools. They should also be trained to use those fire fighting tools effectively.

vi. Awareness on the damage caused by forest fire shall be created amongst the people by holding meetings/ discussion frequently.

5.5.3.7 Communication System and Mobility:

i. The VHF system in vulnerable pockets of the Division needs to be strengthened. Fixed sets, mobile sets and hand sets should be made available. Each Protection Unit should be provided with at least one fixed set and one hand set.

ii. Since quick communication is vital for transmitting information and also for deployment as well as re-enforcement in an emergency case, there shall be VHF system with fixed stations at the Divisional office and all the Range headquarters and in every Protection Units. Besides, all four wheel vehicles of the Division shall also be equipped with mobile VHF sets.

iii. Attempt shall be made to provide every Protection Unit with a four wheeler motor vehicle.

iv. All important communication through VHF shall be recorded in registers. Similarly, details of patrolling done by the staff in protection and mobile units should be maintained properly.

5.5.4 Harvestable diameters

5.5.5 Reducing factors and reduced areas.

5.5.6 Felling cycle.

5.5.7 Division into periods and allotment to periodic block (PB)

5.5.8 Calculation of the yield

5.5.9 Table of felling

5.5.10 Method of Executing the Felling

5.5.11 Subsidiary silvicultural operation cleaning and thinning.

5.5.12 Regeneration.

5.5.13 Associated Regulations and measures.

5.5.13.1 Execution of operations.

The protection series will be divided in to protection units foremphasing execution of the protection measures and boundary maintenance in that unit. There are several protection related problems in the Division which needs to understood clearly and executed properly.

- Deployment of anti-smuggling squads and para forest staffs to prevent illicit felling.
- Infrastructure development.
- Forest fire protection.

5.5.13.2 Protection against Illicit Felling

1. Illicit felling of timber is mainly concentrated in all Ranges of Angul Forest Division mainly for fire wood, poles and agriculture purpose. All the forest blocks shall be strictly protected against illicit felling by strengthening the enforcement mechanism, frequent patrolling, engaging anti-smuggling squad at vulnerable points, by deploying man power from less important areas to vulnerable points and providing ample arms and ammunition to the field staffs.
2. All the Forest Check Gates shall be strengthened with sufficient squad members.
3. To stop transit of smuggled timber and detect smugglers with vehicles strong incentive based intelligence system has to be build in the Division. Further 2 to 3 special teams should be formed and always be in state of readiness to move within a short notice to the spot of forest offence.
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. Another measure area of concern in protection matters is the low conviction rates. The training inputs to staff regularly and persuasion at the level of judicial forum for quick disposal of the cases.
6. These forest roads should be improved for transportation of forest produce, for supervision of forestry operation and to check smuggling, illicit felling and poaching.

5.5.13.3 Encroachments

In Angul Division encroachment of forest blocks are maximum in kaniha and Jarapada Range mostly for quarrying and homestead purposes. Specially, in Arakhadahi RF area and Similipathar RF the forest land and also the non-forest lands are encroached by public for homestad purpose. As theses encroachments are very old cases proper planning is required for eviction by joint action of Police, Forest and Revenue authorities. Therefore, strong action should be taken by the field functionaries to prevent new encroachments. 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.

5.5.13.4 Forest Fire

The fire incidents in this divosion have been effectively controlled during the plan period. However, to protect the forest more number of fire protection squads should be provided in these areas. The villagers of forest fringe villages and the VSS members should be motivated and provide incentives to support the field staffs and participate to control the forest fire.

People participation is an accepted way in forest protection. Hence, the local people shall be increasingly involved in forest protection and management by constituting more number of VSS in vulnerable pocket.

The extent of fire damage and the causes of forest fire must be analysed and a fire map should be prepared in each range for the fire prone forest blocks.

The annual forest clearance of 1 to 2-chain width in fire sensitive areas, coupled with controlled burning shall be done. More ever, old fire lines, forest road, boundary line, village ring shall be kept clean.

The Orissa Forest (Fire Protection) Rules, 1979 should be followed.

Fire fighting team consisting of Forester, Beat guard and fire watcher should be trained properly and should be provided with modern fire fighting equipment, vehicles, wireless sets and mobile phones for better communication.

5.5.13.5 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.

5.5.13.6 Miscellaneous Regulation

Special protection squad is to be deployed in Talcher Range, Chhendipada Range, angul Range, Jarapada Range and Bantala Range to check illicity transportation of Kendu leaves and illigall removal of pole from the forest area.

5.5.13.7 Right and Concessions

Rights and concessions under this working circle shall be regulated in accordance with the provisions of the Orissa Forest Act, 1972: Rules made there under besides the Government policies in force.

5.5.13.8 Grazing control

1. The grazing can be controlled in the forest area in regular consultation with local people and arrange to develop fodder resource and to encourage stall feeding.
2. To educate the forest fringe villages to dispose the un-productive cattles and procure better quality of cattle and stall feeding.
3. Forest area should be strictly closed at least for a period of two years basing on forest protection unit wise.
4. Grazing may be allowed basing on the carrying capacity.
5. Villagers should be encouraged for large scale plantations of fast growing fodder species.
6. In forest areas, development of silvipasture plots and plantations of fast growing fodder species may be taken up.

Special protection measures for area under Satkosia Tiger Landscape- Nuakheta RF and part of Balanga RF

Check gate
Half yearly monitoring

Protection squad

Joint patrolling
Coordination meeting
Special management practices for timber and bamboo coupes

5.5.13.9 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 in forest fringe villages.

CHAPTER - 6

The Bamboo (Overlapping) Working Circle

6.1 General Constitution

6.1.1 This Working Circle is an overlapping working circle comprising of all the forest blocks which have some bamboo crop. This circle overlaps the bamboo forest areas of the Improvement Working Circle in the current plan. Seven forest blocks are included in this Working Circle covering a total area of 6513.201 ha.

Most of the blocks included under this circle are part of the Bamboo Working Circle of the outgoing plan as well as the Special bamboo scheme currently in use. However, some blocks which were earlier part of the bamboo scheme, have now been excluded from this working circle as all such blocks are either in need of stringent protection measures and/or bamboo crop has almost been lost from these blocks mainly because of severe biotic interference.

The bamboo forests of the Division are mostly confined to Angul, Bantala, Jarapada Ranges only. However, there are some bamboo forests in other Ranges of the Division

6.2 General Character of Vegetation

The bamboo of commerce in this Division is Salia (*Dendrocalamus strictus*). This is the most common species of bamboo found in the State. However, Kanta or daba bamboo (Bambusa arundinacea) is the other species found along the perennial nallahs and other streams, but its occurrence is very much limited. Similarly Bolangi/Susongi bamboo(*Cephalostachyum pergracile*) is also found in small patches only in Nuakheta block. Bamboo forests exist as overlapping forest with miscellaneous tree species like Piasal, Sisoo, Asan, Dhaura, Kurum, Kasi and Moi etc.

The production of bamboo in the Division has shown reduction over the years as revealed from the bamboo production statistics furnished at Table No.4.8 (Chapter IV of Part-I). This clearly indicates that there is loss in potential for bamboo production in the Division. As reviewed under the past working of Bamboo Working Circle of the preceding plan and Scheme under Chapter No-V, many of the felling series have become unproductive, both economically as well as silviculturally. This is due to the excessive removal of bamboo culms not only by the local inhabitants but also in the process of working out of such forests by the Forest Corporation. Also, the bamboo clumps have been heavily degraded because of other biotic interferences as well as improper application of prescribed cutting rules. In fact, the easily accessible areas were over-exploited and the difficult terrain was either not exploited to its potential or left without working. This has led to gradual degeneration and degradation of bamboo in the lower slopes while congestion has occurred in the upper slopes. It is further observed that numbers of the clumps on an average do not contain minimum number of culms required for healthy growth of rhizomes.

Despite the biotic interference, the bamboo forests still have good regeneration status and potentiality for harvest. However, these bamboo forests of the Division are in need of appropriate silvicultural operations to increase the productivity. The type and classification of forests included in this circle has already been dealt in Chapter-II of Part- I. However, the major types of forest of this circle are either Moist peninsular Sal Forests (3C/C2) (ii) Northern Dry Mixed Deciduous Forests(5B/C2).

6.3 Felling series, cutting sections and JFM areas

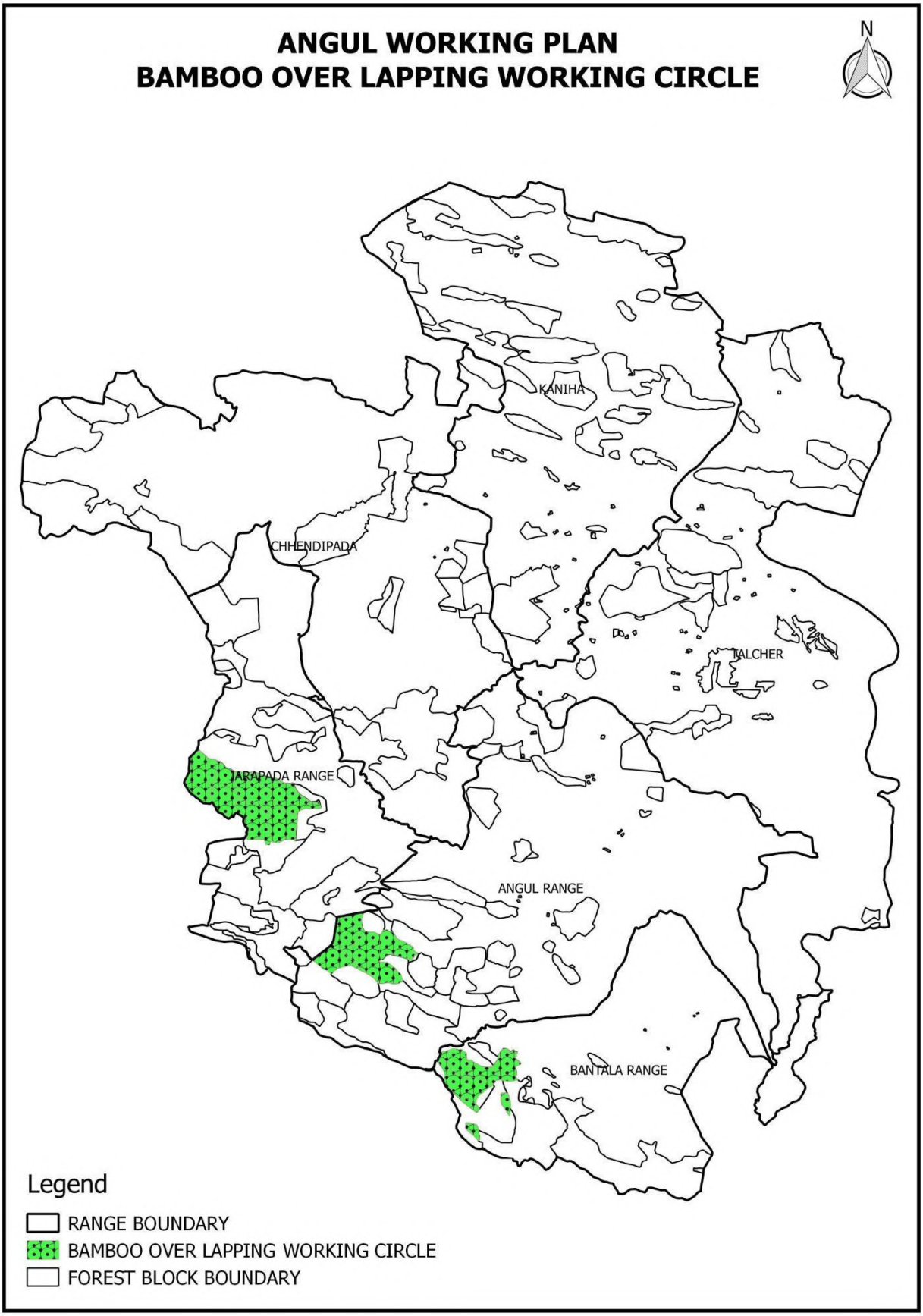
In the outgoing plan and scheme, there were ten and six felling series respectively in the plan area. However, the felling series namely Krushnachakra of the outgoing bamboo scheme have already become unproductive and some other less productive.

For above reasons, reconstitution of the bamboo felling series has been necessitated. Accordingly, after detailed field verification, total five bamboo felling series have been constituted afresh and their composition are shown in **Table No: 6.1.**

6.4 Block, compartment and JFMs area (marked on GIS based maps)

Table No. 6.1 Area adopted in Bamboo working circle for proposed Working plan of Angul Forest Division

Name of the Forest Block	**Forest Blcok in Ha.**	**Bamboo (OL) circle in Ha.**	**Adoption in Bamboo (OL) working circle with IWC Area in ha.**
Jarapada Range			
Katada RF	3142.494	3142.494	3142.494
Bantala Range			
Balanga RF	3096.766	1264.453	1264.453
Nuakheta RF	2889.93	0	0
Balanga PRF	53.522	53.522	53.522
Talasira DPF	49.564	49.564	49.564
Labangi DPF	69.96	69.96	69.96
Angul Range			
Burti PRF	3135.584	1933.208	1933.208
Total	**12437.82**	**6513.201**	**6513.201**


ANGUL WORKING PLAN
BAMBOO OVER LAPPING WORKING CIRCLE
N
KANIHA
CHHENDIPADA
TALCHER
JARAPADA RANGE
ANGUL RANGE
BANTALA RANGE
Legend
RANGE BOUNDARY
BAMBOO OVER LAPPING WORKING CIRCLE
FOREST BLOCK BOUNDARY

6.5 Special Objectives of Management:-

The special objectives of management in respect of this working circle are within the scope of general objectives of management. These are as follows: -

1. To ensure regular silvicultural operations to prevent deterioration of the growing stock.
2. To enforce scientific cutting rules to ensure maximum yield on sustainable basis so as not to effect the future yield
3. To meet the bona fide requirements of bamboo artisans, local people and bamboo based industry.
4. To rehabilitate the exhausted bamboo bearing areas through appropriate measures like tending, soil working, plantation etc.
5. To generate employment for the local poor people.

6.5.1 Analysis of the Crop

The bamboo crop mainly comprises of Salia species though some daba is occurring along nallah and perennial streams. The area under bamboo and its quality has deteriorated during the previous plan period. Unsystematic and indiscriminate felling, unregulated removals by the local tenants from many felling series, coupled with fire, grazing and want of sufficient and timely sillvicultural operations, the crop condition has gradually deteriorated.

Enumeration of bamboo clumps has been taken up along with tree species enumeration in sample point inventory.as already described in Chapter- VIII of Part – I. This data was compared with production figures of bamboo and the enumeration taken up for the preparation of the bamboo scheme. Based on these data, the number of bamboo clumps per hectare has been determined with average number of culms per clump. Most of the clumps are of quality II and III. An abstract of this analysis is given in Table No. 6.3 showing the data of all those blocks which are part of this bamboo overlapping circle. However, the details of enumeration are reflected in the individual compartment history files.

Table No 6.2 Abstract of Enumeration result and its Analysis of Angul Division

Sl. No.	Name of Range	Name of Block	Comptt.	GIS Area in ha.	Bamboo Enumerated No. of S.P. / Area in ha.	No. of Clumps per ha.	No. of Culms per Clump	Avg. ht. in Mtr.	Qlty Class
1	Bantala	Bolong RF	1 to 4	1264.453	15/ 1.5	96	11	Below 6	III
		Balanga PRF		53.522	1	82	10	Below 6	III
		Talasira DPF		49.564	1	76	10	Below 6	III
		Labangi DPF		69.96	1	85	10	Below 6	III
2	Angul	Burti PRF	1 to 7	1933.208	7/ 0.7	56	12	Below 6	III
3	Jarapada	Katada RF	1 to 7	3142.494	56/ 5.6	46	11	Below 6	III

6.5.2 Silvicultural System

The Silvicultural System prescribed is "Culm Selection-cum-Clump improvement" combined with simultaneous cleaning and cultural operations for Salia bamboos where as "clump improvement" combined with simultaneous cleaning and cultural operations are prescribed for Daba Bamboos.

6.5.3 Rotation period

A felling cycle of 4 years has been adopted for both Salia as well as Daba bamboo. Each felling series has been divided into four annual coupes (A, B, C & D) as shown in previous page in Table No: 6.3

Table No. 6.3 Year wise sequence of working of Bamboo Coupes

Felling Coupe	Name of the Range	Name of the Forest Block	Comptt No.	Gis Area in ha.	Annual Coupe Area in ha.	Year
D.	Angul	Burti PRF	4	429.195	429.195	2021-22
	Bantala	Balanga RF	1	298.478	1046.753	
	Bantala	Balanga RF	2	451.707		
	Bantala	Balanga RF	3	226.608		
	Bantala	Labangi DPF	-	69.96		
	Jarapada	Katada RF	4	417.559	871.869	
	Jarapada	Katada RF	5	454.31		
	Total			2347.817	2347.817	
A.	Bantala	Balanga RF	4	287.66	287.66	2022-23
	Angul	Burti PRF	1	340.421	340.421	
	Jarapada	Katada RF	3	550.726	1106.388	
	Jarapada	Katada RF	6	555.662		

	Total			1734.469	1734.469	
B.	Angul	Burti PRF	2	386.664	386.664	2023-24
	Jarapada	Katada RF	2	267.684	598.801	
	Jarapada	Katada RF	7	331.117		
	Bantala	Balanga PRF		53.522	53.522	
	Total			1038.987	1038.987	
C.	Angul	Burti PRF	3	776.928	776.928	2024-25
	Jarapada	Katada RF	1	565.436	565.436	
	Bantala	Talasira DPF	-	49.564	49.564	
	Total			1391.928	1391.928	
D.	Angul	Burti PRF	4	429.195	429.195	2025-26
	Bantala	Balanga RF	1	298.478	1046.753	
	Bantala	Balanga RF	2	451.707		
	Bantala	Balanga RF	3	226.608		
	Bantala	Labangi DPF	-	69.96		
	Jarapada	Katada RF	4	417.559	871.869	
	Jarapada	Katada RF	5	454.31		
	Total			2347.817	2347.817	
A.	Bantala	Balanga RF	4	287.66	287.66	2026-27
	Angul	Burti PRF	1	340.421	340.421	
	Jarapada	Katada RF	3	550.726	1106.388	
	Jarapada	Katada RF	6	555.662		
	Total			1734.469	1734.469	
B.	Angul	Burti PRF	2	386.664	386.664	2027-28
	Jarapada	Katada RF	2	267.684	598.801	
	Jarapada	Katada RF	7	331.117		
	Bantala	Balanga PRF		53.522	53.522	
	Total			1038.987	1038.987	
C.	Angul	Burti PRF	3	776.928	776.928	2028-29
	Jarapada	Katada RF	1	565.436	565.436	
	Bantala	Talasira DPF	-	49.564	49.564	
	Total			1391.928	1391.928	
D.	Angul	Burti PRF	4	429.195	429.195	2029-30
	Bantala	Balanga RF	1	298.478	1046.753	
	Bantala	Balanga RF	2	451.707		
	Bantala	Balanga RF	3	226.608		
	Bantala	Labangi DPF	-	69.96		

	Jarapada	Katada RF	4	417.559	871.869	
	Jarapada	Katada RF	5	454.31		
	Total			2347.817	2347.817	
A.	Bantala	Balanga RF	4	287.66	287.66	2030-31
	Angul	Burti PRF	1	340.421	340.421	
	Jarapada	Katada RF	3	550.726	1106.388	
	Jarapada	Katada RF	6	555.662		
	Total			1734.469	1734.469	

6.5.4 Harvestable diameters

Only 4 years bamboos can be removed.

6.5.5 Reducing factors and reduced areas.

Not applicable

6.5.6 Felling cycle.

A felling cycle of 4 years has been adopted for both Salia as well as Daba bamboo. Each felling series has been divided into four annual coupes (A, B, C & D)

6.5.7 Division into periods and allotment to periodic block (PB)

Not Applicable

6.5.8 Calculation of the yield

Bamboo yield will be regulated entirely by area. However, for calculating the yield, the bamboo felling (cutting) rules communicated vide letter no: 13/FCWP/OS-Gen dt.24th Dec'1990 of the Government of India, Ministry of Environment & Forests are to be followed. As per the said rules, culms up to one year of age (Karadi) and the bamboo culms over one year but less than two years of age will not be cut under any circumstances. Such more than one year old culms and the culms which are older than two years but less than three years of age are also to be retained in the clump and their number shall not be less than the number of Karadis. In addition, the minimum culms per clump to be retained after cutting shall not be less than 15 (fifteen) culms for Clump Quality-II and 10 (ten) culms for clump quality-III.

Keeping the aforesaid conditions, the yield estimation has been done for each bamboo felling series and annual bamboo coupes. The bamboo enumeration data has been taken into account for clump and culm analysis to arrive at number of culms available for harvest per clump. Further, as revealed from above tabular statement at Table No: 6.3, enumerated clumps are either of quality II or quality III; thus average height of culms is taken as 7.5 meters and 3.0 meters respectively for the two quality clumps for the purpose of yield estimation. Since one Sale Unit (SU) is equal to 2400 RMT or one MT, the formula used for yield calculation is as follows:-

Yield of Felling Series (or Annual Coupe) = Area of Felling Series (or Annual Coupe)

X Number of Clumps/hectare

X Number of harvestable Culms/clump

X (Average culm height/2400)

Accordingly, the yield calculation has been done and shown in table no: 6.4

Table No: 6.4 Felling Series And Bamboo Coupe Wise Yield Estimation in Sale Units

Felling	'A' COUPE		'B' COUPE		'C 'COUPE		'D' COUPE		TOTAL	
Series	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield
Balang	287.66	126.57	53.522	18.28	49.564	15.69	1046.753	460.57	1437.499	621.11
Bruti	340.421	95.31	386.664	108.26	776.928	217.53	429.195	120.17	1933.208	541.27
Katada	1106.388	233.26	598.801	126.24	565.436	119.21	871.869	183.81	3142.494	662.52
Total	1734.469	455.14	1038.987	252.78	1391.928	352.43	2347.817	764.55	6513.201	1824.9

The yield estimations as shown in Table no: 6.4 are based on the sample enumeration carried out in between the years 2016-17 to 2017-18. This estimation is likely to change for the reasons that the regular silvicultural inputs to be given are bound to further improve the bamboo crop vis-à-vis yield and that the bamboo forests are prescribed for working on very short rotation of just 4 (four) years cycle. Hence, this estimation shall be taken just as a guiding factor for the purpose for preparation of different treatment types of bamboo forests in the first year of the first cycle of felling only.

6.5.9 Table of felling

A definite sequence of felling in bamboo coupes will be required. The coupe shall be divided into four sections running along the contours. The sections from the uphill side should be worked first and the first section shall be completed in all respect before the work commences in the second section and so on.

Table No:6.5 Year wise sequence of working of Bamboo coupes

Felling Series	A Coupe	B Coupe	C Coupe	D Coupe
Balang	0	0	0	2021-22
	2022-23	2023-24	2024-25	2025-26
	2026-27	2027-28	2028-29	2029-30
	2030-31	0	0	0
Bruti	0	0	0	2021-22
	2022-23	2023-24	2024-25	2025-26
	2026-27	2027-28	2028-29	2029-30
	2030-31	0	0	0

Katada	0	0	0	2021-22
	2022-23	2023-24	2024-25	2025-26
	2026-27	2027-28	2028-29	2029-30
	2030-31	0	0	0

6.5.10 Method of Executing the Felling

6.5.10.1 Demarcation of annual coupes: Bamboo coupes shall be demarcated by giving double coal-tar rings at the breast height of all the trees standing on the coupe lines, which are distinctly visible from each other. Similarly single coal tar ring will show the section line. Sign boards shall be displayed on compartment lines, road crossings, nallah crossings and other strategic points mentioning the details such as sequence of the coupe, its area, year of working and compartment number. Bamboo coupes have already been shown on management maps. The coupe boundaries are kept co-terminus with compartment lines so that the demarcation of coupes is not difficult.

6.5.10.2 Execution of Operations: The State Government decides the agency for working of bamboo, as it is a nationalized forest produce. However, at present, the Orissa Forest Development Corporation Ltd. is the agent nominated by the Government to work out bamboo coupes through the Raw Material Procurer (RMP).

6.5.10.3 Estimation of the yield for fixation of target: Outturn from a coupe is variable as annual production of clumps varies with rainfall, past working, illicit removal of Karadi, flowering of clumps, incidence of fire and other factors. Basing on the clump quality, treatment type as well as enumeration by stratified sampling, the estimated yield (target) shall be arrived at, before coupe working. This work should start by June-July and completed by August for the coupe due for working so that new Karadis are also taken into account

6.5.10.4 Working of Bamboo

Bamboo shall be worked by a definite set of rules that has been prescribed by the CCF (Central), Eastern Regional office, Ministry of Environment and Forests, Government of India, Bhubaneswar as referred to above. It envisages preparation of treatment maps and different felling rules for different treatment types.

Treatment Maps

- After demarcation of bamboo coupes and before taking it up for working, a treatment map will be prepared by the lessee on a copy of the available Management Map, indicating Salia and Daba bamboo areas separately.
- Treatment types to be distinguished shall be based on the assessment of the standard Salia bamboo quality classes and actual clump condition
- In both these cases areas less than 4 Ha in extent will not be separated out as distinct Treatment Types.

Treatment Types of Salia Bamboos: The following treatment types have been identified for Salia Bamboo area. Salia bamboo forest is categorized for different treatments as described below

Treatment Type-A: Areas with healthy and well-stocked Bamboo Clumps consisting of

1. Clump Quality-I:-Culm height of Bamboos from 9 meters and up
2. Clump Quality-II:-Culm height of Bamboos between 6 meters to 9 meters
3. Clump Quality-III:-Culm height of Bamboos below 6 meters

Treatment Type-B: Areas with well-stocked but degraded, damaged, congested and/or fire burnt Bamboo Clumps

Treatment Type-C: Areas where bamboo clumps are sparse and scattered

If necessary, the treatment types A & B may further be classified into the above mentioned three clumps quality classes

6.5.10.5 Felling (Cutting) Rules for Salia Bamboos: Salia Bamboo (Dendrocalamus strictus) will be worked as per the following prescriptions

6.5.10.6 Rules, which are uniformly applicable to all the treatment types

i. Karadi (culm up to one year of age) and the bamboo culm over one year but under two years of age will not be cut under any circumstances. Such more than one-year-old culms and the culms, which are older than 2 years but less then 3 years of age, shall be retained in the clump and their number, should not be less than number of Karadis.

ii. The Minimum number of culms to be retained in a clump is fixed on the basis of quality of the clump and it is as follows: -
    1. Clump Quality I – 20 culms.
    2. Clump Quality II – 15 culms.
    3. Clump Quality III – 10 culms.

iii. Clumps having the minimum or less than minimum prescribed number of culms shall not be commercially exploited. Only broken, dead, dry, badly damaged and mal-formed bamboos will be felled.

iv. A clump will be distinguished, as an independent clump where its periphery is easily discernible from others. Only where such a distinction is not possible, two clumps within one-meter distance will be regarded as one.

v. The retained culms in a clump should be well spaced, preferably at the periphery in the following order of preference
    1. Karadi bamboos.
    2. Kasi bamboos (older than one year but less than 2 years).
    3. Pakala bamboos (Young green bamboos).
    4. Older live bamboos.
    5. Other as may be available.

vi. Rhizomes will not be dug

vii. The height above which culms are cut shall not be less than 15 cm or more than 45 cm from the ground level and in no case below the first prominent node from the ground.

viii. The cut shall be made with a sharp instrument to ensure that the stump remains intact without splitting.

ix. Lops and tops of bamboos will be simultaneously cleared to a distance of at least one meter away from the periphery of the worked out clumps to avoid fire hazard.

x. Climbers shall be cut from all the bamboo clumps during working of the coupes.

xi. Bamboo strips will not be used in tying bamboo bundles.

xii. Bamboo cutting will not be done from 1st July to 30th September.

xiii. In case of sporadic flowering of bamboo, the flowered clumps will be clear-felled, once the seeds from such clumps have fallen.

xiv. In case of gregarious flowering, the clumps will be clear-felled and extracted early just after the shedding of ripe seeds, so that the bamboo do not dry or deteriorate or become prone to fire damage. 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 flowered areas

xv. Lopping of bamboos either for feeding livestock or otherwise is strictly prohibited

xvi. As far as possible, bamboo cutting should be completed by the end of May

xvii. Bamboo forests should be rigidly protected from fire. In any case, forest fire should not occur during the year of working and the year following it.

xviii. No grazing shall be permitted during rains in bamboo forests, which have been worked in the previous season.

6.5.10.7 Rules applicable to specific treatment types:

1. **Treatment Type – A.**

   a. Commercial felling will be done in those clumps, which have more than the prescribed minimum number of culms in each.
   b. Cultural operations will be carried out in clumps having less than the prescribed minimum number of culms in each. In such clumps commercial felling will not be done.

2. **Treatment Type – B**

   i. There will be no commercial fellings in any clump.

   ii. Only cultural operations will be carried out which will include:

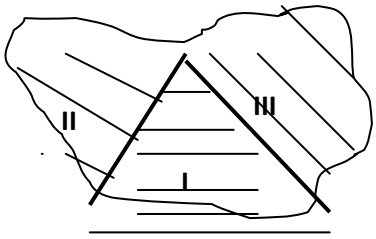
      a. Felling of all dead, dried, over-matured, burnt, broken and grossly damaged bamboos.

      b. 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.

c. The minimum number of culms to be retained per clump as prescribed in foregoing paragraphs for various quality classes may not be strictly followed if necessity so arises.

d. The congested bamboo clumps shall be clear felled by forming segments. The maximum number of segments, under which a congested clump shall be worked, will be three and at each working not more than one segment will be cut. Where three segments are formed, the middle segment will be in the shape of a triangle having apex at the periphery. Only this middle segment shall be felled at the first working. In subsequent cycles, side segments should be felled. Diagram showing divisions of the clump in these segments is given below:

iii.



3. Treatment Type – C

i. Only cultural operations will be carried out in the existing bamboo clumps.

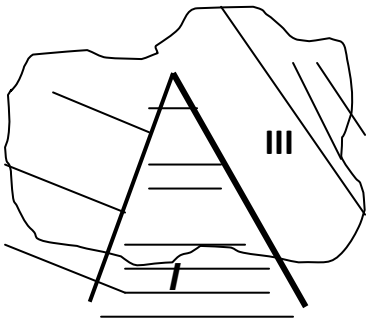
ii. The bamboo potentiality of such forests will be augmented by raising bamboo plantation. The minimum area to be planted annually will be 40 hectares or one third of the area under this type.

iii. Tending and cultural operations in the area planted with bamboo will be done as per the standard practice.

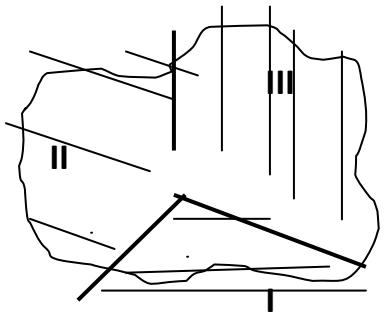
6.5.10.8 Cutting Rules for Daba bamboos (Bambusa arundinacea)

i. All bamboo culms in a clump, which are more than 3 years old, shall be harvested on culm selection basis provided the number of culms, left uniformly distributed in a clump, shall not be less than 10.

ii. In case of congested clumps where culm selection is not possible, the clump should be carefully felled by forming segments as per any of the two diagrams given below depending on the interlacing of bamboos, with a view to provide support to the remaining segments against wind damage.



First preference



Second preference

iii. The maximum number of segments, under which a congested clump shall be worked, will be three and at each working not more than one segment will be cut. Stumps, higher than 50 cm or more than two internodes, should not be left.

Where three segments are formed, the middle segment will be in the shape of a triangle. Only the middle segment (I) shall be felled at the first working.

6.5.11 Subsidiary silvicultural operation cleaning and thinning.

Since productivity of the bamboo forest depends on proper and timely silvicultural operations, it should be ensured to carry out such operations during / or immediately after the year of actual harvest. Even, the early stage 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. These operations shall preferably be done along with the main cutting and comprise of the following components.

i. All cutting debris shall be removed and the clump shall be left cleaned.

ii. If any clump has not been cleaned at the time of felling, such clumps shall also be attended to through pruning in addition to the climber cutting. If any high stumps have been left, those shall also be rectified

iii. 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 down hill 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.

iv. As a moisture conservation measure, half-moon trenching shall also be dug on the uphill side of the clump in concave shape. No damage shall be caused to rhizomes and rootstock.

v. Besides, pulverization and sufficient soil working around the clumps shall be done to improve the over all quality and productivity of the bamboo forests.

6.5.12 Regeneration.

i. **Plantations of bamboo:** Itshould be taken up in deficient areas especially where the density of bamboos is less than 20 clumps per hectare. The technique for raising bamboo plantation prescribed in Forest Plantation Manual 1977, shall be adopted; however, no felling of trees shall be resorted to for this purpose. Bamboo seedlings at a spacement of about 4m X 4m are to be adopted & retained and the rest are to be thinned out.

Cleaning, soil working and seeding is to be done around the adopted bamboo seedlings up to a radius of 50 cm.

To maintain the continuity, planting up of bamboo rhizomes is also to be resorted to especially in big gaps.

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.

All the flowered clumps are to be worked up following the prescriptions of the working plan.

The area shall be closed for grazing.

Elaborate fire protection measures shall be taken.

6.5.13 Associated Regulations and measures.

6.5.13.1 Grazing: Grazing will be regulated in this working circle in accordance with the Orissa Forest (Grazing of Cattle) Rules 1980 and carrying capacity of the forest. The regeneration in bamboo coupes shall be protected from grazing.

6.5.13.2 Fire protection: Fire lines of 5-meter width on boundaries of each coupe shall be meticulously cleared to prevent spread of fire. The Orissa Forest Fire Protection Rules, 1979 and provisions of Chapter XVII of Orissa Forest Department Code shall be strictly implemented.

6.5.13.3 Rights and Concession: They shall be regulated as laid down in chapter 1 and prevailing government policy.

6.5.13.4 Maintenance of Records: Compartment history files and Control forms besides other records shall be maintained for each Coupe/Compartment and Felling Series in accordance with the Management Plan Procedure, 1991.

6.5.13.5 Intermediate Revision

No intermediate revision is anticipated. However the results of prescriptions may be reviewed after 5 years and if found necessary, the Regional Chief Conservator of Forests, Angul in consultation with Conservator of Forests (Working Plans) may recommend for an intermediate revision of the same, to the competent authority whose decision shall be final.

6.5.13.6 Cost Norm for Implementation of Prescriptions

The cost norm for implementation of prescription as per guideline provided by the PCCF, Odisha, Forest & Environment Department.

CHAPTER - 7

The Wild Life (Overlapping) Working Circle

7.1 GENERAL CONSTITUTION

7.1.1 The forests of Angul Division has got rich heritage of wildlife. Due to rapid industrialization and mining activities in and around Angul and Talcher. There has been heavy biotic pressure on the forests, resulting in decline in the forest cover and the wild life habitat. Still this division continues to have good population of wild life as stated in Chapter-II B of Part-I. In fact, different studies in India have indicated that reserved forests in general sustain a substantial number of floral and faunal species, and their level of biodiversity is at par or often exceeding that of many PAs. Many of such forest patches are to be silviculturally worked and tended. Although there is a school of thought that emphatically states that extraction and conservation are mutually contradictory concepts and cannot co-exist, the socio-economic situation in the State in general and in the Angul Division in particular, warrant a marriage of these two entities. While revising this working plan conscious attempt has been made to incorporate elements of conservation ethos. In fact, the National Forest Policy, 1988 has emphasised the need to conserve Wild Life and their habitat. "Wildlife" embraces all forms that are wild, and is therefore any plant or animal which is neither domesticated nor reared/cultivated and inhabits a wild landscape which may include even land, wetlands and sea. Therefore, to provide protection for the existing wild life, to improve their habitat and to conserve bio-diversity, this overlapping Working Circle extending to the entire Division has been constituted.

7.2 General Character of Vegetation

The rural population of this Division still use firewood for their cooking for which they depend mostly on forests. They also collect small timber for house constructions and its repair and edible grass/ fodder for their cattle. These activities not only deplete forests, but also open up forest canopy. This depletion has been increased further due to mining activities and industrial set ups in the area. The relentless biotic pressure by humans and domestic cattle over the years has adversely affected the biodiversity of flora and fauna of this Division. No systematic biodiversity survey has been made in the Division in the past, barring some qualitative observations. Formal floral-diversity surveys have been taken for the first time during the revision of this plan and by the Forest and Ecology Division of NRSA which has been reported in Chapter - II of Part- I of this plan. This will provide a benchmark for future comparisons. These sample floral-diversity surveys, though not very comprehensive, are a modest beginning.

The composition and diversity (including fauna) of the forest blocks allotted to this Working Circle, have already been discussed in Chapter-II of Part - I of this Plan. Further, all the blocks allotted to this overlapping circle have again been briefly described under the primary working circle in which they have been allotted. The wild animals/birds living in the division are presented in the chapter - II B. This Division forms an important buffer area to Satkosia Wild Life Sanctuary and forms part of the migratory corridor for elephants. Parts of this

division have been included in the proposed Mahanadi Elephant Reserve and Baitarani-Brahmani Elephant Reserve. In the proposed Mahanadi Elephant Reserve, Bantala Range and parts of Angul & Jarapada Range comprising of an area of 608 sq.km have been included out of which 252.28 sq.km is the 'Elephant Habitat Zone' and 355.72 sq.km is the 'Zone of Influence'. Important forest blocks coming under this reserve are Bolong RF, Nuakheta RF, Katada RF, Antulia-Tabada RF, Bhogpal RF, Krushnachakra PRF, Pokunda PRF, Kurudu PRF, Burti PRF, Bolonga PRF, Talsira DPF, Labangi DPF and Pathargarh PRF. Part of Kaniha and Talcher Range with an area of 439.06 sq.km have been included in the proposed Baitarani-Brahmani Elephant Reserve out of which 200.78 sq.km is the 'Elephant Habitat Zone' and 238.28 sq.km is the 'Zone of Influence'. Important forest blocks coming under the habitat zone of this elephant reserve are Bulajhar, Mankadchua, Siling, Budhia, Sachi, Biripal, Khajuria, Bandhuli and Seepur RF.

7.3 Felling series, cutting sections and JFM areas

NA

7.4 Block, compartment and JFMs area (marked on GIS based maps)

All the forest blocks, included in the Plan have been allotted to this Overlapping Working Circle. The circle covers the entire geographical area of the Division as far as protection of the wildlife is concerned. The forest blocks which need emphasis on wildlife management are furnished in **Table No. 7.1** and map of the area is shown in **Fig. 7.1** planned improvement on the conservation, habitat management and protection of wildlife is to be ensured. The total operational area of this working circle is 64610.050 ha.

Table No. 7.1 Distribution of area in Wildlife (Overlapping) Working Circle

Sl. No.	Name of Range	Name of Forest Block	G.I.S. Area in ha.
1	Angul	Gurunga RF	59.007
		Bhogapal RF	184.560
		Naudapur-Berhampur RF	40.975
		Madhapur RF	221.793
		Krushnachakra PRF	2489.598
		Kurudu PRF	712.221
		Pokunda PRF	271.416
		Kulasinga PRF	641.715
		Chandanpur PRF	446.364
		Kalapat PRF	1214.713
		Burti PRF	3135.584
		Sorispal-Hinsar PRF	763.359
		Sub Total	10181.305
2	Bantala	Bolong RF	1264.4530
		Baragunia RF	70.634
		Bolong PRF	53.522

		Talsira DPF	49.564
		Labangi DPF	69.960
		Sub Total	1508.133
3	Jarapada	Antulia-Tabada RF	2259.800
		Katada RF	3142.494
		Dandasingha-Bhagatpur PRF	221.380
		Tabada PRF	210.582
		Rodsingha PRF	143.939
		Pathargarh PRF	1633.067
		Para PRF	1052.774
		Sub Total	8664.036
4	Chhendipada	Sunarijharan PRF	450.817
		Chhendipada RF	1824.968
		Jaltap RF	444.978
		Kankurpal RF	929.905
		Sub Total	3650.668
5	Talcher	Bulajhar RF	1948.152
		Mankadachua RF	402.188
		Siling RF	106.47
		Seepur RF	242.085
		Kanheijena RF	1393.382
		Langalkhol RF	125.123
		Sub Total	4217.4
6	Kaniha	Budhia RF	116.725
		Biripal RF	1235.18
		Badakathia RF	1580.345
		Santarabandha RF	172.556
		Sachi RF	97.130
		Khajuria RF	136.076
		Bandhuli RF	65.361
		Silakhani RF	933.211
		Tangiri RF	265.847
		Nialu-Lodhajhari-Sapkata RF	1225.276
		Arakhadihi RF	679.496
		Pedi RF	392.464
		Sub Total	6899.667
		Grand Total	**35121.209**

7.5 Special Objectives of Management

The special objectives of Management set for this Working Circle are within the general objectives of management. These include

i. To conserve, protect and improve wild life habitat with special emphasis on the proposed corridors.
ii. To protect wild life in general and endangered species in particular.
iii. To create mass awareness among the locals regarding the necessity to conserve and protect the wild life and their habitat.
iv. To conserve and develop important wild life habitat for the purpose of eco-tourism.
v. To increase in biodiversity and wildlife population.
vi. To prevent wildlife related crimes.

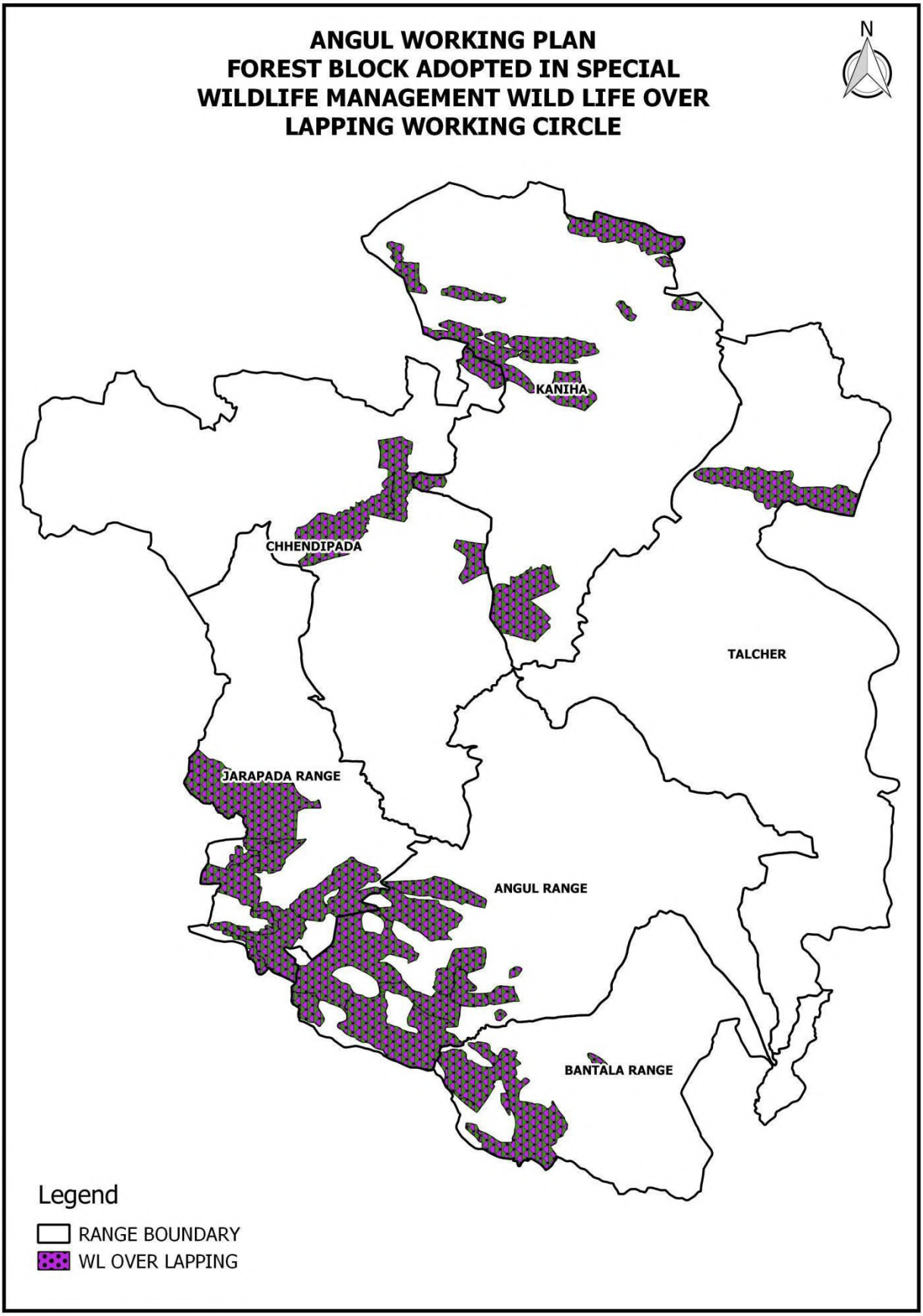
7.5.1 Analysis of the Crop

Wildlife census has been carried out at intervals for different species of wildlife but no formal analysis and valuation of all such data has been done at the Divisional level except for statistical purpose. Due to depletion in the forest cover and the habitat and increase in demographic pressure, the number and type of wild animals in the division is reducing.

Increased human and cattle population has led to pressure on forest resources which has ultimately caused fragmentation and degradation of wildlife habitats. Mining activities and establishment of small and large industries in the Division have worsened the situation further. As a result, the wildlife habitat continues to get degraded. Shrinking space and shortage of food often forces wild animals towards agriculture fields in populated areas resulting in man-animal conflicts. This friction results in the loss of life and property. The causes for habitat destruction and loss in wildlife are:

i. Increasing incidences of encroachment.
ii. Increasing demand for fuel wood, timber, fodder and other NTFPs
iii. Poaching for sport and meat. Mass hunting associated with festivals.
iv. Inadequacy of the forest staff to combat poaching.
v. Lack of awareness amongst the people.
vi. Less focus of management to improvement on habitat for wildlife.
vii. Habitat destruction and fragmentation, which affects wild life population.

In spite of negligible inputs for wildlife and habitat improvement in the past, the Division still has rich variety of wild animals which has been described in details in Chapter-II.


ANGUL WORKING PLAN
FOREST BLOCK ADOPTED IN SPECIAL
WILDLIFE MANAGEMENT WILD LIFE OVER
LAPPING WORKING CIRCLE
N
KANIHA
CHHENDIPADA
TALCHER
JARAPADA RANGE
ANGUL RANGE
BANTALA RANGE
Legend
RANGE BOUNDARY
WL OVER LAPPING

7.5.2 Silvicultural System

7.5.3 Rotation period

7.5.4 Harvestable diameters

7.5.5 Reducing factors and reduced areas.

7.5.6 Felling cycle.

7.5.7 Division into periods and allotment to periodic block (PB

7.5.8 Calculation of the yield

7.5.9 Table of felling

7.5.10 Method of Executing the Felling

7.5.11 Subsidiary silvicultural operation cleaning and thinning.

7.5.12 Regeneration.

7.5.13 Associated Regulations and measures.

7.5.13.1 Wildlife Habitat

Bulk of the area of the Division is terrestrial habitat. However, river Brahmani in Kaniha & TalcherRanges besides river Samakoi, Tikira, Singharajhora, Lingara, Aunli and Nandira in the remaining areas of the Division provide congenial aquatic wildlife habitat. The medium irrigation project water reservoirs at Samal, Kanloi and Derjang village serve as transitory home for many migratory birds. They also form ideal habitat for the aquatic wildlife. A number of other seasonal and perennial streams like Bagedia nalla, Badjora nallah, Tikikori, Kusumjori, Ghumudia, Mutukuria, Bauli and Matala nalla criss-cross the entire Division providing water sources for the wildlife. Sub-terrestrial habitat consists of burrows and natural crevices interspersed extensively all over the forest areas. Many burrows are even dug by the locals in the process of removal of roots & tubers. Besides, the accumulated rock pieces at the foothills and cracks in the rocky patches on the steep slopes also serve as a shelter for many reptiles like snakes; lizards etc. The extensive forest cover in different Ranges besides interspersed scrubs all through the Division which are criss-crossed by many nallahs & streams provide most ideal arboreal habitat for varieties of rich avifauna as well.

The formation types in the terrestrial habitat are mostly covered with fairly dense forests of mixed deciduous species. Some pure Sal patches are also encountered in Bantala and Jarapada Range areas , in forest blocks like Bolang RF & Similipathar RF. These terrestrial habitats in the division have been deteriorated significantly due to heavy biotic interference. According to the degree of deterioration, the habitat may be classified as :

A. Habitat having deterioration of lesser degree. (All forest blocks kept under Improvement Working Circle).

B. Habitat having deterioration of maximum degree.(All forest blocks kept under Rehabilitation Working Circle).

C. Barren blocks near town-ships.(Balaramprasad RF, Mandargiri-Kalima RF, Gengutia RF, etc.)

Special habitats for wildlife which are biological in origin and provide habitat functions not served by successional stages are also available in the forests of this Division. They include snags, snag recruits, den trees, downwood, isolated large old trees, trees with fluting boles, buttresses, lianas,some significant species of fruit bearing trees and shrubs. These special habitat need to be maintained and care should be taken to retain them during the course of silvicultural operations in the forests.

Unique wildlife habitats provide special functions not provided by successional stages and special habitats. They are geomorphic in origin. These unique wildlife habitats include caves, overhangs, dens, cliffs, ledges etc which are used by specific groups of rare wildlife. Care should be taken to identify these unique habitats and maintain properly.

7.5.13.2 Species Structure

Autotrophs: Most of the forest blocks of the Division support almost dry deciduous miscellaneous types of forest. The top canopy includes species like Shorea robusta,Pterocarpus marsupium,Terminalia tomantosa,Bombax ceiba,Mitragyna parvifolia,Anogeissus latifolia and Gmelina arborea etc. The middle storey consists of Bridellia retusa,Dalbergia sissoo,Desmodium oojeinensis, Lannea coromandelica, Lagerstroemia parviflora, Buchanania lanzan, Aegle marmelos, Terminalia bellerica, Terminalia chebula, Semecarpus anacardium, Sygygium cumini, Diospyros melanoxylon, Schleichera oleosa, Madhuca indica, Cleistanthus collinus, Morinda tinctoria, Sterculia urens, Dellenia pentagyna, Emblica officinalis, Tamarindus indica, Anogeissus accuminata, Mangifera indica, Bauhinia variegate, Mallotus phillippensis and Pongamia pinnata etc. Undergrowth like Woodfordia fructicosa, Holarrhena antidysenterica, Indigofera pulchela, Andrographis paniculata, Phoenix acaulis, Tridax procumbens, Eupatorium odoratum and Clerodendron infortunatum etc are also noticed in this forest type. Small or large patches of grasslands which are very important for herbivores are present in the forests interspersed with wooded lands. And, in case of degraded forests, areas are mostly open and having scrubby growth of some of the above referred species. Tree canopy is seriously broken by human activities. Scattered trees in small groups are typical to these degraded forests. This broken canopy characterizes transition to still drier types having trees with low spreading crown, large shrubs and small trees, which occupies many portions.

Heterotrophs: The species structure of major communities is as follows:-

- Primary heterotrophs are Sambar (Cervus unicolor); Cheetal (Axis axis); Barking deer (Muntiacus muntjak); Barasinga(Cervus davauceli), Chausinga (Tetrocerus quadricornis); Hare(Lepus nigricollis); Wild buffalo(Bubalus bubalis) etc.
- Secondary heterotrophs are Tiger (Panthera tigris); Leopard (Panthera pardus); Jungle cat (Felis chaus); Fishing Cat (Felis viverrina).

- Scavengers and other animals are Hyaena (Hyaena hyaena), Jackal (Canis aureus), Wild dog (Cuon alpinus), Sloth bear (Melursus ursinus), Mongoose (Herpestes edwardsii), large Indian squirrel (Ratufa indica), and Otters (Lutrogale perspiciclata), Pangolin (Manis crassicaudata), Wild boar (Sus scrofa),Bengal fox(Vulpes bengalensis), Flying squirrel(Petaurista petaurista), Palm squirrel(Furambulus palmarum), Tree mouse(Vandeleuria oleracea) etc.
- The primates are represented by the common Langur (Presbytis entellus) and the common Pati (Macaca mullata).
- Amongst the snakes, Dhamana (Zamaris nucosus), King Cobra (Ophioptagus hannah), Indian Cobra (Naja tripudians), Viper (Vipera russelii), Banded krait (Bungarus fasiatus) and the Common Krait (Bungarus candidus) are met with all over the Division. The Indian Python (Python molurus) is found particularly in Nuakheta & Bolang forest blocks of Bantala Range. The yellow monitor lizard (Varanus bengalensis) is also commonly found in the Division.
- The avifauna includes peafowl(Pavocristatus), red jungle fowl(Gallus gallus), common quail(Turnix suscitator), green pigeon(Treron phoenicoptera), the imperial pigeon(Ducula aenea), doves(Streptopelia chinensis), the hill mynas(Gracula religiosa), the red-vented bulbuls(Pyononotus cafer), the golden back and the pied wood-peckers, the koel (Eudynamys scolopacea), the crow pheasants, large Indian parakeets, the common king fisher, the common horn-bills(Tockus birostris), the common Indian night jar, the screech owl, the great horned owl(Bubo bubo), the swifts, pariah kite, the eagles, bush quail (Perdicula asiatica), the grey patridge, the cattle egret, storks, pond herons, the jungle crow, pipits and wagtails etc.

7.5.13.3 Poaching and Wildlife Crime

Wild animals live primarily in the forests. But they come outside for food and water resulting man-animal conflict. Crime against wildlife is committed both inside and outside the forests. Man kills wildlife as a sport or fancy, for its meat or to make quick monetary gains by sale of wildlife products. Though India is not a consumer of wildlife body parts, the demand from other countries for these with lucrative profits is a threat to wildlife. The wildlife products traded illegally from the country are musk deer for cosmetics, bear for skin and bear bile, elephant tusk for ivory, tiger and leopard skins for fashion products, oriental medicines, snakes & monitor lizard skins for leather industries, birds for pet trade and feathers for decoration, mongoose for bristles and turtles for meat and soup. It is estimated that quantum of trade in wildlife products is just next to narcotics, valued at nearly 20 billion dollars in the global market, of this more than one third is illegal.

Wildlife crime may comprise of poaching of wild animals, capture, possession, transport or trade of live animals and plants or their parts, products and derivatives. It also includes damaging or destroying its habitat besides the mass-hunting which is associated with local festivals and rituals. In fact, this crime is one of the fastest growing crimes in the world and is said to be next to only the narcotic trade due to the huge financial returns. A wildlife criminal may be a villager or a poor tribal or he may be a smuggler operating from towns/cities, depending on the level at which he is operating in the trade link starting from poaching within a locality to international border smuggling. However, the extent of poaching and the wildlife crimes detected in the Division are reflected in Chapter-II.

Methods of poaching wild animals vary from place to place in the State depending upon even the type of animal being poached. Shooting is a 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 & butterflies are frequently resorted to. Stick and glue, insecticides and pesticides for killing fast flying birds and taking young hatchlings from birds' nest holes on trees are also commonly practiced. Digging out of snakes, porcupines, lizards etc from underground pits is commonly seen.

Poaching of herbivores which is reportedly quite frequent is mainly for meat and for their trophy and includes deer; sambhar, 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 stray into the human habitation and are killed by the villagers. These animals are also killed by laying traps and snares on the jungle paths. Wire nooses for hare are a common sight in most of the tribal dominated forest areas. Tribals use bows and arrows to kill deer and sambhar. Most of them are expert at tracking wild animals and they follow them for two to three days accompanied by hunting dogs and they finally kill the animals using arrows. It is said that poaching of leopards in some areas has been by use of steel leg traps which would spring up when the animal stumbles on the same while on its regular path. Other traps to kill deer and other herbivores are also used.

Many cases of poaching go undetected for variety of reasons. In fact, most of the poaching of birds and herbivores goes either undetected or unreported. However, organized poaching for trade is negligible. Poaching takes place for livelihood or as a local custom, incidental kill or killing in retaliation. The extent of different animals poached and reported during the outgoing plan and intervening period is reflected in the said chapter on wildlife of the Division.

7.5.13.4 Methods of Treatment

7.5.13.4.1 Maintaining Special Habitats

Special habitats are biological in origin and provide habitat functions for small wild animals. They include snags, snag recruits, den trees, downwood, isolated large old trees, trees with fluting boles, buttresses, lianas, some significant species of fruit bearing trees and shrubs. These special habitats have been neglected in the past. Care should be taken while implementing the plan to maintain these special habitats especially in the areas coming under the Improvement Working Circle.

7.5.13.4.2 Snags: As a rule of the thumb, maintain at least the 5 tallest and largest diameter snags per hectare, in a well distributed design in all silvicultural treatments. Retained snags need to appear in the compartment history. These are vital for a variety of primary hole-nesting birds like Woodpeckers and Barbets, which are colonized by secondary hole-nesters like Hill Mynas, Rollers, Owlets etc during subsequent years.

7.5.13.4.3 Snag recruits: Likewise maintain 5 snag recruits per hectare. These are dying trees, mostly affected by heart rot fungus but not quite dead. They can be recognized by their

external symptoms. All such trees, which are being retained, need to be reflected in the compartment histories. These, along with snags provide a very good substrate for epiphytic orchids, especially of genus *Dendrobium.*

7.6.13.4.4 Down wood: In felling operations, among the rejects, apart from lops and tops, large size irregular shaped hollow logs often feature. Being uneconomical they usually remain on site, or are converted into fuelwood. Such large sized woody material provides critical ecological functions in support of maintenance of vegetation and animal diversity, besides serving the functions of cover and micro-habitat for several species. The largest size hollow logs, or rejects for any reason need to be maintained at the rate of at least three logs per hectare, and as far as practicable evenly distributed. These should suitably find place in the compartment history.

7.6.13.4.5 Large old trees: These would naturally occur in low densities. The *Ficus s*p. should not be counted among these since Ficus is not felled even otherwise. Large old trees of different species as and when encountered need to be reserved in any felling/tending operation. These retained trees (2 to 4 per ha) need to be entered in the compartment histories and serve as daytime roosts/nesting sites for large owls of *Bubo species.*

7.5.13.4.6 Trees with fluting boles and buttresses and holes at the base: These are expected to occur in very low densities represented by a small number of species. They provide significant micro-habitat functions for small mammals like the Mouse Deer and reptiles. One such tree at least, the largest possible, needs to be retained per hectare and entered on the marking list.

7.5.13.4.7 Lianas and tangled climbers: Climber cutting operation is a standard practice in the forest management. There are prescriptions for climber cutting in all working circles. However lianas provide significant habitat functions in support of mobility of arboreal animals, and depending on animal species, serve as resting and escape cover for primates. They are equally important for arboreal small carnivores, some rodents and lizards. A climber with tangles is especially important. It is recommended that at least two old spaced apart climbers per hectare be retained, and recorded in compartment histories.

7.5.13.4.8 Fruit bearing trees and shrubs: All fruit bearing tree species have been kept reserved in felling/ tending operations, that are known to provide fruits to local human inhabitants and wildlife. The information on human use is probably complete but the same cannot be said of wildlife. The literature survey, expert consultations and personal observations undertaken earlier will have established such information. Such significant elements need to be retained. Marking rules need to be specific on this.

7.5.13.4.9 Roosting/ Nesting trees: All trees which are known to support nesting colonies of water birds or roosting congregations of raptors/other birds need to be retained. This is crucial especially with reference to vultures, which are critically endangered along with Pallas's Fishing Eagle which have become very rare in the Division.

7.5.13.5 Development of Habitat

Habitat shall 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 reduce the man-animal conflict.

7.5.13.5.1 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. The areas under category 'A' having lesser degree of deterioration are quite extensive to provide wilderness. No tree felling has been suggested in the plan except removal of dead, diseased and dying trees and blocks are to be managed under Improvement Working Circle. It is also prescribed not to fell any trees near water holes, wallows, and saltlicks to maintain cover. In case of Rehabilitation Working Circle, it has been prescribed to go for mixed plantations instead of pure plantations to create ground flora and middle storey to provide cover for different types of wild animals. Tree cover around the stream, water holes and salt licks shall also be maintained and improved. The category 'B' areas having deterioration of maximum degree and category 'C' areas (barren blocks) will promote understanding of nature, wildlife and ecology which will go in long towards better management in the protected areas.

7.5.13.5.2 Improving availability of Food: Food is the most important limiting factor for the wildlife of the area.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 wild life management, the exploitable diameter of various species has not been prescribed and forest blocks are to be managed under Improvement and Rehabilitation Working Circle. If any deviation is needed during the plan period, then care shall be taken to keep the exploitable diameter on higher side and percentage of removal of exploitable size trees shall be 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 as NTFPs, the fruit bearing trees have been prohibited from felling under the respective working circles (In fact, no tree felling has been suggested in the plan). Further, the species as discussed in the following paragraphs will be part of any plantation/retention operation taken in forest areas.

i. 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 ougenensis, Shorea robusta, Syzygium cumini, Terminalia alata, Terminalia belerica, Zizyphus mauritiana, Bombax ceiba etc.
ii. Deer, Monkey, Langur, Rats and Hare feed on wild fruits of plants like Ficus species, Terminalia belerica, Buchanania lanzan, Aegle marmelos, Syzygium cumini, Emblica officinalis, Zizyphus mauritiana, Diospyros melanoxylon, Grewia hirsute etc. These animals help in dispersal of fruits and seeds in the forests.

iii. 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.

iv. Elephants were not known to stay permanently in the areas of Angul Division. They were seen to adopt and move in a corridor between Nuakheta, Bolong, Krushnachakra, Bruti and Antulia-Tabada migrating from Satkosia Wildlife Division area. Similarly herds of elephants move in a corridor between Bulajhar R.F., Phuljhari R.F., Nialu-Lodhajhari-Sapkata R.F. migrating from Keonjhar and Deogarh Forest Division. Herds of elephants are staying permanentely in Chhendipada RF, Kankurpal RF & Jaltap RF, so elephant habitat are to be improved through planting NTFP species Banana, Bamboo etc.

7.5.13.5.3 Water availability: Many nallahs and streams are flowing in the Division which provide water to wild life. But most of them are seasonal in nature and dry up during summer season. There is no dearth of water from July to December. However, scarcity is felt from January to June, putting the smaller ground dwelling animals to a great difficulty. Hence, it is necessary to improve water regime of the area through different water conservation measures. They may include vegetative check dams at 50 m to 100 m interval along the seasonal streams and development of artificial water holes by digging game tanks etc. on the higher slopes across nallahs. This will improve water availability during summer for smaller and ground dwelling animals, but also make drinking water available for large animals when required. It is necessary to create waterholes and check dams on the higher slopes across nallahs to improve water availability during summer. The important interventions required in different RFs/ PRFs are given below.

7.5.13.5.4 Construction of check dams & waterholes:

a) There are several streams & streamlets drain run off water to Bauli Nadi which is flowing along/ across Nuakheta R.F., Bolong R.F., Labangi D.P.F., Krushnachakra P.R.F., Kurudu R.F. Check dams & waterholes can be constructed on the streams. The above blocks have good concentration of wildlife including different herbivores, visiting elephants etc.

b) Check dams & waterholes can be constructed on different nallahs in various block like

Pokunda PRF, Burti PRF	–	Mutukuria nallah
Pathargarh PRF	–	Lingara nallah
Bulajhar RF	–	Bulajhar Nadi, Sankha jor
Nialu-Lodhajhari-Sapkata	–	Tikira river, Balaram jor
Phuljhari RF	–	Balaram jor
Chhendipada RF	--	Gauduni Nala
Kankurpal	--	Gauduni Nala

7.5.13.5.5 Creation of grass land: There are many plain areas on which grass lands can be developed along the barks of nallah and their tributaries as detailed below.

i) Valley areas of Chhendipada & Kankurpal RF
ii) Foot hills & valley of Bolong RF compartment No.1 to 4
iii) Valley area of Krushnachakra PRF compartment No.2, 5 & 4
iv) Valley area of Pathargarh PRF compartment No.1 & 2
v) Foot hills of Bulajhar RF compartment No.4 & 6
vi) Foot hills of Phuljhari RF compartment No.1 & 5

Besides these areas if the Divisional Forest Officer finds any other suitable areas/ spots for construction of waterholes and development of some patches for grass lands, he can carry out the works in the interest of wildlife.

7.5.13.5.6 Distribution of natural salt licks: Salt is a very important requirement of most wildlife, which they often meet from natural saltlicks scattered in different forest blocks being mostly on sides of nallahs and in foothills. A survey of such licks may be made and if required artificial salt licks be provided at suitable locations where more protection can be provided to the wildlife like near anti-smuggling/poaching camps, beat houses, rest houses etc. The existing natural salt licks shall be maintained and improved upon. New salt licks can be created adjoining grass lands in plain areas as detailed below.

i) Krushnachakra PRF compartment No. 2
ii) Burti PRF compartment No. 1 & 4
iii) Pokunda PRF

7.5.13.5.7 Corridor development: Due to qualitative and quantitative decline of wildlife habitat including loss of prey base in the Division and loss of connectivity and fragmentation of the habitat, there is increase in man-animal conflicts. Studies shows that the changing land use in the peripheries of the PAs due to demographic changes is affecting wildlife habitats. These pressures influence the movement pattern, habitat utilization and behavior leading to regular increase in the race for survival between man and animals. Along with strengthening of protection measures for wildlife, corridor development shall be given priority. With concentrated efforts for protection and improvement of forest cover in blocks like Nuakheta, Labangi, Burti, Pathargarh, Kurudu, Krushnachakra, Pokunda, Antulia- Tabada, Bolong, Bhogpal, Katada, Talsira (all blocks included in the proposed Mahanadi Elephant Reserve), Bullajhar, Kiajhar, Baishnabrugudi, Fuljhari, Nialu- Lodhajhari-Sapakata, Mankadchua, Siling, Budhia, Sachi, Biripal, Khajuria, Bandhuli, Seepur, Poipaldanda, Dhankoili, Kiajhar, Gumpha, Durgapur danda, Tangiri, Kanheijena, Langalkhol,Patkhaman,Arakhdahi, Pedi (all blocks coming under proposed Brahmani-Baitarani Elephant Reserve), steps should be taken through afforestation activities/ JFM activities to provide tree cover in these potential corridors. Location of these forest blocks are shown in Fig- 6.1.

7.5.13.6 Maintaining Unique Habitats

Unique habitats provide special functions not provided by successional stages and special habitats. They are geomorphic in origin. These include the following habitats.

7.5.13.6.1 Caves: They are used by a variety of taxa. Large mammals like the tiger, leopard, bear and hyena use caves as shelter and for rearing cubs. Apart from this, in limestone formations caves may have stalactites and stalagmites, some of which can be of significant visitor value. Caves can have in them springs and small streams. They can thus be important for amphibians, reptiles, fishes and species of birds like the Edible Nest Swiftlets. Several species of bats live in colonies inside caves. Caves need complete protection, even while being inside a worked area. SR Choudhury in one of his writings on Similipal mentions that a Tigress used a cave regularly, even while the coupe was being worked hardly a kilometer away!. Hence, it is crucial that any live cave/den be given stringent protection. Inventory of available caves in various forest blocks and mention of them in compartment histories should be taken up during this plan period.

7.5.13.6.2 Overhangs: When soft rock underlying hard rock weathers away, an arch is formed which serves as a shelter, as a substrate for bee hives (pollinators), nesting colonies for swallows etc. Such sites need to be protected. Survey of available overhangs in various forest blocks and entering them in compartment histories should be taken up during this plan period.

7.5.13.6.3 Dens: These are much smaller and distinct from caves, usually dug in soft rock or earth cuttings by animals such as wild dogs, hyena, wolves, foxes, porcupines, for the purpose of shelter and breeding. When not occupied they can be used by a variety of taxa such as small mammals and reptiles. Porcupines and pythons are known to share the same underground chambers. Dens are subjected to human disturbance. Local inhabitants are known to smoke out porcupines for pot, smoke out and kill wolf cubs; or otherwise look for animals in dens. Dens need to be protected. Inventory of available dens in various forest blocks and mentioning them in compartment histories should be taken up during this plan period.

7.5.13.6.4 Cliffs, talus and ledges: Sheer cliffs often have crevices and ledges, some in shade, some exposed to the sun thus providing a variety of microclimate. Ledges located high up serve as nesting platform for eagles (endangered) and vulture colonies (now critically endangered). Cliff tops are equally important for this purpose. Crevices are colonized by several species of bats. Beehives hang along overhangs. Several cliff dwelling birds like swallows, martins establish their nesting colonies along cliff faces. Plants, specific to rocky substrates grow along cliffs. The base may provide caves. Talus is an aggregate of loose rocks dislodged from time to time from cliff faces. They secrete space in between which provides thermally secure microhabitats to several species of small mammals and reptiles. The threats to cliff based micro habitats may come from honey collectors; from activities such as rock climbing. Talus often may be used as source for stone, road metal etc. These features need to be strongly protected. The availability of such unique habitats should be inventoried and mention of them in compartment histories should be taken up during this plan period.

7.5.13.6.5 Large bouldery aggregates: These are normally found in drainages, especially in sections in proximity of headwaters. These are excellent habitat elements for bears, honey badger and some species of reptiles. On rocky banks wild bananas grow which is an important food item for the bear besides species value. These are areas where disturbance needs to be completely controlled.

7.5.13.6.6 Sheet rocks: These often have crevices which provide shelter to several species of small vertebrates. Lithophytic plants peculiar to rocky substrates grow along sheet rocks; in STR, several species are noticed to grow only in the rocky sprayzones of waterfalls. This habitat is vulnerable to road construction, development of hiking trails, and tourism infrastructure, as a source of stone etc. and therefore needs protection.

7.5.13.6.7 Earth cuttings: These are important for species which dig dens. Near streams, kingfishers bore burrows into the banks for nesting. Significant banks/earth-cuttings need to be protected from activities such as road alignment etc.

7.5.13.6.8 Sandy banks and sand spits: Depending on the character and extent these are important as nesting sites for crocodilians, fresh water turtles; activities of otters etc. Sand mining therefore needs to be strongly controlled, especially along the critical stretches where a survey has offered proof of such wildlife use. Dredging changes stream dynamics and may promote accelerated erosion. Likewise uncontrolled boulder collection from bouldery river beds can have similar consequences. Such activity therefore needs to be regulated appropriately. If collection of boulders has been an important activity, then this needs to be allowed from the central portion of the bed with undisturbed stretches e.g. 50 m length alternating with collection sites. Such prescriptions need to be made.

7.5.13.9 Saltlicks: Natural saltlicks are important for all herbivores and such sites need to be protected from disturbance such as road alignment, soil conservation or any other engineering work, setting up labour camps or cattle camps in their vicinity etc.

In summary, the unique habitats are vulnerable for a variety of reasons. Depending on the existing and anticipated situation, the DFO needs to prescribe appropriate protection/regulatory strategies. Some of the prescriptions are likely to be generic, while some need to be site specific with reference to critical sites that come into notice during the survey conducted.

7.5.13.7 Maintaining Critical Macro Habitats

Two kinds of critical macro habitats are the riparian zones and gorges.

7.5.13.7.1 Riparian zones: They are among the most diverse, ecologically productive and dynamic systems. Being dendritic in pattern they connect all kinds of habitats along and across the altitudinal range, and act as wildlife corridors. They are used disproportionately more in relation to their availability by wild animals since all animals need to come to water. Herbivores feed on a diversity of vegetation that is associated with this zone. The riparian forests provide thermal cover in winter and summer which is important for all wild animals. The lofty trees and unbroken canopy is of great significance to arboreal mammals and reptiles. The tall trees provide nesting cover to raptors. These systems are equally attractive to

domestic cattle. Often scenic values are associated with riparian zones and hence they are attractive to people. Riparian stretches offer the cheapest road alignment opportunities to locate extraction roads and paths since minimum amount of cutting and filling is required. Riparian zones are linear and hence most vulnerable to change due to the great pressures they attract. The DFO should ensure that

i. As far as practicable extraction path alignment needs to be avoided along the riparian forests.
ii. Roads already existing but not in particular use need to be closed for traffic
iii. There should be no plantation activity in riparian forests.
iv. Rule of the thumb is that on either side of the stream, an area of a width equal to thrice the average top height of trees in riparian forests should be prescribed as a no felling and no activity zone to filter out effects of an edge in the interior of riparian forests and to maintain their ecological processes and functions.
v. Labour camps likewise should be located outside such zones.
vi. New road alignment should be located outside the no felling zone.
vii. No borrow pits should be located within the riparian zone.
viii. When there is natural tree fall from the bank into the streambed, in water or not, then at least four such trees per running kilometer as far as possible, equally spaced need to be retained.
ix. Recreation sites within the riparian zones should be minimum in number and strictly controlled. They should not be located on sites that are ecologically of critical value.
x. There should be no quarrying within the riparian zones.
xi. No cattle camps shall be allowed nor any infrastructure development.
xii. Specific strategies should be prescribed by the DFO relevant to the issues. If fishing is a concession granted to forest dwellers, it should be regulated by conventional methods.
xiii. If nets are allowed, the minimum mesh size will be prescribed.
xiv. If there are crocodiles and turtles in the water, suggestions from a qualified herpetologist should be solicited as relevant to fishing and other activities.
xv. Use of poison (natural or synthetic) or explosives must be strictly prohibited.
xvi. No non native fish will be introduced in isolated pools, reservoirs or running streams.
xvii. If pisciculture is to be developed, it will be outside the natural streams.

7.5.13.7.2 Gorges: These may not be a common feature. Gorges may occur in hilly areas. They have steep sides and usually evergreen vegetation along the bottom. These are sites where primitive plants may be found; they also provide crucial microhabitat for herpeto fauna. Gorges need to be protected.

7.5.13.8 Maintenance of water sources and wetlands:

Existing water sources, perennial and seasonal, artificial or natural need to be protected and maintained. A water source is subjected to silting, poisoning, being drained off, subject to other pollutants; some are shared between cattle, people and wildlife, some monopolized by cattle or people. Site-specific strategies for their protection and maintenance need to be prescribed by the DFO. Artificial sources may be created if required. The ecological principles for the purpose be followed.

7.5.13.9 Maintaining The Cultural Landscape

7.5.13.9.1 Sites of pilgrimage: Deities of tribals/ villagers are often located in ancient/ old growth stands or groves or hillocks and there are specific periods of pilgrimage/ worshipping. People approach the holy site by following several forest routes. DFO needs to have full information on the average number of people, activities on the pilgrimage site and off site, travel routes, needs of pilgrims etc. From the time pilgrims enter the forest area to the time they exit, their movements and activities need to be regulated and extra protection efforts need to be invested. On the way, they may need fuelwood, camping sites, etc. There are possibilities of rubbish dumping, illegal cutting and opportunistic poaching which could be serious issues. Once issues are firmed up, specific strategies for protection and resource regulations should be prescribed by the DFO. A major concern is for the protection of the old growth/groves from the presence of a large number of people.

7.5.13.9.2 Other Prescriptions

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 even help in further improving the management prescriptions.

Wildlife habitats of endangered species shall be identified and mapped. Presence of natural waterholes, saltlicks and natural meadows shall be estimated and their adequacy shall be assessed with reference to their population estimates. Watch towers shall be constructed near crucial waterholes and saltlicks to not only facilitate estimation of occurrence of wildlife but also to discourage hunting.

Migration routes for wild animals shall be identified and preventive measures taken to protect and improve those corridors. The areas vulnerable to poaching shall be protected from all sorts of biotic interference.

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.

Cattle population in different areas shall be estimated and the carrying capacity of the forests and fodder enhancement measures shall be taken up keeping the requirements of cattle and wildlife in view.

Identified pockets of wild life and scenic beauty can be developed as eco-tourism centers. These centre should be developed with the active support of the local community who should be able to earn some livelihood through the influx of visitors. Visitor amenities and recreational facilities should be developed by submitting specific projects for the same. The list of potential site for eco-tourism in the division are

(i) Development of Deer Park at Talcher(In Rani Park area)
(ii) Development of recreational forestry in Mandargiri-Kalima, Balaramprasad, and Kumanda Talataila forest block near township.
(iii) Development of eco-tourist in Rameswar hill, Biripal, Saliameda blocks around Rengali Dam side.
(iv) Development of trekking route along elephant corrider from Pampaser to Antulia covering Nuakheta, Bolanga, Krushnachakra, Bruti and Antulia-Tabada blocks.
(v) Development of bird watching sites at reservoirs like Derjang-Golabandh, Kanloi(Aunli Irrrigation Project) and Samal barriage.

The Satkosia Wildlife Division, Angul conduct awareness campaign frequently in the vicinity of Angul. There is no need of any interpretation / awareness centre in Angul, Jarapada & Bantala Range as the wildlife division takes care of the situation. At Talcher, an interpretation / awareness centre may be constructed. This will help in building public awareness about forests, medicinal plants and wildlife. Trekking points/routes should be identified and designated.

Creating public awareness and concern for the wildlife and its relevance to the well-being of mankind needs be given priority through different campaigns like conducting rallies, meetings, group discussions, displaying posters, etc. In the line of Eco-Clubs, Nature Clubs/ Bird watcher Clubs shall be formed in each school and message of wildlife conservation shall be spread on missionary zeal to the people. Even the awareness campaign for wildlife conservation can be organized through the members of existing Eco-Clubs in the division. In fact, the local people shall be actively involved in the process of habitat improvement and conservation through the concept of JFM. Local villagers are the treasure of information, which can be of immense help even in tracking down the poachers' vis-à-vis control of wildlife crime

7.5.13.10 Wildlife Protection Measures

The immediate need is to collect and tabulate all available spatio-temporal information about incidence of wildlife crime including identity and modus operandi of the criminals. The second step is to analyze the information and prepare a strategy and action plan while third step is to carry out enforcement.

The staff deployed for anti-poaching operations shall be extremely alert, in good health with high motivation. They should be trained in handling of arms and ammunition and in proper identification of wildlife species and their parts. They should be properly armed and provided with VHF sets for communication. Satisfactory maintenance of the fixed and mobile VHF sets is a pre-requisite for efficient operation. The staff involved in the entire operation shall also be conversant with the basics of litigation and court procedure with regard to wildlife crime

Further, the patrolling party/anti-poaching squads must be well acquainted with the entire terrain. Patrolling paths should be planned out in advance and such paths should not always follow the beaten tracks but should be varied on random choice or based on specific information. Proper dialogue with the local villagers during a patrol is important to gain vital information, and also to gain their trust. The patrol party must always try to obtain information that can be used to prevent further poaching in the area.

As information collection is vital for prevention and/or detection of wild life crime, both covert and overt information shall be gathered. The officer who is handling the full time informers and information inflow should ensure proper follow up of the said information. Decoy and undercover operations may also be adopted to arrest the offenders and seize the wildlife products being traded

An aspect of concern is the lack of proper prosecution leading to very low conviction rate in wildlife cases. The success of protection efforts can not only be judged with regard to the number and nature of wildlife offence cases booked but also the effectiveness with which such offence cases are investigated and contested in the appropriate courts of law. In most cases the offenders booked in wildlife offence go out on bail and/or acquitted to commit the crime again. Very often, the accused escape due to technical flaws or perfunctory prosecution report or shoddy investigation. Hence, appropriate training in wildlife crime investigation methods and techniques shall be imparted to adequate number of staff. It is vital that proper evidence is recorded at every stage of investigation and case records are

meticulously built / maintained on daily basis. Moreover, the prosecution report shall be thoroughly scrutinized by the ACF/DFO before being filed in the court. Even, the cases shall be pursued regularly in the court so as to ensure greater rate of conviction. These measures will have long lasting effect even on the over all forest and wildlife protection in the entire Division as well.

Anti-poaching camp should be set up in vulnerable pockets where there is greater concentration of wildlife. During the fire season these forest blocks should be given priority in protection from fire.

There shall be inventory prepared of all the gun licenses within 10 km radius of blocks rich in wildlife. This will help in better control over the poaching activities otherwise also. This inventory should be regularly posted up to date.

7.5.13.11 Miscelleneous Regulations

7.5.13.11.1 Awareness: The awareness for wildlife preservation may be created through celebration of wildlife week, competitions and debate among the school/college students. Even, publicity material shall be distributed and the benefits of wildlife conservation explained through electronic media. 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 amount for wildlife depredation.

7.5.13.11.2 Infrastructure and Training: To ensure better protection and to enhance their effectiveness, the field staff shall be provided with modern equipments including proper arms and ammunition. As fast and better communication is the key for protection of forests and wildlife, divisional headquarters, all the range headquarters, section headquarters, sensitive beats and check gates should be provided with VHF sets. More and more field staff shall be trained in wildlife management and in detection and investigation of wildlife crimes.

7.5.13.11.3 Information network and records keeping: A regular data base should be maintained at Divisional level comprising of details like

- schedule species found in the area,
- pictorial directory of all identified poachers to be prepared and circulated in the locality,
- list of traders in cattle and goatskins as well as tanneries;

- list of eating houses alleged to be serving bird/deer meat and
- timely & proper documentation of all the incidences of man-animal conflicts including poaching.

Further, the DFO shall also submit half-yearly report to the authorities concerned with regard to steps taken by him to protect wildlife and to improve their habitat. He shall also report constraints faced by him in implementing the prescriptions of this Working Circle.

7.5.13.11.4 Wildlife Depredation: Depredation by wild animals is gradually increasing and the main reason for this conflict is shrinkage of their habitat and shortage of food.The situation has been further aggravated by the mining activities and establishment of small and large industries in the Division. Animal depredation is a problem in this division. There are several reports of killings and injury of the human beings, damage to the crops in the division. The details of depredation by different animals are discussed in the Chapter IIB.The human killings, injury and crop damage are on increasing trend as detailed in said chapter. DFO should develop short term and long term measures to combat this problem. To mitigate miseries of people due to wild animals, the compassionate amount for crop damage, house damage, injuries and death, should be disbursed to them as quickly as possible. Delay makes people lose faith in the forest department and they tend to take revengeful self-protection measures even by resorting to killing/poisoning of animals. Guidelines issued by the PCCF (Wildlife) to tackle various type of incidents has been placed in Annexure as ready reference and guidance.

7.5.13.11.5 Control of Grazing: The wildlife rich areas shall be closed for grazing. However, grazing may be controlled else where as per the provisions of the Orissa Forest (Grazing of Cattle) Rules, 1980. The local people and the VSS may even be motivated to immunise their cattle which graze inside the forests.

7.5.13.11.6 Fire protection measures: Forest fire in late winter and in early summer is a major threat to wildlife. Almost every square meter of ground floor gets affected by ground fire. Repeated forest fire not only kills ground vegetation, but also a number of small ground dwelling animals who are mostly terrestrial and birds, including young ones. It is essential that fire lines should be cleared and maintained regularly. As most of the forest fires are man-made, it can be prevented to a large extent by motivating & educating the local people. Adequate field staff should be stationed with necessary infrastructure in fire prone areas to control and suppress the fire menace during the summer season.

7.5.13.11.7 Incentives and Rewards: There shall be provision for rewards and incentives to the staff and public including the informers whose efforts lead to detection of wildlife crime and arrest of the offenders. Moreover, their deeds shall also be given media publicity in the locality as well as recognition on the occasions like Wildlife Week and World Forestry Day.

7.5.13.11.8 Rights and Concessions: Rightsand concessions under this Working Circle shall be regulated in accordance with the provisions of the Orissa Forest Act,1972; the Wildlife (Protection) Act'1972; Rules made there under besides the Government policies in force.

7.5.13.9 Intermediate Revision and Working Cost

No intermediate revision is anticipated. However, if so required, the Conservator of Forests, Angul in consultation with the Conservator of Forests (Working Plans), will send a proposal for amendment of prescriptions to the competent authority for necessary approval.

The estimated cost for implementation of various prescriptions of this Working circle is given in Chapter – II on Financial Forecast and Cost of the Plan.

CHAPTER - 8

The Non Timber Forest Produce (Overlapping) Working Circle

8.1 GENERAL CONSTITUTION

8.1.1 The forests of Angul division contain a large number of species which yield a variety of non-timber forest products (NTFP) e.g. fruits, seeds, tubers, barks, leaves, roots and gums.The NTFPs can fulfill the needs of several people without destroying the resource. For most of the rural households, NTFP provides essential food and nutrition; medicine, fodder, fuel, thatch and construction materials; mulch and non-farm incomes. These products are particularly important in tiding over the 'hunger periods' in the agricultural cycle and in smoothing out other seasonal fluctuations. The people living in and around the forests rely on NTFPs as a crucial component of their livelihood security. They usually collect these products for their own consumption as well as for sale to add to their earnings. For the rural population of the division particularly living on the forest fringe, collection and marketing of NTFPs can provide employment during pinch period of agricultural cycle and provide a buffer against risks and household emergencies

In the last few years, the demand for different varieties of NTFPs as a raw material for many industries like herbal cosmetics, dyes, ayurvedic drugs etc has increased many fold. It has been estimated that the world trade of these herbal material is at more than 60 billion dollars per year. This huge demand for a few varieties of NTFPs has given an impetus to greater destructive exploitation – especially of already depleting and endangered species. In many cases, methods adopted by the collectors are absolutely destructive, so much so that many species which have their roots or under ground propagative portion like rhizomes, bulbs, tubers etc. extracted by the collectors, are facing a threat of extinction. Even once abundant species like Amla (*Emblica officinalis*), Char (*Buchnania lanzan*), etc are facing threat due to over-exploitation as vigorously growing middle aged trees are hacked down to pluck unripe fruits before the fruits fall on their own. Harvesting commercial quantities of fruits and seeds can affect not only the regeneration of species, but also the genetic composition and quality of the resource, especially if only inferior fruits and seeds are left to regenerate. Further, the greed of local communities, the middlemen, and the end users makes the situation more complex. Continued unsustainable and over-exploitation in this manner will endanger the resource itself. Overexploitation is further aggravated by excessive grazing, illegal felling of trees, frequent forest fires, invasion of weeds which in many cases is leading to loss of natural regeneration of these species in the forest.

The non-availability of these NTFPs in large enough quantities, exploitation of the primary collectors by agents and middle men and the adulteration of the NTFP product has resulted in the increased interest in NTFPs amongst all enlightened sections of the society. This has prompted numerous initiatives aimed at promoting NTFPs use, value addition and commercialization as a means of improving the well being of rural populations and at the same time, conserving the existing forests. Keeping in view of this consideration, the Government of Orissa formulated the '*Policy on procurement and trade of Non Timber*

Forest Produces' during March 2000 and the '*Gram Panchayat (Minor Forest Produce) Rules'2002'* .

Under the present scenario, special efforts are required to strike a balance between the protection of the interests of the primary gatherers and side by side the protection/conservation of the natural resources. Concerns regarding the contribution of these endangered NTFPs to the incomes of the poor people and the need to use the forest resource in a sustainable manner needs to be addressed. In-situ conservation measures are vital for conservation of the eco-system and natural habitats and maintenance and recovery of viable population of species in their natural surroundings. Ex-situ conservation measures are also vital for increasing the production of NTFPs and sustainability of the resource. This working circle attempts to address the above problems. To address the issues mentioned in the foregoing paragraphs including the felt needs to ensure long term sustenance of this varied forest resource, the Non Timber Forest Produce (Overlapping) Working Circle has been prescribed overlapping the entire working plan area of the Division.

8.2 General Character of Vegetation

The composition and diversity of the forests allotted to this Working Circle have been discussed in Chapter II of Part I of this plan. Moreover, all the blocks allotted to this overlapping circle have again been briefly described under the respective working circles as well.

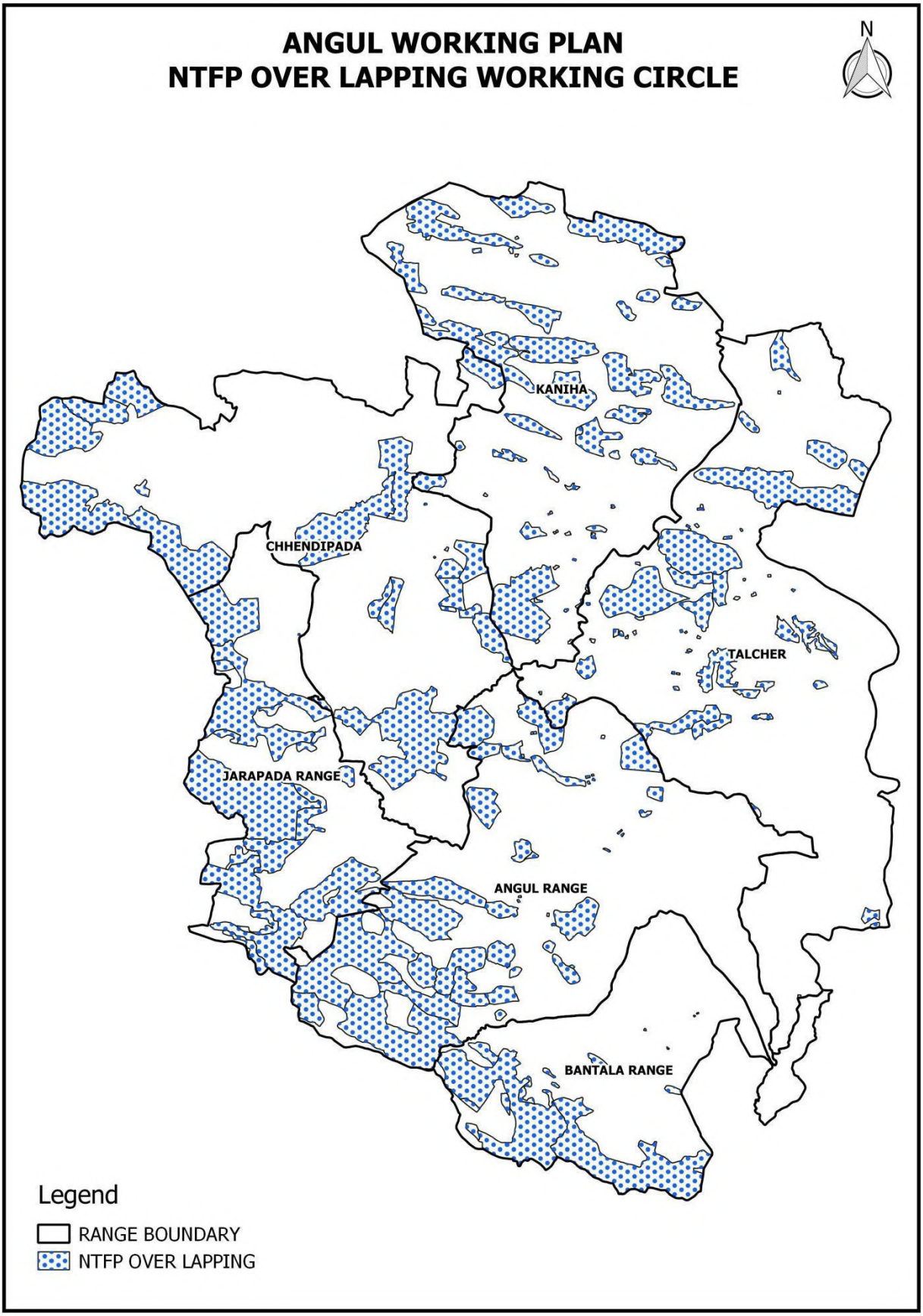
The details of the NTFP items available are given in the Chapter III of Part-I of this plan. The outturn and royalty of various NTFP items are presented in the **Table No 3.25**.General decline in the productivity of the NTFP items is observed warranting remedial measures on priority.

8.3 Felling series, cutting sections and JFM areas

NA

8.4 Block, compartment and JFMs area (marked on GIS based maps)

All the forest blocks included in the Plan have been allotted to this overlapping working circle. The total area included in this working circle is 64610.050 ha. Since thisworking circle overlaps the entire plan area, the details of area allotment to this circle has not been furnished.


ANGUL WORKING PLAN
NTFP OVER LAPPING WORKING CIRCLE
N
KANIHA
CHHENDIPADA
TALCHER
JARAPADA RANGE
ANGUL RANGE
BANTALA RANGE
Legend
RANGE BOUNDARY
NTFP OVER LAPPING

8.5 Special Objectives of Management

The Special objectives of management of this working circle are as follows:-

6. To regulate and optimize extraction and utilization of various NTFPs in conformity with Government policy with a view to promote sustainable management of forest.
7. To enhance the value of forest by way of developing new NTFPs, creating additional opportunities for further value addition in the existing NTFPs and strengthening the marketing.
8. To develop and extend skills to the local people including the tribals for sustainable collection, extraction and utilization of various NTFPs.
9. To develop biologically rich forests through in-situ as well as ex-situ conservation of NTFP plants/trees by adopting suitable silvicultural measures.
10. To create alternate employment / income generation by developing cottage industries by using the locally available NTFP items as input / raw materials.

8.5.1 Analysis of the Crop

Except this assessment as shown above, no systematic study has been undertaken in this division till date to assess the potential of availability of various NTFPs and to ascertain impact of collection / extraction / utilization practices on sustainability of these forests. Though the need for such studies has been felt for long, such a study could not be undertaken during the revision of this Plan for want of time and skilled human resources.

Table No. 8.1 gives an overview of the various NTFPs which are regularly collected and 1used by the local people. This list is however only indicative and not exhaustive.

It is generally believed that collection of NTFP cause little or no deleterious effect on the forests. This is however not always true. The method of collection of some NTFPs very adversely affects forests. Forest eco-system has such complex inter-relationships that harvest of some non-wood resource can affect plant (and wildlife) population as negatively as logging. For example, theoretically if all seeds of a particular species or a group of species are collected from the forest floor and no seed is left for regeneration then the forests may not regenerate. This is evident in many Sal forests where seed has been very intensively collected. Similarly, no young mohua trees are observed in many forest blocks as because there is no scope for regeneration due to its seed and flower collection. Forest floors are often burnt before many oil seeds and grasses, particularly fodder grasses, are collected. This practice is very harmful to forests as it destroys the regeneration and also kills the microflora and fauna in the top layers of the soil. It also physically compacts the soil and this situation is further aggravated when the forests floors are swept for leaf litter and humus. This practice adversely impacts nutrient re-cycling.

Table: 8.1 Available NTFP Species of Angul Forest Division.

Sl. No	Local Name	Botanical Name	Parts Used	Uses
1	Arjuna	Terminalia arjuna	Bark & Fruits	Tannin for leather, Medicinal
2	Asan	Terminalia tomentosa	Bark	Tassar cocoons, Medicinal
3.	Amba	Mangifera indica	Roots, bark, seed and kernel	Fruit is edible, medicinal,
4.	Ambada	Spondias pinnata	Roots, barks, Fruits and Seeds	Medicinal
5	Anla	Emblica officinalis	Root, bark, leaves and fruits	Fruit is edible, Medicinal
6	Arakha	Calotropis gigantea	Whole plant	Medicinal
7	Aswasthha	Ficus religiosa	Bark, shoots, fruits and seeds	Medicinal, Rope making, Fruits for animals.
8	Anchhu	Morinda tinctoria	Roots and leaves	Medicinal
9	Bandhan	Ougeinia oojeinensis	Bark	Medicinal
10	Bara	Ficus bengalensis	Root, bark, leaves, buds latex	Rope making, Medicinal, Fruits for birds and animals
11	Bela	Aegle marmelos	Roots, leaves & fruits	Fruit is edible, Medicinal
12	Bhalia	Semecarpus anacardium	Fruits	Medicinal
13	Bichhuati	Tragia involucrate	Roots and leaves	Medicinal
14	Baidanka	Mucuna pruriens	Roots, leaves, seeds and hair	Medicinal
15	Bana haladi	Curcuma aromatica	Rhizomes	Medicinal
16	Baula	Mimusops elengi	Bark, flowers, fruits seeds	Fruit is edible, Medicinal
17	Begunia	Vitex negundo	Whole plant	Medicinal
18	Babul	Acaccia nilotica	Bark, Gum, Fruits	Calico-printing, dyeing sizing material for silk, cotton, Medicinal, Tannin for leather.
19	Bahada	Terminalia bellirica	Bark and Fruits	Fruit edible for animals, Medicinal, Tannin for leather.
20	Bhuin anla	Phyllanthus	Whole plant	Medicinal

		niruri		
21	Bhuinnimba	Andrographis panicul	Whole plant	Medicinal
22	Banakhajuri	Phoenix sylvestris	Fruits	Medicinal
23	Barakoli	Ziziphus mauritiana	Whole plant	Fruit is edible, Medicinal
24	Bhersunga	Murraya koenigii	Roots, bark and leaves	Medicinal
25	Banatulasi	Ocimum americanum	Leaves and seeds	Medicinal
26	Char	Buchnania lanzan	Roots and fruits	Fruit is edible, Medicinal
27	Chhatian	Alstonia scholaris	Barks and leaves	Medicinal
28	Chakunda	Cassia tora	Leaves and seeds	Medicinal
29	Champa	Michelia champaca	Whole plant	Perfumes, Medicinal
30	Duba ghassa	Cynodon dactylon	Whole plant	Medicinal
31	Dimiri	Ficus hispida	Bark and fruit	Fruit is edible, Medicinal
32	Dudura	Datura fastusa	Whole plant	Tannin for leather, Medicinal
33	Dhanan-twari	Cymbopogon citratus	Whole plant	Medicinal
34	Dhatki	Woodfordia fruticosa	Flowers	Medicinal
35	Dhaura	Anogeissus latifolia	Roots bark leaves seeds Gum	Medicinal, Sizing paper printing
36	Eucalyptus	Eucalyptus indica	Leaf	Oil , Medicinal
37	Genduli	Sterculia urens	Gums	Gum is edible Confectionaries.
38	Gohira	Acacia leucophloea	Barks	Medicinal
39	Gayasha	Leucas aspera	Leaves, flowers	Medicinal
40	Guluchi	Tinospora cordifolia	Stem	Medicinal
41	Gambhari	Gmelina arborea	Whole plant	Fruit for animals, Medicinal
42	Gangasiuli	Nyctanthes arbortristi	Leaves, flowers and seeds	Medicinal
43	Ghikuanari	Aloe vera	Leaf juice	Medicinal
44	Harida	Terminalia chebula	Fruits	Tannin for leather, Medicinal
45	Hinjala	Barringtonia	Roots, leaves, and	Medicinal

		acutangu	fruits	
46	Hadabh-anga	Vitis quadrangularis	Whole plant	Medicinal
47	Jamu	Syzygium cumini	Bark, leaves and fruits	Fruit is edible, Medicinal
48	Jayasanda	Litsia glutiness	Fiber	Medicinal,
49	Jari	Ficus microcarpa	Roots, bark and leaves	Medicinal
50	Karanja	Pongamia pinnata	Whole plant	Oil & Medicinal
51	Kathhachampa	Plumeria rubra	Root, leaves and latex	Medicinal
52	Kochila	Strychnos nuxvomica	Bark, leaves and seeds	Fruit is edible- birds, Medicinal
53	Kendu	Dyospyros melanoxyl	Fruits and leaves	Fruit is edible, Leaves for Bidi making
54	Kaincha	Abrus precatorius	Roots, leaves and seeds.	Medicinal
55	Kainthha	Limonia feronia	Bark, fruits and gums	Medicinal
56	Kamala-gundi	Mallotus philippensis	Glandular hairs of the fruit	Medicinal
57	Khair	Acacia catechu	Bark and heart wood	Ingredient of Pan, Medicinal
58	Kantamaris	Amaranthus spinasus	Whole plant	Medicinal
59	Kanteikuli	Flacourtia indica	Roots, leaves and fruits	Medicinal
60	Kurein	Holarrhena antidysent	Bark, seeds and leaves	Medicinal
61	Kusum	Schleichera oleasa	Bark and oil	Fruit edible, Oil, Medicinal, soap
62	Kumbhi	Careya arborea	Bark, leaves and fruits	Medicinal
63	Kunkum	Bixa orellana	Roots, bark and seeds	Medicinal
64	Lantana	Lantana camara	Whole plant	Medicinal
65	Lajkuli	Mimosa pudica	Roots and leaves	Medicinal
66	Lodha	Symplocus racemosa	Bark	Medicinal
67	Mahula	Madhuca Indica	Flower and Fruits	Edible oil, Fruits, country liquor
68	Mohalimba	Melia composita	Whole plant	Medicinal
69	Mai	Lannea coromondelic	Bark and leaves	Medicinal
70	Mohakal	Trichosanthes anguin	Roots and fruits	Medicinal
71	Mundi	Mitragyna parvifolia	Roots, barks and leaves	Medicinal

72	Mohul	Madhuca indica	Bark, fruits and seeds	Medicinal
73	Neem	Azadirachta indica	Bark, leaves, seeds	Oil & Medicinal
74	Nageswar	Mesua ferrea	Flowers	Oil & Medicinal
75	Palasa	Butea monosperma	Root	Rope making
76	Piasal	Pterocarpus marsupiu	Heartwood and gum	Medicinal
77	Panasa	Artocarpus heterophyl	Roots, leaves, fruits seeds	Edible fruit, Medicinal
78	Poksungha	Ageratum conyzoides	Roots and leaves	Medicinal
79	Palas	Butea monosperma	Bark, seeds and gums	Medicinal
80	Phanaphana	Oroxylum indicum	Roots, leaves, fruits seeds	Medicinal
81	Raktachita	Plumbago rosea	Roots	Medicinal
82	Ritha	Sapindus laurifolia	Roots, bark and fruits	Herbal Sampoo, Soap,Medicinal
83	Sal	Shorea robusta	Leaves, Bark, fruits resin.	Tannin, Medicinal, Edible Oil, Leaf plates, Agarbati, Varnish
84	Siris	Albizia lebbek	Bark, flowers and seeds	Medicinal
85	Sissoo	Dalbergia sissoo	Roots, leaves, bark heart wood	Medicinal
86	Sunari	Cassia fistula	Whole plant	Medicinal
87	Satabari	Asparagus racemosus	Tuberous roots	Medicinal
88	Semul	Bombax ceiba	Roots, gum, bark and fruit.	Cotton , Medicinal
89	Salai	Boswellia serrata	Bark, gum and resin	Pleasant smell- burnt, Medicinal
90	Sahada	Streblus asper	Roots, Bark, leaves latex	Medicinal
91	Siali	Bauhinia vahlii	Fiber	Rope making
92	Siju	Euphorbia antiquor	Roots juice	Medicinal
93	Tentuli	Tamarindus indica	Roots, fruits and seeds	Fruit is edible, Medicinal
Source: Field Survey				

Leaves, which play an important role in maintaining transpiration processes, are over-exploited for commercial use in some cases. This removal of leaves may adversely affect some species like Sal. Similarly, some species of medicinal plants have also been over-exploited. These are now threatened in the area they were previously found in plenty. Similarly, plants whose tubers and roots are collected/ used are also under threat. These negative aspects of NTFP collection, exploitation and utilization deserve greater attention of the Territorial administration and proper monitoring of collection should be ensured. Training of VSS member in collection, processing and value addition of the major NTFPs collected should be carried out.

8.5.2 Silvicultural System

The primary collectors should be properly guided and trained 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 by the primary collectors will increase their earning. Small enterprises to utilise the collected and value added products to produce products required by the markets should also be set up around the forests.

8.5.3 Rotation period

Period of rotation will be as per fruting year.

8.5.4 Harvestable diameters

NA

8.5.5 Reducing factors and reduced areas.

NA

8.5.6 Felling cycle.

NA

8.5.7 Division into periods and allotment to periodic block (PB)

NA

8.5.8 Calculation of the yield

The figures regarding collection of NTFPs have been covered in Chapter-III. There are substantial fluctuations both in quantity collected and royalty realized. This is because the outturn depends on various factors like weather and the market price. The figures do not indicate the actual outturn or potential of NTFP items as many of them are consumed locally and only surplus is sold if it fetches good price. In view of these factors it is not possible to prescribe any regulation of yield. However, it has been the general observation that many NTFPs have been on decline, mainly for the reason of over exploitation and degradation of the forests.

8.5.9 Table of felling

NA

8.5.10 Method of Executing the Felling

NA

8.5.11 Subsidiary silvicultural operation cleaning and thinning.

NA

8.5.12 Regeneration.

NA

8.5.13 Associated Regulations and measures.

8.5.13.1 Miscelleneous Regulations

In areas of the divisions where artificial regeneration through block plantation or gap plantation is to be taken preference in species selection should be given to species which yield NTFPs or medicines. Similarly in the Rehabilitation Working Circle areas, care should be taken during cleaning operations to retain the miscellaneous species which yield important NTFPs.

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 exist, they are too long that the primary collector finds it difficult to fetch good returns for the NTFPs collected by him. Most 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 Divisional Forest Officer shall contact the 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 to ensure that 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. Simultaneously, 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. Several options have been suggested. These may be used in combination or as alternative options. For example, 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 (e.g., seeds) to ensure that sufficient seeds are left on 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 local people who may be motivated not to collect entire seed from forest floors 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.

The divisional staff should prevent the purchase of the NTFPs at lower price by middlemen and ensure collection/disposal in accordance with the Rules'2000. The minimum procurement prices should be given wide publicity through VSS and other media. Audio and 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 control of Gram Panchayats on the Forests & the primary collectors shall also be studied and annual reports submitted suggesting any changes if required.

All forests shall be strictly protected against forest fires, un-authorized grazing and illicit-felling. Effective measures shall also be taken to contain shifting cultivation and other 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

8.6.13.2 RIGHTS AND CONCESSIONS

Rights and concessions of local people shall be regulated in accordance with the provisions of the Orissa Forest Act and relevant Rules in force besides the Government policy in vogue.

8.6.13.3 Interim Revision And Cost Norm

The current policy on NTFP has been internalized in this Plan. However some gray areas still exist in working of the NTFP by the Gram Panchayats. This may call for an interim revision of the prescriptions of the Working Circle. The Conservator of Forests, may, therefore, review the situation in the light of impact of the NTFP policy and may suggest for interim revision of this Working Circle in consultation with the Conservator of Forests (Working Plans).

The cost norm for implementation of prescription and the total estimated cost of working under this Working Circle is discussed in Chapter No (Financial Forecast and Cost of the Plan).

CHAPTER - 9

THE JFM (OVERLAPPING) WORKING CIRCLE.

9.1 General Constitution

9.1.1A common notion says that the forest is a free resource for human kind. While the invaluable and intangible products of this precious asset is indispensable for the very existence of life on this planet, the valuable and tangible products are the essential commodities of our life. Age-old dependence of the local people on the forests is irrevocable.

Earlier people use to get forest produce for their bonafide use through nistar or nominal charge that is royalty. In this division the per capita forest is very low where as the demand of forest produce is high. Protection of forests is extremely difficult on the part of the forest officials alone. The involvement of local people is very much felt for this purpose. Participation of the local people cannot be ensured without considering their bonafide need. In order to make the matter broad based particularly peoples friendly, Joint Forest Management is conceptualised for protection, conservation and management of the natural forests by the forest officials and local people combinedly in consonance with the compelling need of the circumstances. Such change in the mode of management of forest is the call of the hour.

As already described earlier the joint forest management is regulated through a Resolution No. **16524-IF-Affn.17/2011/F&E** of Forest and Environment Dept. of Odisha. Participation of local people through VSS is becoming popular day by day. It is the most suitable option for protection and management forest in the present circumstances. A sincere, specific and special effort is essential to stabilise this on-going process for sustainability. Hence Joint Forest Management (Overlapping)Working Circle is constituted for this purpose.

The different category of forest assigned to the VSS comes under the preview of this working circle. Similarly all the new area out of the plan area assigned to the VSS in course of implementation of this working plan will automatically become the part of this working circle. The prescriptions of this working circle shall be applicable to them. Further, these prescriptions should also be adopted for the areas protected by the VSS beyond the purview of plan area.

9.2 General Characters of vegetation:

The area of this working circle is scattered and also varied in crop composition and density, but mostly degraded forest under the perview of rehabilitation working circle are assigned to the VSS. In general the vegetation belongs to mixed deciduous tropical forest. These forests have the potentiality for speedy rejuvenation due to the availability of rooted waste, coppice shoot and pole crop.

9.3 Felling series, cutting sections and JFM areas

9.4 Block, compartment and JFMs area (marked on GIS based maps)

As already mentioned above the area of this working circle is flexible with constitution of new VSS as well as assignment of more area to the existing VSS. However, the area is allotted to this working circle is 47416.323 ha**.** having 341 nos. of VSS is annexure in **Appendix – XVIII** and furnished in Table no. 9.4.1.

Table No. 9.4.1 Area adopted in JFM (OL) Working circle in the Revised Working Plan 2021-22 to 2030.31 of Angul Forest Division

SL No.	Name of the Forest Block		Forest Block Area in ha.	Planned Area in ha.	JFM (OL) Area in Ha.
1	2	3	4	5	6
1	Antulia- Tabda	RF	2259.8	2230.546	510
2	Arakhadahi	RF	679.496	679.496	300.496
3	Arisulia - Sulia	RF	142.044	142.044	142.044
4	Badadandasahi	RF	284.431	284.431	196.631
5	Badakathia	RF B	1581.145	1580.345	906.27
6	Bahianali	RF	33.690	33.69	0
7	Baishnabaragudi	RF	62.77	32.1937	32.194
8	Balaramprasad	RF	51.421	51.421	51.421
9	Bandhuli	RF B	65.361	65.361	65.361
10	Baragounia	RF	70.634	70.634	70.634
11	Bhana	RF	63.214	62.608	62.608
12	Bhogpal	RF	184.56	184.56	158.694
13	Biripal	RF	1239.34	1235.18	1035.97
14	Bolonga (P)	RF	3097.126	1264.453	1264.813
15	Bramhanbil	RF	203.108	203.108	203.108
16	Budhia	RF	116.725	116.725	116.725
17	Bulajhar	RF	1948.152	1947.852	1027.12
18	Chandrapada	RF	303.143	303.143	303.143
19	Chhendipada	RF	1852.968	1824.968	1297.4
20	Derjang-Golabandha(P)	RF	176.649	176.649	176.649
21	Dhankoili	RF	694.667	686.405	390
22	Durgapur (A)	RF	55.486	55.486	55.486
23	Durgapur		3630.121	3609.371	3574.86
24	Durgapur Danda	RF	227.963	227.963	227.963
25	Gengutia	RF	56.178	40.834	30.834
26	Godigotha	RF B	346.45	346.45	346.45

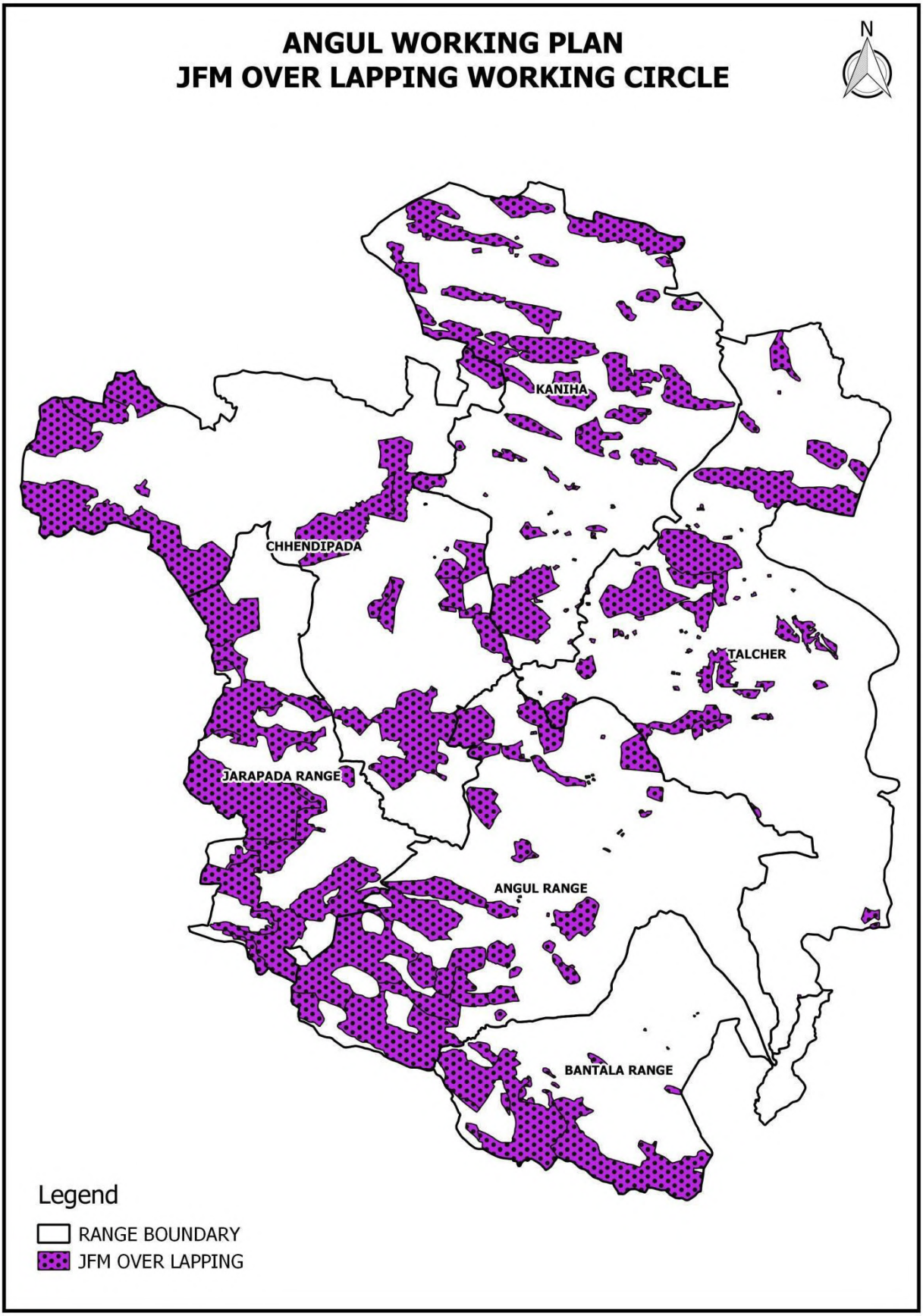
27	Gohiradanda	RF	29.755	29.755	0
28	Gopalprasad	RF	154.057	153.427	102.254
29	Gumpha	RF	37.359	37.359	37.359
30	Guranga	RF	59.007	59.007	59.007
31	Hirapur R.F.B	RF	209.577	168.007	168.007
32	Jaghani	RF	38.856	38.856	38.856
33	Jaltap	RF	444.978	444.978	315
34	Jaypore	RF	478.263	478.263	368.263
35	Kaliakata	RF	205.691	205.691	205.691
36	Kandhakurudu	RF	98.948	98.948	98.948
37	Kandhal	RF	189.7	189.7	173.861
38	Kanheijena	RF	1393.382	1393.382	845.382
39	Kankurpal	RF	929.905	929.905	205.5
40	Kanloi	RF	2066.120	2066.12	1376.87
41	Kanteikulia R.F.B	RF	299.493	299.493	259.493
42	Katada	RF	3142.494	3142.494	2225.25
43	Kauchiakhol R.F.B	RF	549.995	146.215	146.215
44	Khajuria	RF B	136.076	136.076	136.076
45	khalpal	RF	101.698	101.698	101.698
46	Kiajhar	RF	277.085	274.197	103.17
47	Kosala	RF	319.127	243.127	189.7
48	Kuio	RF	534.329	534.329	534.329
49	Kuio-Sakasinga	RF	88.722	88.722	88.722
50	Kukurkhai	RF	16.735	16.735	0
51	Kumanda-Talataila	RF	38.779	38.779	38.779
52	Langalkhol R.F.B	RF	125.123	125.123	55.123
53	Madhapur	RF	221.793	221.793	221.793
54	Makundanali	RF	66.153	66.153	66.153
55	Malibrahmani	RF	150.391	142.541	142.541
56	Mandargiri-Kalima	RF	606.995	606.995	606.995
57	Mankadachua	RF	402.188	402.188	352.188
58	Matharagadi	RF	45.855	45.855	45.855
59	Nanda	RF	55.408	55.408	55.408
60	Nandapur-Berhampur	RF	40.975	40.975	40.975
61	Nialu- Lodhajhari & Sapakata	RF	1225.276	1225.276	680
62	Nisa	RF	625.6	489.8	489.8
63	Nuabhuin	RF	293.076	114.766	114.766
64	Nuakheta RF	RF	2917.85	0	0
65	Paranga	RF	222.077	216.387	216.387
66	Pattakhaman	RF B	438.412	413.4	314.11

67	Pedi	RF B	392.464	392.464	319.77
68	Petachira-Pathuria	RF	289.763	289.763	289.763
69	Pital Hill	RF	27.903	27.903	27.903
70	Poipal Danda (Dalak)	RF	645.413	645.413	553.9
71	Putagadia	RF	68.159	68.159	13.15
72	Rabipur R.F.B	RF	1182.925	1174.319	1174.319
73	Rakas R.F.B	RF	564.549	314.912	215
74	Rameswar hil	RF	84.033	84.033	64.41
75	Sachi	RF	97.13	97.13	97.13
76	Sadarkhol	RF	1077.441	1057.737	1021.51
77	Saharagoda	RF	184.713	184.713	184.713
78	Saleimada	RF	356.095	356.095	356.095
79	Santrabandha	R.F B	172.556	172.556	151.16
80	Saradhapur	RF	113.778	107.8896	107.89
81	Seepur R.F.B	RF	242.085	242.085	107.085
82	Silakhani (Phulajhari)	RF	933.211	933.211	233
83	Silling 'A'	RF	106.47	106.47	106.47
84	Similipathar	RF	2593.972	2524.903	2189.07
85	Similisahi	RF	307.148	307.148	110
86	Sorispal	RF	216.198	211.207	211.207
87	Tangiri	RF	265.847	265.847	238.07
	Total		48625.798	42501.797	31539.013
1	Balanga	PRF	53.522	53.522	33.522
2	Burti	PRF	3135.584	3135.584	1235
3	Chandanpur	PRF	446.364	446.364	226.364
4	Dandasingha-Bhagatpur	PRF	221.38	221.38	186.05
5	Dangapal	PRF	831.814	831.814	831.814
6	Dera	PRF	76.229	76.229	76.229
7	Derjang-Golabandha	PRF	27.844	27.844	27.844
8	Devinagar	PRF	3202.93	3202.93	3202.93
9	Durgapur	PRF	56.305	56.305	56.305
10	Hinsar-Sorispal	PRF	763.359	763.359	400.39
11	Kalapat	PRF	1214.713	1214.713	827.47
12	Kandhaberini	PRF	243.076	243.076	243.076
13	Kangulei	PRF	46.009	46.009	46.009
14	Kanloi	PRF	69.769	69.769	69.769
15	Kerjang	PRF	466.011	466.011	466.011
16	Krushnachakra	PRF	2489.598	2489.598	1266
17	Kulasingha	PRF	641.715	641.715	296.78
18	Kurudu	PRF	712.221	712.221	360.95

19	Marudhipa	PRF	1351.149	1351.149	1192.14
20	Nunmati	PRF	440.620	440.62	440.53
21	Para	PRF	1052.774	1052.774	805.85
22	Pathargarh	PRF	1633.068	1633.068	1019.71
23	Pitachari	PRF	60.853	60.853	60.853
24	Pokunda	PRF	371.416	371.416	250.33
25	Rodasingha	PRF	143.939	143.939	86.3
26	Sibarampur	PRF	290.559	290.559	240.559
27	Sudagolasar	PRF	98.876	98.876	98.876
28	Sunarijharan	PRF	450.817	450.817	450.817
29	Tabada	PRF	210.582	210.582	144.24
	Total		20803.096	20803.096	14642.718
1	Chakundapal	DPF	178.821	178.821	178.821
2	Ganthigadia 'A'	DPF	87.976	84.739	63.738
3	Ganthigadia 'B'	DPF	21.259	21.259	21.259
4	Labangi	DPF	69.96	69.96	69.96
5	Talisara	DPF	49.564	49.564	0
	Total		407.580	404.343	333.778
1	Baudabeda	PF	33.722	33.722	33.722
2	Jukub	PF	4.860	4.86	4.86
3	Talagarh, Kantamegha, Ragudiapada	PF	168.232	168.232	168.232
	Total		206.814	206.814	206.814
1	Badagunduri	VF	5	5	5
2	Badahar	VF	10	10	10
3	Badahar	VF	12.52	12.52	12.52
4	Badahar	VF	4.83	4.83	4.83
5	Badatribida	VF	5	5	5
6	Balipata	VF	0.25	0.25	0.25
7	Banabaspur	VF	14	14	14
8	Barapali	VF	4.55	4.55	4.55
9	Barapali	VF	3.84	3.84	3.84
10	Bedasasan	VF	1.38	1.38	1.38
11	Belpada	VF	5	5	5
12	Bhagirathipur	VF	13.5	13.5	13.5
13	Bikisar	VF	5	5	5
14	Bilinda	VF	30	30	30
15	Brahmanbil	VF	5	5	5
16	Brahmanbil	VF	5	5	5
17	Budakera	VF	5	5	5
18	Chakundapal	VF	5	5	5
19	Chhelia	VF	10	10	10
20	Chitalpur	VF	10	10	10

21	Danara	VF	6.78	6.78	6.78
22	Dumduma	VF	10	10	10
23	Gopalprasad	VF	2.13	2.13	2.13
24	Gundurinali	VF	6	6	6
25	Gurjanga	VF	5	5	5
26	Inkarbandha	VF	1.52	1.52	1.52
27	Inkarbandha	VF	0.71	0.71	0.71
28	Jadunathpur	VF	10	10	10
29	Jadunathpur	VF	10	10	10
30	Jamunali	VF	0.6	0.6	0.6
31	Jamunali	VF	17.57	17.57	17.57
32	Jamunali	VF	10	10	10
33	Jarada	VF	10	10	10
34	Jarasingha	VF	3	3	3
35	Jarasingha	VF	1.02	1.02	1.02
36	Jhulakhuntia	VF	10	10	10
37	Joragadia	VF	1.18	1.18	1.18
38	Joragadia(kuria)	VF	6.43	6.43	6.43
39	Jukub	VF	4	4	4
40	Kaliakata	VF	10	10	10
41	Kandhabereni	VF	10	10	10
42	Katrapada	VF	10	10	10
43	Katarapada	VF	10	10	10
44	Katrapalli	VF	10	10	10
45	Kuluma	VF	20	20	20
46	Kuluma	VF	30	30	30
47	Kumanda	VF	5	5	5
48	Kuruhuni	VF	4.27	4.27	4.27
49	Lodhabandha	VF	5	5	5
50	Lokeipasi	VF	0.48	0.48	0.48
51	Lokeipasi	VF	0.58	0.58	0.58
52	Mahuliapasi	VF	8.66	8.66	8.66
53	Malibandha	VF	5.48	5.48	5.48
54	Malibrahmani	VF	10	10	10
55	Mardharipur(kumunda)	VF	8	8	8
56	Natada	VF	6	6	6
57	Nisa	VF	10	10	10
58	Nisa	VF	5	5	5
59	Nua-Jarasingha	VF	2.73	2.73	2.73
60	Olanda	VF	5	5	5
61	Padmabatipur	VF	4.43	4.43	4.43
62	Padmbatipur	VF	1.21	1.21	1.21
63	Phulapada	VF	5	5	5

64	Phulpada	VF	4	4	4
65	Raghunathpur	VF	20	20	20
66	Ranjagola	VF	12	12	12
67	Ranjagola	VF	15	15	15
68	Rankasingha	VF	4	4	4
69	Rengali	VF	8	8	8
70	Rutubhuin	VF	8	8	8
71	Rutubhuin	VF	8	8	8
72	Sahadagoda	VF	3	3	3
73	Samal	VF	10	10	10
74	Samal	VF	5	5	5
75	Samal	VF	5	5	5
76	Sanhar	VF	10	10	10
77	Santarabandha	VF	5	5	5
78	Santribida	VF	15	15	15
79	Santribida	VF	8	8	8
80	Sarangi	VF	15	15	15
81	Sibarampur	VF	12.08	12.08	12.08
82	Sibarampur	VF	3	3	3
83	Sibarampur	VF	10	10	10
84	Solada	VF	5	5	5
85	Solada	VF	5.27	5.27	5.27
86	Solada	VF	29	29	29
87	Sunakhani	VF	5	5	5
88	Surendrapur	VF	1	1	1
89	Susab	VF	3	3	3
90	Tubey	VF	5	5	5
91	Tumuni	VF	3	3	3
	Total		694.000	694.000	694.000
	Grand Total		70737.288	64610.0503	47416.323


ANGUL WORKING PLAN
JFM OVER LAPPING WORKING CIRCLE
N
KANIHA
CHHENDIPADA
TALCHER
JARAPADA RANGE
ANGUL RANGE
BANTALA RANGE
Legend
RANGE BOUNDARY
JFM OVER LAPPING

9.5 Special objectives of management.

To spread the message of JFM to every forest fringe village by mass awareness campaign.

- To involve communities in forest and natural resource management.
- To make the people and Forest Department equal partners in the management process.
- To restock the barren and blank areas through artificial regeneration.
- To increase the productivity of soil through suitable soil and moisture conservation measures.
- To encourage people to rational utilization of their own community resources for the betterment of the community.
- To involve people in NTFP collection and trade.
- To create income generating activities in the villages & reduce dependence on forest.
- To study the scope of enhancing the network of VSS protection areas.
- To spread the message of JFM to every Forest fringe village by adopting entry point activities & organizing mass awareness campaign.
- To achieve all round socio economic development of the village by involving other line departments like Agriculture ,Horticulture, Soil Conservation, Veterinary, Health, Mass Education etc.

9.5.1 Analysis of the Crop

The forest blocks allotted to the JFM working circle are either VillageForests / KhesraForests or degraded ReservedForests / Proposed RFs / DPFs. Growing stock estimates of these (RF/PRF/DPF) blocks have been made by inventory and the estimates have been provided in appendicesand dealt in detail in Chapter- II of Part I.. As seen from the estimates the growing stock per hectare in these blocks is relatively low since the forest crop is largely degraded with shrubby growth. All these blocks have potential for rapid improvement since they have rooted waste, coppice shoots and pole crop. Degradation of these forests have taken place due to continuous biotic pressure on these forest blocks. As a result, these blocks are remaining in degraded state. Soil and moisture condition is deteriorating day by day. It is expected that with the formation of VSS and allotment of these degraded forests to the villagers most of the biotic pressure will be reduced due to restrain shown by the people which will allow the rejuvenation of the crop. The villagers should be advised to divide the allotted area in to 5 or 10 small parts as per the size of the area, so that they can permit grazing /collect their requirement from a particular part and the balance area would remain closed from any sort of biotic interference for some years till the collection cycle repeats. During this period of closure the forest can rejuvenate by allowing the natural regeneration to establish.

Micro plans are prepared for the area allotted to the VSS as per the JFM resolution of the State. 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 / Improvement 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 RWC/ IWC and the JFM Working Circle. In case of any major discrepancy, it will be brought to the notice of the Conservator of Forests.

9.5.2 Silvicultural System

This Working Circle is an overlapping circle. Hence the silvicultural system to be followed depends on the prescriptions outlined for the main Working Circle to which the block is primarily allotted. Moreover, the system of working in these particular areas would be guided by the micro-plans prepared jointly by the DFO/VSS for the particular patch of forest allotted to the VSS which will be in conformity with the prescriptions of the main Working Circle. The silvicultural operations required for improvement of the crop should be clearly mentioned in the micro-plans. The intermediate benefits derived from the forests (JFM area) shall be shared as per prescriptions of JFM resolutions.

9.5.2.1 Method of Execution of Operations

Demarcation of the areas assigned to the VSS for protection and management is the first and foremost duty of the Divisional Forest Officer. The allotted area should also be delineated on the SOI topo map of scale 1:50000. This step will help to give a specific identity to the VSS and will motivate them to protect the forest and help for better management. At the Division level, details of village forests created through Social Forestry Project in the past shall be kept and their activities monitored. Steps shall be taken to convert VFPCs to VSSs.

Since the forest areas assigned to the VSS is to have less than 40% crown density most of the JFM area fall in the area allotted to the Rehabilitation Working Circle and very few in Improvement Working Circle. Micro plans for the assigned area should be prepared keeping in view the overall prescriptions of the primary Working Circles to which these areas belong. All prescriptions for removal of biomass should be done conservatively. In areas falling under Rehabilitation Working Circle areas, emphasis should be laid on gap plantations and soil & moisture conservation measures. There will be no exploitation in the JFM area except removal of dead and uprooted trees keeping in view of prescriptions laid down in primary working circle which it belongs and wild life point of view. So care should be taken to consider all aspects of the current plan while preparing micro-plans.

Micro plans shall be prepared for each VSS irrespective of availability or non-availability of money for implementation. After micro-plans are prepared, efforts shall be made to obtain funds from different funding sources like State Budget, District Budget, DRDA, MPLAD and MLALAD grants, etc.

Each VSS shall have a micro-plan. The micro-plan shall be prepared through 'Participatory Rural Appraisal' (PRA) technique by involving all the villagers/stake holders. Before preparation of the micro-plan, the forest assigned to the VSS shall besurveyed and demarcated. Pillars should be posted to avoid area-dispute among different VSS in future. A map to scale shall also be prepared by the field staff and enclosed with the micro plan. While registering a VSS, it will be better to involve the local revenue officials like Tahasildar, OIC of local police station and BDO. Their involvement will help in future to solve any litigation on the issue. Where ever any revenue forest is being allotted to VSS, approval / signature of concerned Tahasildar and RI should be obtained on the map and on VSS resolution register. The micro-plan shall discuss in detail about the different activities like plantation, soil & moisture conservation measures, silvicultural operations like tending and cultural operations, disposal of the cleaning materials, pasture land development etc, along with financial outlay. Even, sharing mechanism shall also be clearly spelt out. However, it shall be ensured that the provisions of this micro plan shall be in conformity with the over all prescriptions of this working plan.

Wherever plantations exist in VSS allotted area, these plantations should be thinned and pruned as per requirement. Sweeping off the floor of plantations for leaves and twigs should be avoided since it affects the cycling of nutrients. Grazing and fire protection should be provided to all plantations. These prescriptions should serve as a guideline while preparing the micro-plans in these areas. Efforts should be made as far as possible to identify contiguous patches of RF and KF and these areas should be planted with suitable species to meet the firewood, NTFP and small timber requirement of the villagers.

It is important that the motivation level of the people to protect the forests should be sustained for a longer period for the forest to respond to the protection provided. The gestation period for the forest to provide returns is quite long. During this period there may be conflicts amongst groups of people or stakeholders. Most of the time it is difficult for the Forest Department personnel to keep up the motivation level at the village level due to the multifarious job of its staff. Hence it is advisable to identify genuine NGOs or eminent local persons (like teachers, doctors, village level workers, retired forest officials etc.) who are

closely associated with the people, and who can convince the people and keep up their motivation level and enthusiasm. These persons and institutions should be encouraged and if possible some remuneration should be given to them. Further, free labour in shape of committee member or other wise may not be available for protection of forests (JFM area) for long. So, the VSSs should examine alternatives and if possible a watcher may be employed for protection of forests. Prior to such action, source for remuneration shall be ensured.

In each forest fringe village, efforts shall be made to create sustainable income generating activities which may be forest product based. Income generating activities (IGA) like Sericulture, Pisciculture, Vermiculture, Lac and Honey Bee farming shall be encouraged through the VSS. Many NTFP items are also collected from the forests and efforts shall be made to explore processing, value addition and finding good market for these forest based products. The entry point activities done in different programmes should aim at sustainable income generation and enterprise development in the villages. NGOs specialising in IGA and SHG and marketing should be entrusted with the 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.

Well managed VSS shall be identified and rewarded. Their success stories shall be given wide publicity and the other VSS members, potential VSS villages shall be taken to these successful VSS villages on exposure visit. These promotional visits or exposure visit would help a great deal to promote the VSS movement in the Division. Awards shall be instituted to adjudge the best VSS in the Division every year. The active VSS shall be motivated to apply for State Awards like 'Prakruti-mitra' & National Awards like IPVM and their application should be properly forwarded to proper quarters.

The capability of the lower functionaries of the Forest Department to work along with the villagers should be improved by proper and adequate training and exposure visits. During training, special emphasis should be on communication skills of the staff. Proper orientation of the field staff through training, workshops and discussions on the philosophy and need of Participatory Forest Management should be imparted. Similarly the VSS members also need training, exposure visits and forum for exchange of ideas.

In the Division there are 3 Forest Extension Officers, (FEOs), and 14 Village Forest Workers (VFWs). These staff should be utilized effectively for working closely with the VSSs. There is a general perception that the services of these staff are not utilized properly but they have an important role to play. They can be very helpful to the DFO to organize village level coordination meetings, organizing village level exhibitions, conducting village level tours of the VSS members etc., provided they are suitably oriented for the job.

There are 91 numbers of village forests in the Division with total village forest area being 694 ha. The plantations in these village forests have been raised under erstwhile Social Forestry Project and constituted as Village Forests under the provisions of the Orissa Village Forest Rules, 1985. These plantations in these village forests shall be managed in accordance with management plan prepared under the provisions of the aforesaid Rules 1985. The list of such village forests is appended to this plan at Appendix No: VII.

9.5.2.2 Control

All the areas assigned to the VSS should be marked on the SOI topo sheets of 1:25000 scale. The works taken up in the VSS areas should be entered in the concerned compartment history files. The checking of compartment histories should form a part of the office inspections by the Conservator of Forests and the Divisional Forest Officer.

9.5.2.3 Rights and Concessions

Rights and concessions in this Working Circle shall be regulated in accordance with the provisions of the relevant gazette notifications of the respective forest blocks and the Govt. of Orissa policy with regard to JFM. The existing rights and concessions are elaborated in Part I of this plan & clearly mentioned in 1993 resolution appended in Appendix-XX

9.5.3 Rotation period

No rotation period is possible for prescription in general due to variable nature of crop composition and condition in scatted manner.

9.5.4 Harvestable diameters

9.5.5 Reducing factors and reduced areas.

NA

9.5.6 Felling cycle.

NA

9.5.7 Division into periods and allotment to periodic block (PB)

NA

9.5.8 Calculation of the yield

9.5.9 Table of felling

9.5.10 Method of Executing the Felling

NA

9.5.11 Subsidiary silvicultural operation cleaning and thinning.

NA

9.5.12 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.

9.5.13 Associated Regulations and Measures.

9.5.13.1 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.

9.5.13.2 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.

9.5.13.3 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.

9.5.13.4 Associated measures

It will be executed as provided in the micro plan for individual VSS.

9.5.13.5 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.

9.5.13.6 Interim revision

No major change in the prescriptions of this Working Circle is anticipated. However, it may be reviewed if necessary, after five years jointly by the Conservator of Forests, Angul Circle and Conservator of Forests, Working Plan & in accordance with revised JFM resolution of the State Govt. amended from time to time. Any deviations suggested shall be subjected to the sanction of competent authority.

CHAPTER - 10

10.1 STATISTICS OF GROWTH AND YIELD

10.2 Past Statistics

The growth rate and yield of the growing stocks of a particular patch of forest is affected by different parameters like the geology, climatic factor, position of ground water table, mineral content of soil and biomass on the particular patch. Soil formation on the earth's surface is a slow continuous process taking ages. Even changing climatic factors like temperature, light, rainfall, wind etc. is bound to exert considerable impacts upon the growth rate of the growing stocks thereby affecting yield statistics of that particular patch of forest. So at the time of assessment of growth and yield of growing stock, a localized patch needs to be considered and all research works needs to be focused on that patch to curb the impacts of the above said factors. But unfortunately Angul Forest Division does not have any such experimentation wings to assess the growth rate and yield of the forest crop on a regular basis. Under these circumstances the Working Plan officer does not have the scope of getting up dated data on research within Angul Division. The detailed method of volume determination and yield calculation of major species by different Author are as under.

(i) SAL: (*Shorea robusta*)

a) Volume and outturn tables for Sal by Mr. S.H. Haward as published in Indian Forest Records (Silvicultural series) Vol. XII – Part-I (1925).

b) General Volume table for Sal (*Shorea robusta*) by Sri S.H. Haward, Indian Forest records (Silvicultural series) Vol.X Part 6 (1924)

c) The yield and stand tables for Sal high forest by AL Griffith and Bakshi Santa Ram publication as Indian Forest Record (New series) (Silvicultural Series) Vol. IV A No. 4 (1943)

d) Yield table for clear felled Sal (*Shorea robusta*) coppice by S.H. Howard. Indian Forest records (Silviculture series) Volume XXI Part IV, 1962.

e) The uneven aged Sal forest of Ramnagar Forest Division of Uttar Pradesh and their condition, rate of growth, etc, along with empirical yield and stand table for selection type of Sal crop by Sri G.S. Mathanda. Indian Forester Volume-84, 1958.

f) Yield table for (*Shorea robusta*) for the united province, by Smithys and Howard, Indian Forester Volume X Part III 1923.

g) General volume table for Sal (*Shorea robusta*) by A.N.Chaturbedi I.F.R (N.S) 12(13) 1972. Besides the above, volume tables and stand tables available in National level and some more volume tables, stand tables of other principal species are also available. Such volume tables are furnished as under.

(ii) Teak (*Tectona grandis*)

Yield table and stand table for teak, Indian forest records (New series) silviculture volume IX No.-4, 1959

(iii) Halanda(*Adina cordifolia*)

An approximate volume table for Halanda by E.C.Mobbs UP forest leaflet No.6

(iv) Sisoo (*Dalbergia sissoo*)

(a) Preliminary yield table for *Dalbergia sissoo* by S.H.Howard forest bulletin No. 52, (Silviculture) 1925.

(b) Standard and commercial volume table for *Dalbergia sissoo*, by M.A.Kazi Indian Forest records (Silviculture series) Vol-II No. 2, 1936.

(v) Asan(*Terminalia tomentosa*)

(a) General standard volume tables for *Terminalia tomentosa* by A.N.Chaturbedi and P.K.Bhattarya , I.F.R. (New) series silviculture Vol-12,No.4 1971.

(b) General standard and commercial volume table for Asan (*Terminalia tomentosa*) high forest by A.L.Griffith, Bakshisantra Ram, and Jagadamba Prasad, Indian Forest Records, New series Volume IV C No.5, 1945.

(vi) Simal(*Bombox ceiba*)

Volume table and diameter growth for simal (*Bombax ceiba*) by L.D.Mahendru, Indian Forest Records. (Silviculture series) Volume XV, Part – IV, 1932.

(vii) Piasal (*Pterocarpus marsupium*)

Standard and commercial volume table for (*Pterocarpus marsupium*) by S.N.Dabral and P.K.Bhattacharya, Tailok Singh and D.S. Rawat.

(viii) Moi (*Lennea grandis*)

Standard volume for Moi by Sri Dabaral and D.C. Sharma, Indian forest records (New series) Silviculture Volume – II, No.7

(ix) Jamu(*Syzygium cumini*)

Standard volume tables for (*Syzygium cuminii*) by S.N. Debral , P.K.Bhatarya and P.S.Payal, Indian forest records new series silviculture volume-II, No. 4, 1964.

(x) Karada (*Cleistanthus collinus*)

Standard and commercial volume table for (*Cleistanthus colinus*) by S.N.Babral, P.K.Bhatacharya, Tailok Singh, and R.C. Jain.

All the research papers shown above pertain to the volume table which are old. These have been used in the preparation of the volume table at the national level based on research data from different localities out side Orissa. As such the use of such data and statistics to calculate the yield of different species in this Division needs modulation. So it is prudent to develop and devise volume and yield tables locally for Angul Division independently.

10.2.1Mean Annual Increment

Owing to the absence of any research activities for assessment of rate of growth of different species and other aforesaid reasons it would be very difficult to assess the mean annual increment as the past enumeration data, year wise for last 20 years are not available. Illicit felling is regular features in most forest blocks. As such illicit removal of timber from the forest would make the calculation of M.A.I. even more difficult task.

10.2.2 Local Volume Equation

The Forest Survey of India has developed Local volume equation for different forest species both principal and secondary species taking the forest of Phulbani, Sambalpur and Koraput district as per their sampling for Orissa state. The 'Report on Resources Survey of Phulbani Forest Catchment (Orissa) prepared by Forest Survey of India, Dehradun, 1982 has been referred for relevant local volume equation for determination of volume and yield in this plan. The local volume equation for different species used in this working plan are shown in **Table No. 9.1**. In these equations, 'V' denotes under bark round timber volume in cum. and 'D' denotes diameter over bark at breast height in meter. All other species including fruit bearing species like Mahul, Kendu, Mango, Gambhar, Siris,and Kusum etc. have been categorized as other miscellaneous species.

Table No. 10.1: Local volume equation of different species

Sl. No	Name of the Species		Local valume regression equation to be adopted
	Local	Botanical	
1	2	3	4
1	Sal	Shorea robusta	$V = 0.109884 – 1.804754 D + 10.297714 D^2$
2	Piasal	Pterocarpus marsupium	$V = 0.058424 – 1.233468 D + 9.433633 D^2$
3	Sisoo	Dalbergia latifolia	$V = 0.00965 + 0.58546 D – 2.5605 D^2 + 24.34215 D^2$
4	Simuli	Bombax ceiba	$V = 0.136196 – 2.076740 D + 10.156600 D^2$
5	L.Moi	Lannea grandis	$V = 0.057424 – 1.153088 D + 8.542648 D^2$
6	Mundi	Mitragyna parviflora	$V = 0.08444 – 1.26801 D + 8.75274 D^2$
7	Kasi	Bridelia retusa	$V = 0.035142 – 0.839708 D + 8.157614 D^2$
8	Dhaura	Anogeissus latifolia	$V = 0.015731 – 1.020606 D + 9.656667 D^2$
9	Asan	Terminalia tomentosa	$V = 0.103171 – 1.684599 D + 10.107586 D.-^2$
10	Bandhan	Ougeinia oojeinensis	$V = 0.057424 – 1.153088 D + 8.542648 D^2$
11	Jamu	Syzygium Cumini	$V = 0.08444- 1.26801 D + 8.75274 D^2$
12	Kuruma	Adina cordifolia	$V = 0.08507 – 0.19669 D + 7.16812 D^2$
13	Sidha	Lagerstroemia parviflora	$V = 0.07199 – 1.25923 D + 9.28416 D^2$
14	Mahul	Madhuka latifolia	$V = 0.030925 – 0.567067 D + 5.709471 D^2$
15	Salai	Boswellia serrate	ÖV = (-)0.188655 + 3.021335 D
16	Bahada	Terminalia bellirica	$V = 0.035142 – 0.839708 D + 10.107586 D^2$
17	Kendu	Diospyros malanoxylon	ÖV = 0.06728 + 4.06351 D – 0.99816 ÖD
18	Misc.	Other species like, Kusuma, Gambhar,etc.	$V = 0.088074 – 1.449236 D + 8.760534 D^2$

10.2.3Study of Growth and Yield in this Plan

In this plan advanced technologies of Remote Sensing and Geographical Information System (GIS) have been employed to make an assessment of the growing stock of the forest of Angul Division. Forest Survey of India and NRSA have perfected the methodology for use of this technology in the recent past. Satellite remote sensing and GIS based methods have been operationally employed to provide forest working plan inputs in various forest divisions across the country – Assam, Andhra Pradesh, Madhya Pradesh and Karnataka. These efforts have demonstrated that significant reductions in cost and time can be achieved by relying on stratified sampling methods based on mapping forest canopy density and forest type using satellite remote sensing.

With this background the Orissa Remote Sensing Application Center (ORSAC) and the Forest and Ecology Division of National Remote Sensing Agency (NRSA) were requested to provide working plan inputs for forest divisions in Orissa by the Orissa State Forest Department (OFD).

10.2.4 Methodology Adopted:Fig No 9.1 presents an outline of the methodology adopted for assessment of the growing stock and yield in Angul Forest Division.

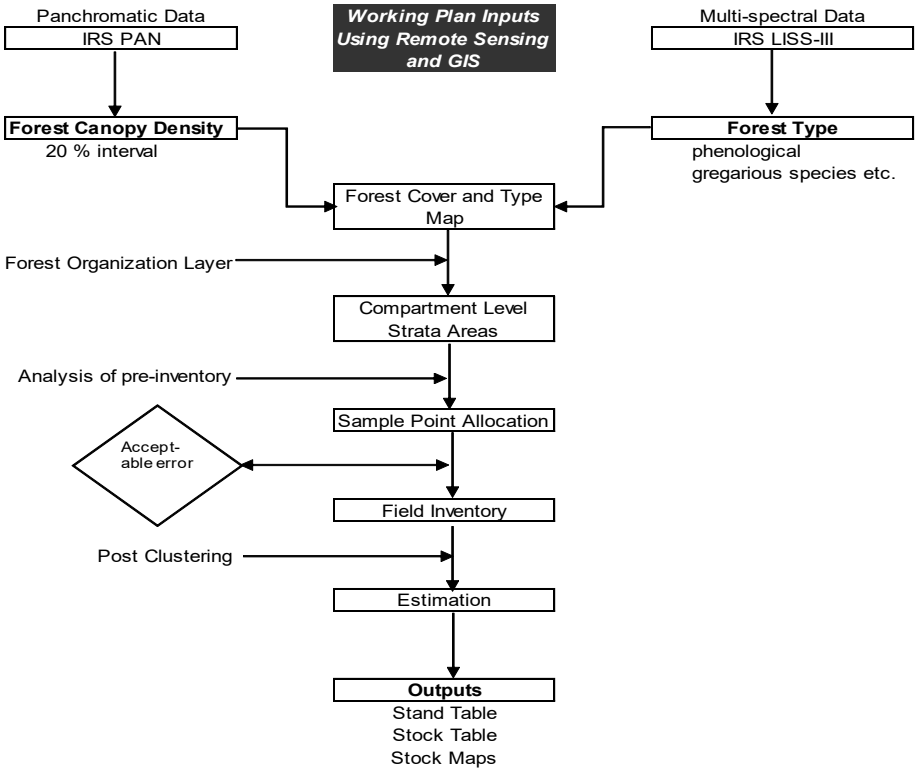


Fig.No. 8.1: Methodology Flow Chart

10.2.5 Development of Base layers: As per methodology, the following input layers were developed for Angul Division by NRSA and ORSAC based on data and information provided by the Working Plan Division, Balasore.

a. **Preparation of Infrastructure layer (Base layer):** Two infrastructure layers namely the administrative layer having details like roads, rivers, administrative boundaries of the division showing division boundary, range boundary, section boundary and beat boundary and the Management layer showing all the forest blocks covered under the revised plan was prepared by digitizing Survey of India topographic sheets at the 1:50,000 scale. This work was undertaken by ORSAC, Bhubaneswar.

b. **Satellite data preparation:** Cloud free, optimal season multi-spectral and panchromatic satellite data was used in the study by NRSA and ORSAC. All data sets were geo-corrected with respect to the base layers adopted in the study. Quality standards followed in various national projects carried out by ISRO/DOS were followed by NRSA/ORSAC.

c. **Mapping Forest type**: Multi-season IRS LISS-III satellite data was used to prepare a forest type map of the Angul Division by NRSA. The discrimination of major phenological types and gregarious formations was based on hybrid classification methods and resulted in map products in the 1:50,000 scale. In addition to the forest types major non-forest/ land use classes was also depicted. The division area is covered with different land cover categories viz., Sal, Mixed Sal, Miscellaneous forests, agriculture, plantations, orchards, water, sand, scrub, etc. The classification was done using supervised classification approach with maximum likelihood algorithm as has been described in Chapter II A. Two optimal seasons IRS LISS III scenes were selected for the classification process. These scenes were geometrically rectified with reference to the master images of UTM projection and WGS-84 datum. The classification of the image started with the identification of a homogenous area in terms of spectral properties based on which particular land cover classes can be discreetly separated based on some measure of statistical distance between them. The representative areas of different land cover classes especially the forest classes were delineated based on reflection properties and confirmed during repeated field survey. The forest vegetation in the Angul Division being very complex, the final classification was achieved after several rounds of iterative processes. In the final step, the final set of inventory data helped considerably in terms of the species composition and its abundance. Through the phyto-sociological analysis it was observed that the ground inventory points could be separated into three discreet classes – forest with >66% Sal dominance (named as “Sal”); forest with 1-66% dominance of Sal (named as “mixed Sal”); and the remaining forest with miscellaneous composition. The distributions of inventory points belonging to these three classes were taken into consideration while classifying them using relatively pure signature sets.

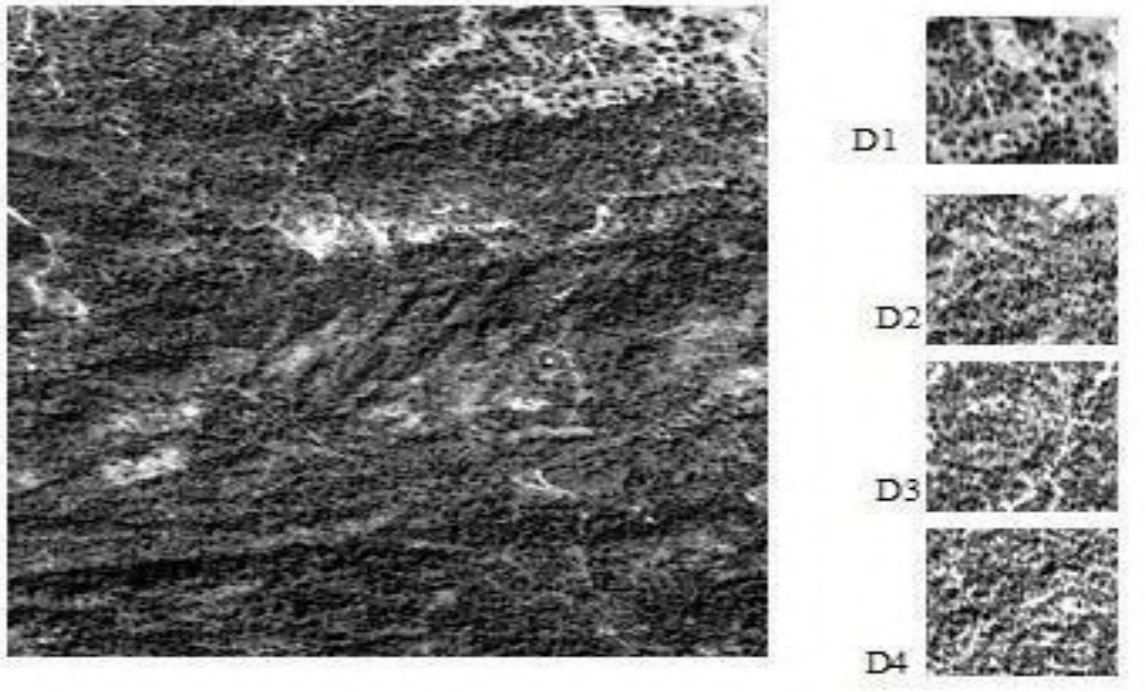


Fig 10.2 IRS Pan data for forest crown density mapping from least (D1) to most dense (D4) crown density classes

d. **Delineating forest canopy density**: IRS Panchromatic satellite data with a spatial resolution of 5.8 m was used by ORSAC to prepare a forest canopy density layer for the Angul Division using visual interpretation methods. This data set enables the discrimination of 5 canopy density classes with a 20% interval and the resulting map products will be compatible with the 1:50,000 scale. This layer is a very important component of the forest stock map. Based on the interprtation key developed as shown in (**Fig No. 10.2**), the IRS P6 PAN data was interpreted for forest crown density delineation "on screen" based on standardisation and correlation from field experience along with ancillary information available. A GPS aided pre and post interpretation ground truth data was collected and acceptable accuracy as per the SOP Forestry manual accuracy levels was ascertained. IRS Panchromatic satellite data with a spatial resolution of 5.8 m was co-registered to IRS LISS III data provided in UTM projection and WGS-84 datum by NRSA. The following canopy density classes, 10-25% crown cover, 25-40% crown cover, 40-70% crown cover and >70% crown cover (<10% crown cover/scrub was kept separate as they do not hold appreciable timber quantity) were delineated using onscreen digitization method. The crown density layer of Angul division has been completed with various rounds of field check and quality.

The Crown Density data set provide an input to generation of stratification base to understand the variability of growing stock at different forest compartments and helps in optimally designing the ground inventory for growing stock assessment. The crown density has been mapped at 1:15,000 using IRS 1D PAN data with a spatial resolution of 5.6m. At this resolution the crown density can be delineated using panchromatic satellite data. The distribution of the crown density classes for the entire division as well as for the six .

e. **Geo-database organization**: The above input layers were integrated and organized in geo-databases. Metadata, codification, projection, layer types completeness and correctness etc. were in accordance with the standards followed by ISRO/ DOS in various national projects

10.02.6Sampling Design:

The objective of field inventory was to provide estimates of the growing stock of economically important species. Inventory design was based on a stratified sampling design based on the forest canopy density and forest type layers generated using satellite remote sensing. A pre-inventory was first carried out to assess the variability within and across strata. Sampling intensity, inventory point allocation at the compartment/ division level and allowable sampling error, and approaches to optimize the inventory effort for the project was deliberated on and recommended by the technical committee in the meeting of Project Execution Committee and Project Management Committee.

The entire division comes under Rehabilation Working Circle (Improvement Working Circle for Angul Division) and Non Selection Working Circle (NSWC) based on historical information of growing stock and as per the approval of 2nd PWPR. Accordingly it was planned to generate stand and stock and yield information at compartment/coupe level for the Selection Working Circle Improvement Working Circle (IWC) areas and only growing stock information at forest block level for Non Selection Working Circle (NSWC) areas. Based on this suitable sampling design and estimation procedures were followed to address the requirements of and NSWC areas. An optimal sampling design with high precision in the estimate was adopted to address the large variability of forest composition and stock in the division. The precision of the sample estimate of the population depends not only on the size of the sample but also on the variability in the population. When the variability in the population was very high, the sample variance was reduced by dividing the population into number of homogenous vegetation strata and then selecting the inventory points randomly. This procedure is called as stratified random sampling. The use of stratification was very convenient with the advantage of forest type classified map and forest crown density map available from remotely sensed data. Therefore to optimize the intensity of ground inventory and enhance the precision of the estimates, stratified random sampling procedure was adopted for growing stock assessment.

One of the major information requirements for the RWC areas is the growing stock and yield levels of Sal, Asan, Moi, Dhaura , Karada and other Non Sal species. Therefore to account the spatial variability of these compositional classes and guide the field inventory, forest type map as shown in the Chapter-II was used as one of the strata. In addition, the forest crown density, which serves as surrogate for growing stock, was used to further subdivide the each forest type class into two crown density classes. The forest type map used for inventory purpose has two strata viz; Mix Sal and Misc. and crown density map has two strata viz 10-40% and >40%. The area of these strata at different management and administrative units were then generated for the subsequent use in sampling design and estimation.

The precise sample estimates are generated based on adequate sample size and its distribution pattern and finally estimation procedure followed against a defined error, time and cost limits. Sample size and distribution was determined in consonance with spatial variability in the strata distribution and growing stock conditions. 343 number of sample points of 0.1 ha. area based on type stratification were distributed randomly across the entire division as pre inventory points to understand the spatial trends in the variability of growing stock and estimate the sample size. Based on the spatial semi variance estimated using geo statistical analysis of the pre inventory data, it was estimated to have ~0.01% , ~0.05%, ~0.07 and ~ 0.6% sampling intensity for <10%, 10-40%, 40-70% and > 70% crown density strata respectively with maximum distance of 1km between each sample point. Taking this sampling intensity as a rule, sample size was determined for the four strata mentioned above. The total number of points thus allocated for each strata were further reallocated over all the compartments based on the probability proportion to the size of the strata present in each compartment. The sample points allocated over compartments were distributed randomly across the strata maintaining a maximum distance of 1Km between each point. **(Fig. 10.3)** The number of points distributed in different ranges and strata are given in the **Table No.10.2**. and details of sampling intensity is given in **Table No 10.3.**

Inventory points were allotted at the compartment level. Inventory points were located on the ground using GPS receivers. As an alternate method inventory points were also transferred onto 1:50,000 scale SOI topographic sheets for sake of convenience.

Table No. 10.2: Range Wise Distribution of Sample Points

Range	>70% crown cover	40-70% crown cover	10-40% crown cover	<10% crown cover	Total
Chhendipada	1	47	20	1	69
Jarapada	9	45	24	1	79
Kaniha	0	1	28	5	34
Angul	12	55	14	1	82
Bantala	6	36	5	0	47
Talcher	0	2	13	17	32
Grand Total	28	186	104	25	343

Source: NRSA, Hyderabad

Fig. 10.3

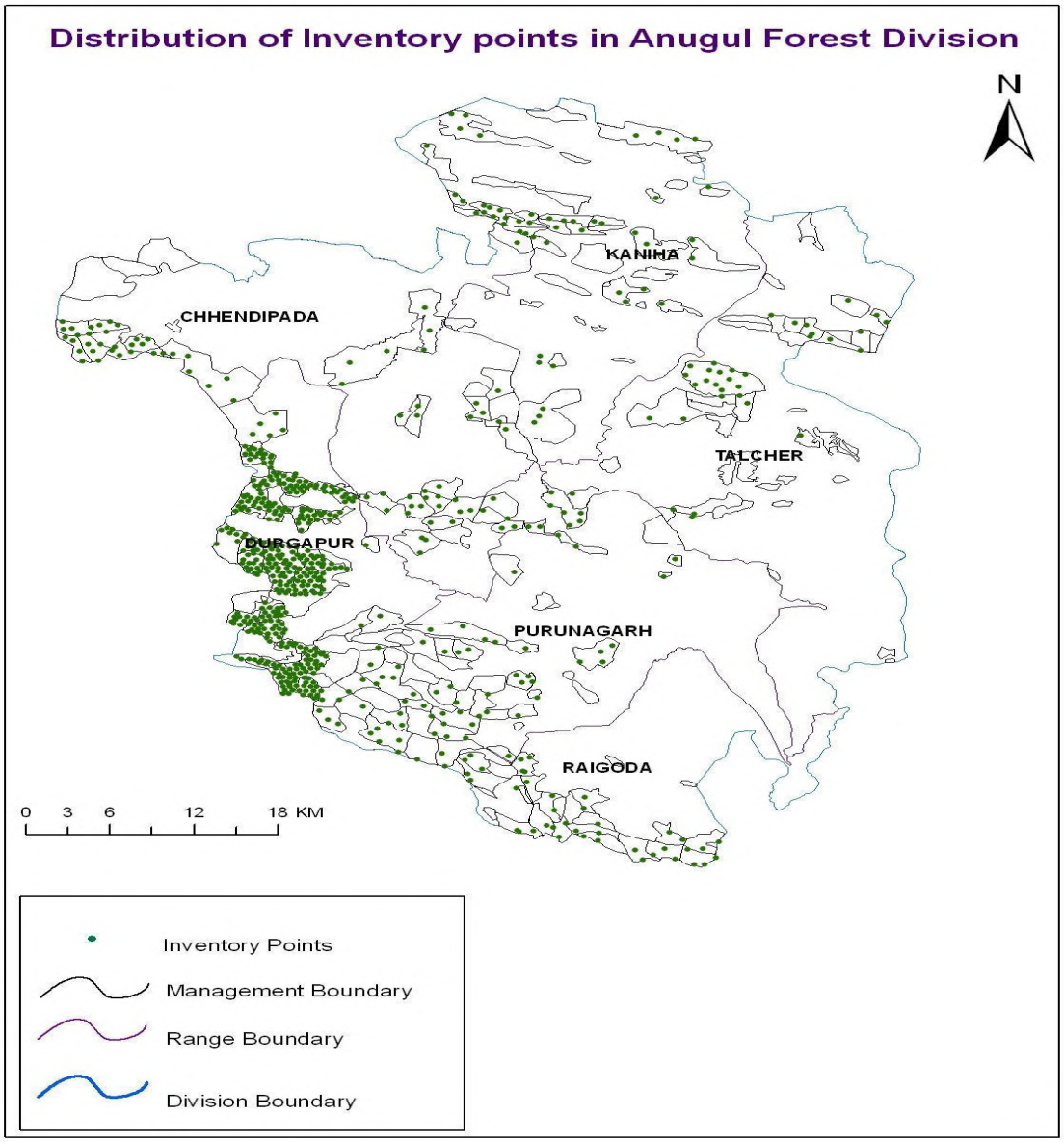


Table No. 10.3 Realized sampling intensity

Working Circle NSFC

Sl. No	Strata	Area in Ha	Plot	Sampling Intensity
1	>70%	4607.87	28	0.0608%
2	40-70%	25,508.02	186	0.0729%
3	10-40%	22,242.06	104	0.0468%
4	<10%	18,317.48	25	0.0136%

OVERALL

Sl. No	Strata	Area in Ha	Plot	Sampling Intensity
1	>70%	4607.87	28	0.0608%
2	40-70%	25,508.02	186	0.0729%
3	10-40%	22,242.06	104	0.0468%
4	<10%	18,317.48	25	0.0136%

10.2.7 Forest Inventory

The field inventory was carried out by field staff of Working Plan Division, Balasore. Inventory crews were trained and equipped in accordance with the inventory manual prepared by NRSA/ORSAC.

The sample points distributed over the compartments were overlaid on the 1:50,000 scale Survey of India (SOI) map. The locations of sample points and plot enumeration details are enlosed**.** The sample point location maps along with latitude and longitude positions were provided to the field party. A field inventory workshop and orientation camp was organized for all the field officers to train them about the methodology, use of GPS and different types of maps and maintain uniform methodology across the teams. Field inventory manual detailing all the steps of data collection was provided to field officers.

10.2.8 Collection of Inventory Data: The enumeration sheets given to field staff consisted of 3 formats such as Form No. A, B, and C.

i. Form No. “A” meant for recording of data of situation of the point its longitude, latitude, map index, landscape, forest type, slope, soil type and texture, reference point etc. and about the identity of enumeration party including regeneration survey.
ii. Form No. “B” for recording enumeration result of different forest species of a particular point within 0.1 Ha. area beyond the girth class of 31.4cms. Including clear bole height and tree height.
iii. Form No. “C” meant to record information of bamboo enumeration. The growth of the bamboo, circumference of the clumps in meters, culms height in mtrs., number of culms existing in clumps in 1st Year, 2nd Year, 3rd Year , 4th Year and above. Data generated by the field inventory crews were entered into the inventory database. The data collected through point enumeration were compiled and all data are sent to NRSA for further analysis. This data was integrated with the geodatabase.

10.2.9 Data Analysis and Outputs

After the final phase inventory was completed, the total inventory data was overlaid on the forest type/ crown density intersected layer. For the estimation of growing stock, the crown density map was collapsed into two major classes: Scrub,10-40% , 40-70% and >70% crown density class. Similarly the Forest type layer with two major classes were utilized – Sal Dominated, Mix Sal and Misc. The forest type with three major classes was intersected with the crown density layer with four major classes as mentioned above. Thus the seven main spatial strata were obtained. Similarly, the inventory points, spatial layer was intersected with the seven strata with the infrastructure layer.

First of all the timber volume was computed for each inventory point for the identified economic species as well as for the pooled "misc." category. The timber volume was computed using the volume equations provided

Now, for each compartment, based on the mean value for the plots falling in each stratum, the stand and stock for each economic species was computed. The stratum in the compartments where we have at least three sample points are called "represented " where we can extrapolate the mean timber volume for the specific stratum. The remaining strata are called "unrepresented for which minimum number of inventory points are not available. As the compartment number is fairly large, it was not optimal to have at least three points in each stratum in each compartment. Moreover based on the remotely sensed data as well as sample points it is known that similarity do exist amongst the compartments in terms of volume ranges and species composition. In order to resolve this, the similar compartments were grouped into zones in terms of context, neighborhood, physiography, terrain and species composition. Thus, for the unrepresented stratum in the compartment, the zone level mean for the particular stratum was taken and the value for the stand stock was computed. Finally compartment wise total stand and stock table was computed by adding up the contributions from each stratum, finally the stand and stock table is prepared for the entire division**.**

The distribution of different species as per the field enumeration data across the remote sensing based forest type strata is shown in **Fig. No 10.5.** The predominance of miscellaneous species and Sal in the respective strata can be very well observed. This indicates the role of stratification in controlling the growing stock estimation with reference to species predominance. The distribution of the total number of trees in the SWC area of the Divisions is provided in **Fig No. 10.6**

The total estimated number of trees & volume in different girth classes of the total Division is given in **Table 10.4**. The estimated no. of trees are **12,402,596**& volume is **2,096,733 cu.m**. The distribution of total no. of trees & volume in different working circles at Division level area given in **Fig. 10.6 &10.7**.

Table: 10.4 - Total estimated Trees & Volume in Angul Division in Different Girth Classes.

Girth Class	Total Trees	Total Volume (cu.m.)
30 – 60	9,710,463	1,012,666
60 – 90	2,146,283	597,963
90 – 120	396,008	245,365
120 – 150	100,108	110,184
150 – 300	49,734	103,556
Total	12,402,596	2,069,733

Source: NRSA, Hyderabad.

Fig No 9.6

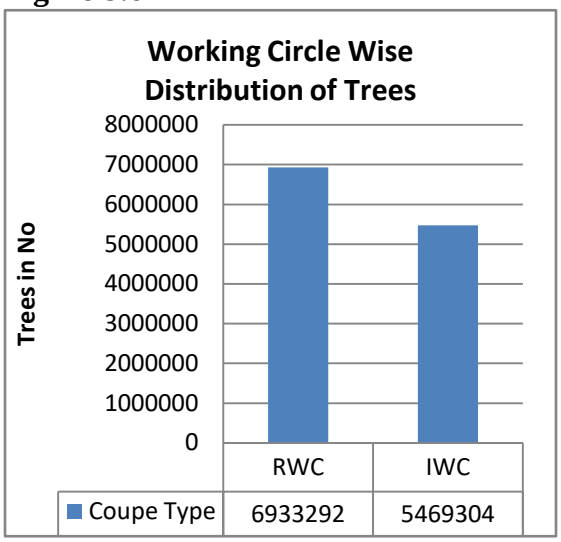
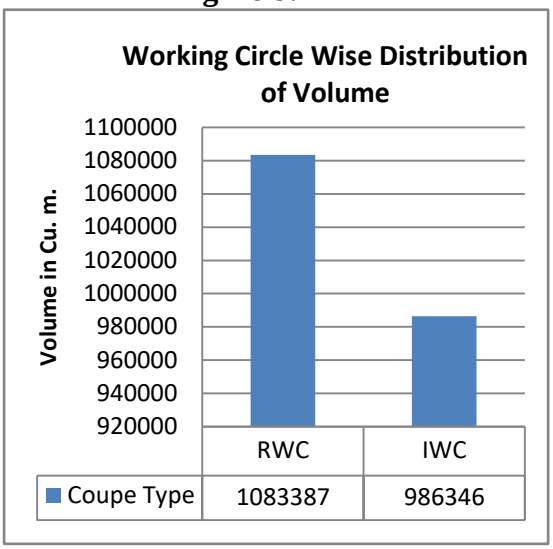


Fig No 9.7



Working Circle Wise Distribution of Trees & Volume		
Coupe Type	Trees	Volume
RWC	6,933,292	1,083,387
IWC	5,469,304	986,346
Total	12,402,596	2,069,733

10.2.10 Range wise details of estimated no. of trees & volumes is provided in **Table No. 9.5**. Range wise stand & stock table for RWC area .

Table no. 10.5. Range Wise Distribution of Trees & Volume

Range	No. of Trees	Volume in Cu.m.
Chhendipada	2,841,251	450,255
Durgapur	3,008,818	624,720
Kaniha	1,112,984	186,424
Purunagarh	3,181,418	503,656
Bantala	1,579,945	202,036
Talcher	678,181	102,644
Total	12,402,596	2,069,733

Source: NRSA, Hyderabad.

Block level & Compartment level stand & stock**.** Major species which constituted 70% of the total number of trees samples collected were only included in the stand & stock table.

10.2.11 Yield Calculation

The yield will be regulated by area with a percentage check on the removal of exploitable trees as calculated by Smythies' safeguarding formula. This formula is also known as U. P. safeguarding formula. Smythies evolved it for the Sal forests of Uttar Pradesh for sustainable yield. The formula is based on the following assumptions, which holds true for the forest blocks allotted to this Working circle.

i. The exploitable (Selection) trees already exist and are being recruited almost throughout the area (and not in any particular compartments) and that fellings pass regularly through the forests in consecutive annual coupes in a felling cycle of 10 or 20 years.

ii. The basic object of management is to ensure, as far as possible, sustained yield of exploitable trees and volume 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) is not likely to decrease in the near future.

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.

According to the **Smythies' safeguarding formula** the number of trees in approach Class - II (A) trees (out of which) per hectare that pass into Class - I i.e. within the felling cycle is determined by following tree formula.

$$X = \frac{F\ (II - Z\ \%\ of\ II)}{T} \quad \text{----------} \quad (1)$$

Where

X = Number of trees in approach class that passes into the exploitable class within period of felling cycle.

II = No. of trees in pre- exploitable girth class or approach 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. i.e. taken as 45% for Angul Forest Division considering the local biotic pressure on the forest.

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

$$Y = \frac{2\ F\ II\ (100 - Z)}{200\ I\ T + F\ II\ (100 - Z)} \times 100 \pm A \quad \text{----------} \quad (3)$$

The value of 'T' is 36 years for average site quality III in respect of irregular Sal forests of Ramnagar Forest Division. This is slightly less than that obtained from the yield table. The values of 'T' and 'Z' as per yield table are 39 years and 43 %. Since it is forests on undulating topography, the value of 'T' and 'Z' is taken as 40 years and 45 %. Substitution of these values of 'T' and 'Z' in equation (3), we get

$$Y = \frac{1100\ II}{8000\ I + 550\ II} \times 100 \pm A$$

A. *or,*

$$Y = \frac{22\ II}{160\ I + 11\ II} \times 100 \pm A$$

Details of improvement series wise calculated yield are given in the Chapter on Improvement Working Circle in Part II for the sake of academic interest as there is no regular felling prescribed.. The values of Volume and Stem Density both for the Approach and Exploitable class of trees is provided in **Fig 10.8** and **Fig 10.9** The estimated number of trees and estimated volume of the below exploitable diameter classes and above diameter classes range-wise is provided in **Table No. 10.6.**

Table No 10.6 Estimated No. of Trees & Volume Above & Below Exploitable Class

No of Trees							Volume in cum					
Coupe Type	30-60	60-90	90-120	120-150	>150	Total	30-60	60-90	90-120	120-150	>150	Total
RWC	5,525,162	1,148,677	191,527	46,307	21,619	6,933,292	558,161	315,768	115,798	50,532	43,129	1,083,387
IWC	4,185,301	997,606	204,481	53,801	28,115	5,469,304	454,505	282,195	129,567	59,652	60,427	986,346
Total	9,710,463	2,146,283	396,008	100,108	49,734	12,402,596	1,012,666	597,963	245,365	110,184	103,556	2,069,733

Fig 10.8

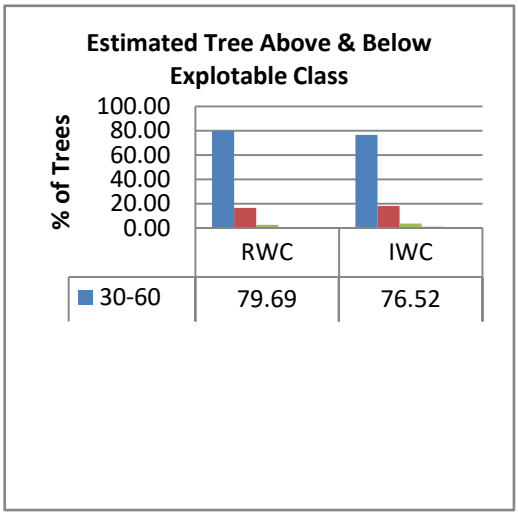
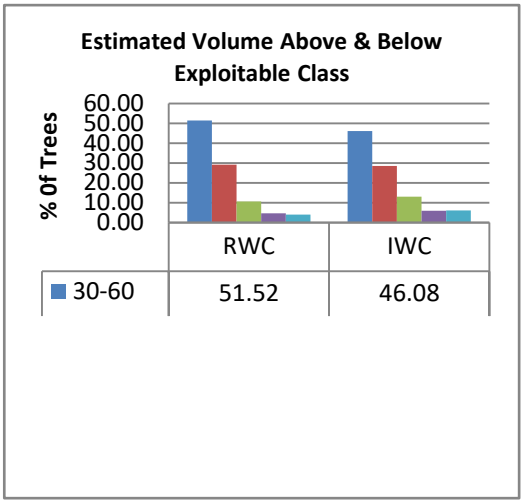


Fig 10.9



10.2.12 ENUMERATION AND ANALYSIS OF BAMBOO:

Bamboo enumeration has been taken up during sample point enumeration in the field. The bamboo clumps available inside the main plot have been enumerated simultaneously with the tree enumeration and recorded in Form No "C" with detail of clump circumference, culm height and age of culm, like 1st Year, 2nd Year, 3rd Year & 4th Year etc.

10.2.13 Quality Class of Bamboo:

Unlike the quality class of the Sal, the bamboo have been classified into three quality classes as per the culm height as shown in **Table No.10.7**.

Table No.10.7 Quality Class of Bamboo

Quality Class	**Height of Bamboo culm in Metres.**
Quality Class – I	Culm height 9 Mtrs. and above.
Quality Class – II	Culm height between 6 Mt. To 9 Mt.
Quality Class – III	Culm height less than 6 Mts.

Statistics of growing stock of Bamboo:

Effort has been made to estimate the growing stock of the bamboo. For this it is necessary to first calculate the total number of clumps in a unit area (i.e. per Ha.), this when multiplied by the total bamboo producing area of the Division gives the total nos. of clump in entire Division. Similarly when total nos of culmps multiplied by the average number of culms per clump gives the total numbers of culms in the Division.

10.2.14 Estimation of Sale Units (SU):

Efforts have also been made to estimate the entire production of bamboo of the Division in terms of Sale Units (SU). Mean height of Q-III is being taken as the average height of culms i.e. 6m.

10.2.15 Running Meter of Culms and Sale Unit: Total numbers of culms of Bamboo in the Division multiplied by mean height of the culm gives the total length of Bamboo. Sale Unit is the total running meter of bamboo culms in the Division divided by 2400. This gives the total sale unit of the bamboo of the Division. The quantity of bamboo involved in 2400 running metre is taken as one standard sale unit of Bamboo equals to 1 MT.

Estimatesof the total number of culms and clumps in the division along with the estimate of the production of bamboo in the Division is given in **Table No 10.8.** Detailed felling series wise estimates of growth and yield of bamboos in the Division has been covered in Part II of the plan in the Chapter on Bamboo Overlapping Working Circle.

Table No. 10.8 Abstract of Bamboo production in Angul Division.

Total bamboo bearing area of Angul Division in Ha.	6513.201
Total Bamboo area enumerated in Ha.	80
Total Bamboo clumps enumerated in numbers.	1777
Total Bamboo culms enumerated in Numbers	32639
Average no. of clumps per Ha.	49.71~ 50
Average no. of culms per clump	11
Total no. of clumps in Bamboo area of Division	323,771
Total no. of culms in bamboo area of Division	3,561,481
Average height of culm in mtrs.	5.5
Total Sale Unit of Bamboo in Division.	8161.72~8162 SU

10.2.16 Capital value of the forest:

For estimation of capital value of the forest the value of growing stock and the following assumptions has been made.

a) The data about growing stock has been estimated by analyzing inventory data collected from the field by sample point enumeration as discussed in Para 8.2.5 and the value from satellite imagery data calculated by NRSA.

b) The growing stock of the entire division has been converted in shape of round timber, firewood and bamboo.

c) The quantum of firewood obtained from the growing stock above 30 cm gbh is only 20% of total volume and rest 80% is timber. The volume of growing stock below 30 cm gbh is roughly 20% of the growing stock in the girth class 30-60 cm, which may

be calculated in terms of fire wood. The volume of firewood may be calculated in terms of MT by adopting the formula, i.e. {Volume x Average specific gravity of timber (i.e. 0.5)}.

d) One MT of firewood is equal to 3 cum, as one standard stack of firewood size is 12' x 3' x3' = 108 cft. or 3 cum.

e) The entire stock of bamboo is calculated as if converted to industrial bamboo.

f) The felled materials is disposed off at the stump site and the cost of production is only towards felling and conversion which has to be deducted from selling price to arrive at in-situ capital value of forest.

g) All the collected materials are disposed off through the OFDC Ltd.

h) The capital value includes the value of environmental services i.e. ecological value rendered by forest.

Thus the measure of the capital value of the forest of Angul Forest Division can be broadly categorized in to the following two measure heads.

1. In-situ capital value of the growing stock of the forest (value of biomass).
2. Capital value of the environmental services provided by these forests

Capital Value of the Forests can be estimated basing upon the following parameters such as -

a. Value of the forest from yield of timber
b. Value of the forest from sale of fire wood
c. Value of the forest from the yield of bamboo
d. Value of the forest from the yield of Kendu leaves
e. Value of the forest from the sale of the NTFP

The Angul Forest Division comprises of 87 Reserve Forest Blocks and 29 Proposed Reserve Forests and 05 Demarcated Protected Forests stretching over GIS area of 69836.484 Ha. In all these forest blocks, the forest type, crop composition and density vary. It is quite essential to arrive at the details of the total growing stock of all the constituent forest blocks (Plan area) for the estimation of capital value of the forests. The sample enumeration exercises conducted in 72 forest blocks of the division, which cover almost 85.8 % the forest areas/ blocks (Plan area) of the Division. The analysis furnished by NRSA for the sample enumerated blocks are taken and in the rest of the areas the details of growing stock are collected through law of averages as provided by NRSA and through reconnaissance surveys. So the capital value of the forests is calculated from the field exercises and projection of satellite imagery by NRSA.

For the estimation of the capital value of forests, certain facts which are presented below, have formed the basic data.

a) The total area enumerated through 343 sample points of 0.1 ha each equal 34.3 ha. which is 0.048% of the total forest area of the plan taken as the management area for the purpose of this working plan.

b) Enumeration has been done in 72 forest blocks out of 121 forest blocks.

c) The criteria for enumeration has been fixed to 0.1 % of the forest areas of RF/ PRF/ DPFs, but the percentage of sample points was reduced to 0.02% by NRSA and ORSAC after analyzing the crown density and satellite imagery data. The GPS

coordinates for sample points were provided by ORSAC and NRSA basing upon the stratification through satellite imagery. As a result, stock mapping of the growing stock has been carried out for the entire Division by ORSAC.

d) Comparison of such enumeration data with previous data could not be feasible because of different methodology adopted and non-availability of complete enumeration data.

e) Local volume equations, which are developed by FSI based on their inventory conducted in different parts of Orissa, have been used in estimating the volume of the growing stock.

f) Thus the capital value of the forest for timber and firewood is calculated for all the forest blocks.

g) The unit volume of timber has been calculated by the method as prescribed by the office of the Principal Chief Conservator of Forests, Orissa vide Memo No. 12224(4)/ 5F S.T. –20/81 dt07.06.1982 and Memo No. 5F.S.T.- 2083 – 17544 dated 04.19.87. As per the directions in these circular the unit volume is given in **Table No. 10.9.**

Table No. 10.9 Ratio for conversion into units

Girth Class in Cm.	Class species		
	1st Class	2nd Class	3rd Class
Les than 60 Cm.	0.25	0.12	0.06
60 to 89 Cm.	0.50	0.25	0.12
90 to 119 Cm.	1.00	0.50	0.25
120 to 149 Cm.	2.00	1.00	0.50
150 to 179 cm.	4.00	2.00	1.00
More than 180 Cm.	6.00	3.00	1.50
1st Class species	Sal, Piasal, Sisoo, Bandhan, Gambhar, Halnda		
2nd Class species	Kasi, Asan, Mango, Kendu, Jamu,		
3rd Class species	All others except Teak and sandal wood.		

Unit Price : Unit price of the forest value is a variable which depend upon the

(a) Availability of forest produces in the market.
(b) Fluctuating market demand and supply.
(c) Rate of inflation in the market.

These parameters are responsible for raising/dropping of the unit price of forest produce such as timber, and NTFP. Owing to the closure of coupe working in different forest divisions by the State Govt. from 1992-93 onwards, the unit price structure is not readily available. However we have to rely upon the unit price of the previous years to calculate the average unit price of the timber and other NTFP forest produce. The unit price of timbers of the years 1991-92 and 1992-93 is given in Table No 9.10.

Table No. 10.10 Rates of increase in Unit rates

Year	Unit rate (In Rs.)	Rate of increase (%)
1991-92	210	
1992-93	231	10%

Taking the rise in unit price at 10%, the unit price would be Rs.798/-

10.2.17 In situ capital value of trees: Arriving at the total number of units, Unit value for each girth class X (multiplied by) total no. of trees of different girth class (given in **Table No. 10.5**). This total no. of units are multiplied with average unit rate derived for the current year i.e. Rs.798/- to get the capital value of Timber above 30cm. girth class.

10.2.18 Capital value of Firewood for trees below 30 cm girth. This item is calculated on the basis of the following assumed projection:-

i) Volume of Fire wood for the trees below 30Cm. girth has been assumed to be roughly 20% of the growing stock in the girth class 30-60cm.(Approved by the Working Plan Committee while approving 2nd PWPR)

ii) The weight of Firewood in M.T has been calculated by multiplying the volume with average specific gravity of the timber of various species. In the instant case this varies from 0.33 for Simuli to 0.745 for Sal and the average is taken as 0.5 for the whole lot for simple calculation.

iii) The present value of Firewood is taken as Rs. 1200/- per metric tonne.
Calculation of value of Fire wood and timber given in **Table No. 10.11**

10.2.19 In-situ capital value of Bamboo: The enumeration of the Bamboo crop was done on the sample point plots in RF/PRF and DPFs of the Division. The details of enumeration are shown in the chapter on Bamboo Overlapping Working Circle in Part II of this revised working plan. The average no. of clumps per ha in the enumerated blocks are 73.55. and average no of culms per clump in the enumerated blocks is 17. The quality class of bamboos in the Division is Q – III and the average height of bamboo culm is can be taken as 6 meters. From this the total no. of Sale Units are calculated. The average rate of royalty in 1998-99 is Rs. 616/- per SU. It may increase during subsequent years due to inflation of price index of the market. However for sake of calculation the rate of Rs. 616/- per SU can be taken into account. Calculation of Sale units of Bamboo: {Total Number of harvestable bamboo for each coupe X 6 Mts. / 2400 Mtrs.} = No of Sale Units.

10.2.20 Kendu Leaves: Kendu leaves is produced in the entire division under Angul (KL) Division. In the last five years from 2000 to 2004, the average production of Kendu leaves was 10239 Qtls. and average selling rate per quintal was Rs. 3090.25 per qtl. Therefore, the total value of the kendu leaves produced in this Division area per year is Rs.316.41 lakhs.

10.2.21 Non timber Forest Produce: A number of NTFP items are collected from the forests of Angul Division. The accounts of various products and their evaluation for the entire item could not be possible due to want of suitable data. But instead of money value, the livelihood needs of primary collectors at Gram Panchayat level is given more importance. However, based on the available data and field studies, valuation of NTFP items is listed in **Table No. 10.15** is made and presented.

10.2.22 IN SITU CAPITAL VALUE OF THE GROWING STOCK (FORESTS): The forests of Angul Forest Division provides Timber, Firewood, Bamboo as well as many Non timber forest produces and a variety of medicinal plants / parts of the plant. We could assess only for a few items for which data are available. The value of the forests for it's Biodiversity and the absorption of carbon dioxide and sequestration of Carbon is to be also added. The valuation of Biodiversity and carbon sinking capacities of the forests of this Division has not been taken and needs to be added.. For the purpose of assessment of capital value of the forests at present state, only the value of timber, firewood, bamboo, kenduleaves and a few NTFP items have been considered and the details of such assessment are presented in **Table No. 10.15**. The estimate is very conservative for the growing stock and real value of the forests will be much more.

10.2.23 Assessment of growing stock (forests) of Angul Division above 30 cm gbh:

Volume of growing stock from trees above 30 cm gbh = 2,069,733 cum.

i. Estimated timber production from the growing stock above 30 cm gbh = (80% of the growing stock) = 1,655,786.4 cum.
ii. Estimated firewood from growing stock above 30 cm gbh = (20% of growing stock) = 413,946.6 cum.
iii. Quantity of fire wood in MT = estimated volume of fire wood x specific gravity, i.e. 0.5 = 206,973.3 MT.

10.2.24 Assessment of growing stock (forests) of Angul Division below 30 cm gbh:

i. Volume of growing stock from trees below 30 cm gbh = 20% of growing stock in the girth class 30-60 cm in terms of fire wood. (i.e. 20% of 1,012,666 cum.) = 202533.2 Cum.
ii. Volume of fire wood from the growing stock below 30 cm gbh = 232533.2 cum.
iii. Quantity of fire wood in MT = 232,533.2 x 0.5 = 116,266.6 MT.

Table No.10.11 Estimated Production & Revenue

Sl. No.	Item	Quantity	Sale price or Market value	Production cost	Net capital value in crores
1	Timber	2,069,733 cum	Rs 28773/ Cum	Rs 3700/ Cum	5189.44
2	Firewood (>30Cm. gbh)	206,973.3 MT	Rs 2555 per MT	Rs 500/ MT	42.53
	Firewood(< 30 Cm. gbh)	116,266.6 MT	Rs 2555 per MT	Rs 500/MT	23.89
3	Bamboos	8162 SU	Rs 616 per SU	Excluding cost of production	2.57
4	Kendu leaves	3530 Qtl per annum	Rs. 11763.23 / Qtl.	Rs. 9044.34/ Qtl.	0.95
5	NTFP Items (mainly sal seeds & leaves, myrabolans, siali fibers & leaves, Mohua flowers)	Sal seeds-50 MT, Siali fiber-66 MT per year	Varies from Item to Item	Excluding cost of production	0.25
Total					5,259.63

10.2.25 Imputed Capital value of the forests of Angul Forest Division on Environmental Services.

The Forests of this Division is vast treasure of biodiversity and other valuable resources evolved out of rapid growth of civilization and science. For evaluation of environmental benefits a perfect method has not yet been standardized and as such actual environmental valuation of the forests is not possible. However norms have been suggested by Govt. of India in their letter No. 11-16/85 FRy (CONS) dated 15.1.1985 for computation of environmental value of the forests. As per these norms, the environmental value of 1 Ha of fully stocked forests having a density of 1.0 is 126.74 lakhs to be accrued for a period of 50 years.

10.2.26 The density of the forests of this Division varies from fully stocked to blank patches. Here the different forest blocks have been classed into groups of <10%, 10-25%, 25-40%, >40% density (**Table no 10.12**) and the environmental value of these density groups is calculated. The details of such calculation are presented in **Table No. 10.13.**

Table No. 10.12. Statistic of Area (in ha.) under different Crown Density, Angul Forest Division.

DENSITY CLASS				
<10%&Blank areas	10-40%	40-70%	>70%	Total
20,508.73	20,485.89	25,507.92	4,607.84	71,110.39

Table No. 10.13 Valuation of environmental services of forests of Angul Division

Density Class wise forest	Density Class	Average Density	Gross Area (Ha.) (Actual Density)	Net area in Ha. Converted to 1 density	Ecological Value per Ha. Per Year.	Calculated Ecological value in crores.
Dense	> 70%	0.15	4,607.84	691.176	10,43,000/-	153.79
Partly degraded	40-70%	0.55	25,507.92	14,029.356	9,39,000/-	147.29
Highly degraded	10-40%	0.25	20,485.89	5211.472	7,30000/-	102.78
Scrub	< 10%	0.05	20,508.73	1,025.43	7,30,000/-	22.50
		TOTAL	71,110.39	21,137.434		426.36

1. In-situ capital value of the growing stock of the forest. -Rs 5,259.63 crore

2. Capital value of the environmental services provided by these forest or its ecological value per year -Rs 426.36 crore

TOTAL - Rs. 5,685.99 crore

CHAPTER - 11

11. MISCELLANEOUS REGULATIONS

11.1 GENERAL CONSIDERATIONS.

This chapter deals with those important activities that concerns the whole Division and includes mostly all those prescriptions, regulations and recommendations which are not made earlier in the main Working Circles. Therefore, the prescriptions made here would be applicable to all the forest blocks (unless and until specified other wise) included in the revision. Some of the important subjects for which regulations have already been prescribed are also re- emphasis here.

11.2 MANAGEMENT OF BALANCE AREA (MISCELLANEOUS)

This includes the balance forest area not covered under any Working Circle. The area statement for such areas is given in Table

Sl.No.	Name of block	Compartment No.	Area in ha.	Objective of management	Agency for management
1	2	3	4	5	6
A. Preservation Plot.					
1.	Antulia-Tabada.	5	12.63	Preservtion plot	Silviculturist for Ecological Study Orissa,BBSR
B. Research gardens.					
2.	Chhendipada	-	28.00	Forest Research	-do-
3.	Kosala	-	76.00	-do-	-do-
C. Forest Villages.					
4.	Similipathar	2	68.799	Dahimal Forest Village	D.F.O.Angul

Area shown in category A & B shall be fully managed by the Silviculturist, Orissa, Bhubaneswar according to his research programmes. Management of area under category C shall be looked after by the Divisional Forest Officer, Angul as per prescriptions regarding improvement of these forest villages.

11.3 FOREST CONSOLIDATION.

As stated in Part I, the consolidation of forests has been grossly neglected in the past. In fact, only one further RF blocks could be notified during the outgoing plan and even in the intervening period though 29 numbers of PRFs and another 5 numbers DPFs blocks have been pending. All the pending blocks need to be notified u/s 21 of OFA during this plan period. Utmost priority is to be given to this work and a phased programme is to be drawn by the DFO and pursued vigorously with the Collector/Forest Settlement Officer (FSO) for final

notification of all such blocks as RF for better and intensive forest management. More over, large patches of good forest are existing in Kaniha, Durgapur and Purunakote Ranges without any demarcation. Further other forest areas as per DLC report and borne in the Revenue records especially large areas with good tree growth should also be converted to RF/PFs for better management. New reservation proposals for areas having good forest cover and/ or coming within the identified wildlife corridor should also be submitted after proper survey, demarcation on the ground and mapping.

As DPFs and PRFs have been notified long back i.e. more than four decade, these blocks may need fresh redemarcation to ascertain their exact location, size and area. In fact, in many such blocks, the boundary lines are not traceable leading to confusion in the field. These blocks need to be redemaracated in consultation with the FSO and assistance should be provided to the FSO to complete his enquiry so that the final notification is facilitated. The DFO should sincerely pursue all the pending proposals and facilitate the notification in a fixed time frame. Since in all 34 number of such blocks are to be attended to, every year at least 10 number of the blocks shall be pursued by the DFO for their declaration as Reserved Forests. Besides, new proposals for notification as RFs during the plan period shall also be dealt with promptly

11.4 AREA DISCREPANCY AND ITS RECONCILIATION

It has been dealt in detail in Chapter- I of Part- I that there are some variations between the notified area and digitized topo area/GIS area in case of some R.F., PRFs and DPFs. The field verification carried out vis-a-vis reference to the notification and the corresponding forest block maps revels that topo depiction is prima-facie correct. Hence the topo depicted and digitized area has been taken for the current plan till detailed survey of all these forest blocks and reconciliation of the discrepancy by the DFO during the currency of the plan. During verification of original notification, maps and records in the Division office it was found out that the scale given in the map and area computed there off are not always correct. So thorough verification of all the R.Fs., PRFs DPFs with a larger discrepancy is needed which can be done during this plan period. Details of variation provided by the ORSAC/NRSA is furnished in Table No.1.8, 1.9,1.10, Chapter- I of Part-I.

11.5 DISPOSAL OF FOREST PRODUCE

All the timber and bamboo coupes due for working shall continue to be worked out by Orissa Forest Development Corporation (OFDC). However, all silvicultural operations including thinning, cleaning and pruning must be done departmentally in addition to bamboo silvicultural operations. The disposal of NTFPs shall be as per the Government policy in vogue.

Since regular seizure of the forest produce, particularly timber is being done, the same shall be promptly disposed off not only to restrict its quality deterioration but also to fetch revenue for the State. The detail guidelines have since been issued by the Government guidelines vide letter NO.10F (TR)-23/02.15398/F&E dated, Bhubaneswar, the 31st August-2005. The said circular is enclosed here with as

Similarly, timber and firewood from dead, dry, wind fallen trees, and from leftover materials of illicitly felled trees, shall be salvaged departmentally. However, to carry out these operations, the Range Officer shall submit a plan of operation with detail enumeration list to the DFO for approval, indicating location, anticipated quality of timber and firewood available, reasons for availability and funds required for extraction etc. Salvaged materials may be handed over to OFDC Ltd. for sale as per the Government instructions in vogue. Besides, thinning materials are expected to be an important source to even meet local demands. Such saleable thinning materials may, therefore, be disposed off through local auctions or in accordance with the Government policy. Besides some materials may be available during subsequent silvicultural operation which should be disposed off through O F D C Ltd.

11.6 IRREGULAR EXPLOITATION

Generally any irregular felling should not be permitted. However, in emergencies or extraordinary circumstance (i.e. natural calamities like fires, floods, cyclones, urgent departmental requirements and socio religious functions), requirement may be met from the current year selection coupes. To meet the requirements for construction of the local Car festivals DFO should try to supply out of the departmental salvaged or UD case timbers or from the current year Improvement/Rehabilitation working coupe.

11.7 MAINTENANCE OF FOREST BLOCK BOUNDARIES.

The boundaries of various forest blocks are poorly maintained due to a variety of reasons including paucity of funds as has been elaborately explained. Non-maintenance of boundaries in the past has given scope for encroachment. During field verification, many of the boundary pillars were found missing or not properly marked. Boundary pillars of RFs are required to be periodically repaired, painted and numbered. Boundary lines are also required to be cleared and properly maintained. Details of block boundaries, e.g., length of forest boundary, number of pillars, pillar to pillar bearings and distances (along with GPS readings), and a record of maintenance of boundaries shall be meticulously maintained in the Divisional Office.

The inter divisional boundaries shall be cleared to a width of 15 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 5 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. However during the course of revision of the plan i.e. during 2005-06 and 2006-07 , DFO has taken right step to construct masonary boundary pillars out of the funds available for maintenance of boundary. Such efforts should continue.

Though plantations of Agave and Jatropha along the block boundary line has been prescribed under the NTFP (Overlapping) Circle, such prescription will cover only 100 Kms of the boundary line against the total extent of 1298.83 Kms in the Division. Hence, during the currency of the plan period, the boundary line/pillars shall be maintained as per the guidelines mentioned. Boundaries of blocks put under the Protection Working Circle will be taken up in the schedule prepared under that circle:-

A five year cycle of maintenance of boundaries and boundary pillars is prescribed with annual length of treatment being about 10 Kms. However, no specific block wise programme has been prescribed. As per actual need and funds available the DFO will decide the annual programme of the blocks to be treated in a particular year.

The inter-divisional boundaries shall be cleared to a width of 15 Mtr., external boundaries and common block boundaries to 8 Mtr. and enclosed village ring lines to 5 Mtr. Compartment lines where they do not follow natural features like nallah, road, bridges etc shall be cut to a width of 5 Mtr.

The boundary clearance of forest blocks would be taken for construction of missing pillars besides repair of existing damaged pillars. The pillars to be constructed should be of only stone or brick masonry with cement plastering and pointing. In remote areas where availability or transportation of such materials would be very difficult stone cairons with dry wooden poles at the centre is recommended.

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.

It is of vital importance thatthe field staff regularly inspects the boundaries of blocks. Every Forester shall submit quarterly certificate (1st April, 1st July, 1st October and on 1st January) of having inspected the boundaries of all the blocks within their respective jurisdictions to the Range Officers concerned, for transmission of the same to the Divisional Forest Officer. Similarly every forest guard should submit a monthly certificate of verification of boundaries of all forest blocks under his charge and it should be reflected in his tour diary.

Since all the boundaries of forest blocks have been digitized for use of GIS technology, there is need for GPS (Geographical Positioning System) reading of all the boundary pillars. The DFO shall ensure obtaining this data at the time of boundary verification and hence, the forest personnel before hand shall be trained in handling GPS instruments.

11.8 CONSOLIDATION OF AREA AND COMPENSATORY AFFORESTATION

Diversion of forest land under FC. Act-980 required area of revenue forest has been identified in the field. These area should be mutated in favour of Forest department and reservation proceedings should initiated U/s 4 of Orissa Forest Act., 1972. These newly identified patches where compensatory afforestation has to be carried out or done requires good protection efforts to ensure that the planted crop is not adversely affected by biotic interference. Such areas are not covered under this management plan, as the areas are not mutated in favour of forest department.

11.9 FOREST FIRE MANAGEMENT

Though the matter has been dealt in detail under Forest Protection Overlapping Working Circle it needs more emphasis. The implementation of the Orissa Forest (Fire protection) Rules 1979 has been very poor and fire continues to be the major threat to forest regeneration and establishment. Most blocks experience some fire every year. Fire Watcher system needs to be strengthened. The forest fringe village where the vulnerability of fire is more are to be identified. In these villages the VSS need to be motivated and incentive should be given for four months i.e. from February , March, April, May every year to prevent forest fire. The local officials of other departments should also be involved so that information regarding forest fire is obtained early for needful action . On experimental basis some NGO's may be entrusted to motivate to forest fringe villagers to prevent forest fire on payment reasonable remuneration.

Incidence of annual fire should be entered in the compartment history. Fire prone areas should be identified and precautionary steps should be taken in time. Every year fire maps need to be prepared block wise and if possible compartment wise.

Analysis of causes of forest fire, its extent and damage done to forest has been explained in the Part -1. Forest blocks vulnerable to fire based on satellite imageries have been identified in Chapter 2 of Part I. Special plans to prevent fires in these blocks have to prepared and implemented. The community around these blocks has to be made aware and with their assistance the occurrence of fire in these blocks is to be reduced. In these villages, the village level committees or VSS need to be formed and each committee is to be given incentive for three months (March, April and May) for preventing the incidence of fire and they should be motivated to protect the forests from fire. The following fire protection measures are suggested:-

All Range Officers shall maintain annual fire maps on 1:50,000 scales of their respective ranges showing incidence of fire, in order to enable them to take advance fire protection measures in fire prone areas.

Annual fire line clearance of 1 to 2-chain width in fire sensitive areas, coupled with controlled burning shall be done under the personal supervision of forester. Moreover, old fire lines, forest roads, boundary lines, village ring shall be kept clean by taking up control burning in 1-chain strip on both sides of it.

The Orissa Forest (Fire Protection) Rules, 1979 and the fire protection measures provided in the O.F.D. code shall be followed in these forests. The forest fringe villages where there is high fire vulnerability is to be identified. In these villages, the village level committees/VSS need to be formed and each committee is to be given incentive for three months (March, April and May) for preventing incidents of fire and motivate them to protect the forests from fire.

Public awareness campaign should be launched in winters to educate people especially in the fire prone areas not to resort to burning of ground flora to collect NTFP including kenduleaf. Besides, VSSs shall be actively involved in fire protection including extinguishing of firea in

their allotted area. Incentives should be announced to both public (including VSSs) and staff to protect the forests from fire. Funds for this purpose should be provided in budget.

Fire fighting teams consisting of Section Forester, beat guard and fire watchers should be formed in areas vulnerable to fire. Incidence of annual fire should be entered in the compartment history.

Imparting training to forest staff, VSS members and workers on modern forest fire management. Better communication facilities like wireless sets, vehicles etc. will be of great help to combat the menace.

11.10 GRAZING REGULATION

Estimation and analysis of grazing problem has been discussed in Chapter-2. Due to heavy cattle population pressure in the division except the interior forest blocks natural regeneration in some blocks of the forest is less than expected. For better fodder availability, following measures should be adopted:-

Along with the Animal Husbandry department and the VSS, attempt should be made to motivate the people to gradually reduce the number of unproductive cattle. They should be encouraged to procure better quality of cattle and stall-feeding through available Govt and bank schemes.

Plantations of fast growing fodder species and development of silvipasture plots in the selected high-density cattle areas may be taken up under various schemes of the govt.

Acacia nilotica (Babul), Albizzia lebbek (Siris), Gliricidia maculata (Gliricidia), Sesbania aegyptiaca (Agasti), Leucaena leucocephala (Subabul), Albizzia procera (Tentra), Grewia oppositifolia are some suitable fodder tree species. Similarly, Dichanthium annulatum, Cenchrus ciliaris (Anjan), Andropogon ascinodis, Themeda arundinacea, Setaria pumila, Eleusine indica are some suitable fodder grasses for the Division. These could be planted through the Forest Development Agency and other special programmes in suitable areas.

To regulate grazing of cattle on forest land the following steps should be taken by the DFO through his field staff:-

Forest protection unit wise area should be strictly closed for grazing at least for a period of two years to allow regeneration to be established.

Grazing will be allowed strictly basing on the carrying capacity of the forest area. Goats and Sheep should not be allowed inside the forest areas.

Lopping of trees for fodder is to be discouraged.

Grazing should not be allowed regenerating areas and where cleaning have been carried out.

All plantations shall remain closed for grazing for a period of 5 years including the year of planting.

To control the damage caused by indiscriminate grazing of forests, the Government has framed the Orissa Forest (Grazing of Cattle) Rules 1980, but the implementation of these rules at the field level has been tardy and ineffective. Therefore, during this plan period, proper implementation of grazing rules should be ensured .

11.11 MAINTENANCE OF RECORDS.

11.11.1 Register of Forest Blocks: Proper maintenance of this register is vital. Registers of Reserved forests, Protected forests, Village forest is to be maintained as per codal provisions. This register should preferably contain copies of the original notification (or an attested copy there of) declaring the forest blocks under a particular category. Accurate maps of the block delineating the boundaries and showing the position of the boundary pillars as they exist on the ground and other details like boundary lengths, number of pillars, GPS readings etc should also be kept as part of this register. All changes in area due to diversion, de-reservation along with copies of such notifications should also be maintained in the register.

11.11.2 Compartment Histories: The up dating of compartment histories has been neglected during the last plan period, which has made it difficult to collect reliable data for revision of the plan. Compartment History Files for all the compartments of the forest blocks have been prepared in three sets, which will be kept in the Working Plan office, Divisional Office and at the Range Officer for maintenance, in accordance with the standard instructions contained in the O.F.D. Code. A stock map on 1:25,000 scales showing growing stock of the compartment has been attached to each such file. Entries in the compartment histories should be completed by Range Officer before 30th of June every year and sent to the Divisional Forest Officer for onward transmission to the Conservator of Forests for perusal within 31st July. During office inspection, maintenance of compartment histories shall be checked.

11.11.3 Control Forms: Standard control forms will be used and maintained as per Rule 132 of the O.F.D. Code and Working Plan Code. In Angul Division the maintenance of control forms, deviation statements and records has been unsatisfactory in the past, as the coupe working was discontinued after imposition of ban on tree felling during last plan period.

11.11.4 Plantation Journals: Journals will be maintained for each plantations/ rehabilitation work taken up in the Division showing details of operations and their cost, in the forms prescribed in Orissa Forest Plantation Manual 1977. Maps of the plantations with all details will also be kept in the plantation journal.

11.11.5 Plantation Register: A plantation register shall be maintained at the Division level giving details of every plantation carried out like year of plantation, location, area, species planted and agency involved. A unique index number will be assigned to individual plantation, and this will also be shown in the Plantation journal. This register should not show any detail of operations, which will be shown in the plantation journals. The plantation register should be maintained as prescribed under Plantation manual 1977. The plantations taken up should be reflected in the GIS database for the division in the divisional office and the database in the GIS lab of the PCCF should also be updated in October/November each year.

11.11.6 Fire Maps: Fire maps shall be maintained as per Rule 283 (22) of the Orissa Forest Department Code. The record should be submitted annually in code Form No. 39, along with fire map to the Conservator of Forests. Burnt area shall be shown on a trace copy of compartment map and details shall be given in respective compartment history. The incidents of fire and the area burnt should be reflected in the GIS database at the Divisional level and in the GIS lab of the PCCF office.

11.12 DEVELOPMENT OF FOREST ROADS.

The existing forest roads (as per details at Table 3-28 of Chapter-III of Part-I total length of 75.5 Kms. Spread over 9 roads) are not properly maintained due to paucity of funds. These roads are important means for transportation of forest produce, supervision of departmental work and to check smuggling, illicit felling and poaching. Moreover it also serves local people and tribal who use these roads for communication.

All forest roads should be regularly maintained and made road worthy. These roads should be provided with drains (at least of size 20 cm wide and 40 cm deep) on either side which should be periodically cleared to allow runoff smoothly. Cross-drains should be provided at appropriate places on hill slopes. Existing causeways and temporary bridges should be improved. Light morrum topping of road should be done periodically so as to prevent soil loss and erosion. Roads should be repaired generally during November and December.

The concerned Range officer shall prepare a plan and estimate for annual repair/special repair after physical verification of forest roads and obtain the approval of the competent authority prior to execution of the work. In case of new construction, detail investigation and alignment of roads shall be undertaken before execution of any such project.

11.13 MANAGEMENT AND DEVELOPMENT OF BUILDINGS

There is a shortage of accommodations for the field staff in Angul Forest Division. The position with regard to buildings has been reflected in Part I Construction of new quarters for field staff is to be taken up in an urgent manner. The DFO must make sustained efforts to secure desired funds for this purpose. Possibility of construction of barracks at the Section and Beat level and family quarters at the Range and divisional level needs to be explored. The existing old buildings, rest houses and wells are also required to be repaired /renovated in a regular manner. The current allocation of funds for maintenance of buildings is grossly

inadequate and the available funds are often repeatedly utilized only for few buildings only and other buildings are often ignored. These capital assets of the Division should be regularly and, carefully maintained and their value and utility needs to be augmented.

A phased programme should be drawn up by the DFO for construction of residential and office buildings for all the staff during the currency of the plan period. A proper review of the building available and the location of sections and beats should be carried out. The requirement of buildings especially in remote isolated beats and section should be assessed and the plans submitted to the competent authorities. Electrification of all the buildings in remote Beats and Sections, where such facilities are available, should also be taken up.

11.14 SURVEY AND MAINTENANCE OF MAP

During the revision of this Working plan all administrative boundaries of the Division up to beat level has been digitized at 1:50,000 scale and all the blocks of RF PRFs, DPFs included in this plan have also digitized at this scale. A GIS database showing forest types and density type has now been created. The following maps have now been prepared through this GIS database

11.14.1 Working Plan Map: The working plan map has been prepared on 1:50,000 scale by ORSAC. The map shows different working circles. It also shows the permanent features, territorial boundaries, name of the block, number of compartments etc. One set is to be supplied to the DFO for use in the Division.

The stock map has been prepared by ORSAC in 1:50,000 scale giving details of crop composition for all the blocks included in the plan. Stock map for each compartment has even been pasted in the respective compartment history file. One complete set of stock maps has been prepared for use in the Division

11.14.2 Index Maps: Index map has been prepared on 1:1,00,000 scale. The map depicts the important towns, roads, forest blocks, river system, range headquarters, beat headquarters, section headquarters, etc of the Division.

11.14.3 Management Maps: Two sets of management maps have been prepared on 1:50,000 scale topo sheets. Annual coupes with coupe numbers in each Working Circle have been shown. One set of management maps will be supplied to the DFO and another to be retained in the Working Plans office

11.15 MANAGEMENT OF OTHER FOREST NOT COVERED IN THE PLAN.

As per District Level Committee report, an area of 1,04,121.736 ha. of forest under different categories is existing in the Division within total geographical area of 2909.542 SqKm. and, the present revision includes only 736.91 sq.km or 73690.836 ha(Notified Area). which works out to be over 70.77% of the total forest area of the Division. Thus, the remaining area of only 30,430.09 ha. is left, which the forest area, under the control of the Revenue department and private personel. These forests needs to be identified and slowly brought into the management fold. Un-surveyed land having forest, if any, should be located, surveyed and notified as PF/RF under OFA. Hence, expeditious steps shall be taken to consolidate all such good forests out of this left over area into RF blocks for intensive management.

11.16 CAPACITY BUILDING OF FOREST PERSONNEL.

The skill and the information requirementsof the staff at the beat, section and range level has undergone a lot of change in the last two decades. The interaction of these level of staff with the public, people's representative, NGOs and officials of other department has increased manifold. The following proposal may be considered by the DFO for improving the efficiency and performance of the field staff at Proper training and regular refresher courses for the field executives.

Good communication skill training to the FG/FR level

Regular in-house discussion to update knowledge of the field staff. Important relevant rulings of different Courts should be discussed & changes brought about in Forest Act and Rules in recent years should be brought to their notice. New techniques of plantation, nursery raising etc be demonstrated to the field staff.

Monthly meeting at the Range level should give opportunity to Foresters and Forest Guard to express views and opinion on various current issues. Successful tackling of situations should be discussed and analysed.

Important circulars and changes in methods/ technology/approach should be discussed at length by the DFO during monthly meeting of Range Officers

Supply of firearms to all Range Officers, Section foresters and Guards and impart arms training to them.

Frequent raids and surprise checks should be conducted in the smuggling prone areas and check gates.

Awards/Incentives should be given to the field staff for exemplary work in the protection and development activities.

Malkhanas to keep seized produce should be available in all smuggling prone areas.

Personal entitlements of filed staff especially those posted in remote areas should be disbursed at the earliest.

Some of the administrative changes as stipulated below may also be considered by the authorities concerned

Promotional opportunity to the field staff should be increased. At present most of the FGs/Foresters who are at the cutting edge of the territorial administration, are disgruntled as they are retiring without any promotion. Minimum of one promotion should be assured.

Power of Executive Magistrate be given to the ACFs and DFOs for eviction operations and forest raids/search

Secret Service Funds should be provided to the DFO to collect intelligence about timber smuggling, poaching etc.

Attractive compensatory/ rehabilitation package be given to the families of field staffs laying their life or getting badly injured on forest protection duty.

11.17 MONITORING AND EVALUATION OF IMPLEMENTATION OF PLAN PRESCRIPTIONS .

The National Working Plan Code, 2004 prescribes use of Criteria and Indicators for monitoring and evaluation of Sustainable Forest management which is the objective of this Working plan. The Criteria and Indicator as devised by Indian Institute of Forest Management (IIFM), Bhopal is given in Annexureand the location of information for indicators in the Working Plan at the Division level is provided in Annexure as published in 'Incorporation of Criteria and Indicators in Forest Working Plans' by IIFM, Bhopal.

To monitor the effect of implementation of prescription in different working circles, the DFO in consultation with CF will select at least one point where sample point inventory (0.1 ha) has been carried out in every improvement series/treatment series for periodic monitoring of various parameters including change in vegetation. This data would be used in interim review of the plan.

11.18 COLLECTION OF SEEDS OF RARE AND ENDANGERED SPECIES:

Seeds of extremely rare threatened or even endangered species of herbs, shrubs or trees of the division could be sent in reasonable quantities (20 gm. To 200 gms.) depending upon the size and weight of species to the Director, Plnt Resource Centre, Nayapalli who is maintaining a gene bank where seeds are preserved for posterity at sub zero temperatures. The species, locality of collection, habitt and the name of the Collector should be sent along with the specimens. Special preference should be given to endemic species and special varieties or stains of species.

CHAPTER—12
WATER RESOURCES MANAGEMENT

12.1 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.

12.2 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**.**

(iv) **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.

12.3 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.

12.4 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.

12.5 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. 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.

12.6 Water resources of Angul Forest Division:

Brahmani is the major river flowing in the territory of this forest division from the Rengali Dam project to Samal Barrage constructed on the river and then forming northern boundary upto Talcher and beyond a little in the east after which it flows in Dhenkanal Forest Division.The Rengali Dam Project has been constructed on river Brahmani by joining the Saleimada hill (Saleimada R.F.) and Biripal hill (Biripal R.F.) of the division, which is to a little east to Samal Barrage. The main tributaries of the river are Samakoi from north-east side and Tikira River, Singharajhora, Lingara& Nadira nala from the southern side. These five tributaries are mostly perinal and its fidding small nalas drain most of the water of Kaniha, Talcher, Angul, Chhendipada and Jarapada Range. Aunli River originates from north-west corner of the division i.e.Jarapada Range and flows in the territory of the division upto the border of Deograh Forest Division and after that in Deogarh Forest Division where it meets with Tikira River coming from Rairakhol area and ultimately meets Brahmani. Aunli along with its tributary nalas, Nuhurani drain most of the water of Jarapada and Chhendipada

Range. Detail of important river and nalas flowing in the Division are presented at Table No. 12.6.1.

Table No 12.6.1. Important Rivers / Tributaries in Angul Forest Division

Sl.No.	River/Tributary	Origin	Pass Through	Duration of Water Flow
1	Brahmani	Chhotnagpur region of Jharkhand	Enter through Rengali Dam Project, Samal barrage and then forming northern boundary up to Talcher and beyond a little in the east.	Perennial
2	Samakoi	Kalapat R.F. of Pallahara	Chhendipada and Kanhia Range	Perennial
3	Tikira (200 km)	Rairakhol Forest Division	Jarapada, Chhendipada and Kanhia Range	Perennial
4	Singharajhara (115 km)	Sarisua hill	Kuskila, Barpada & Kosala GP of Chhendipada Block and Kumuda GP of Talcher Block	Perennial
5	Lingara (176 km)	Hills located at the boundary of Athmallik & Angul Division.	Jarapada, Angul and Talcher Range	Perennial.
6	Aunli (40 km)	Rail R.F of Rairakhol Division and Sursuri Parbat of Athmallik Forest Division	Jarapada, Chendipada and Kanhia Range	Perennial
7	Nandira (56 km)	Mutukuria and Naindra join together to form Nandira	Angul and Talcher Range	Perennial

12.7 Flowing of Water: - Some ofnalas are leads to above said Jora such as Aunli, Tikira, Lingira, Nandira, Singhada, Samakoi which are tributaries of Brahamani river. Its origin duration of water flow are described in the **table 12.7.1**

Range	Name of the Nala/Jora	Originates from	Leads to	Duration of water flow
Angul	Baladahada Nala	Paranga RF	Nandira Jora	Upto January
Angul	Matlia Nala	Mandargirikalima RF	Lingira	Upto January
Angul	Mutkuria Nala	Patharagarh & Burti RF	Lingira	Upto March
Angul	Bhalukhai Nala	Landa & Mandargiri Kalima RF	Lingira	Upto March
Angul	Kudrabahal Nala	Durgapur RF	Nandira	Upto January
Bantala	Takua Jora	Burti PRF	Bauli	Perennial

Bantala	Bauli Jora	Krushnachakra PRF	Lingira	Upto April
Chhendipada	Kankhol Nala	Kanloi RF	Aunli	Upto April
	Mandalia Nala	Athamalik Division area	Aunli	Upto April
	Nuhurani Nala	Marudhipa PRF	Aunli	Upto April
	Kumbhira Nala	Devinagar PRF	Tikira	Upto April
	Gauduni Nala	Chhendipada RF	Olhani	Upto April
	Kudapasi Nala	Chhendipada RF	Gauduni	Upto March
	Olhani Nala	Chhendipada RF	Tikira	Upto April
	Atandi Nala	Brahamanbil Area	Olhani	Upto December
	Thuntimahula Nala	Kankurpal RF	Olhani	Upto January
	Gundijhari Nala	Durgapur RF	Singirha Jora	Upto January
	Kandha Nala	Kankurpal RF	Singirha Jora	Upto December
	Bainsinali Nala	Devinagar PRF	Singirha Jora	Upto January
	Kusal Nala	Devinagar PRF	Singirha Jora	Upto January
	Baunsadhara Nala	Devinagar PRF	Aunli	Upto February
	Sapoi Nala	Panapasi gobindpur area	Aunli	Upto February
	Durhuba Nala	Revenue Forest of Gholagadia	Tikira	Upto February
	Sianjurhi Nala	Deogarh Forest Division	Tikira	Upto March
	Bagdal Nala	Nunmati & Marudhip RF	Nuhurani	Upto March
	Bada Jora	Deogarh Forest Division area	Nuhurani	Upto March
Kaniha	Marada Jora	Badakathia RF	Singirha	Upto January
	Chilanti Nala	Pedi RF	Brahamani river	Upto March
	Balaram Jora	Godigotha RF	Brahamani	Upto March
	Chauridhara Nala	Deogarh Divison area	Brahamani	Upto February
	Bhalutunguri Nala	Deogarh Division area	Singirha	Upto January
	Jambua Nala	Jambua RF of Deogarh Division	Brahamani	Perennial
	Bankhuli Jora	Brahmanabil RF	Singirha	Upto March
	Dadari Nala	Dalak Poipal Danda RF	Brahmani	Upto December
	Purunapani Nala	Similisahi & Khalpal RF	Marada Jora	Upto January
Talcher	Bangaru Nala	Gopalprasad RF & Kalamchuin Area	Brahmani	Upto April

	Kasia Jora	Bulajhar RF	Samakoi	Upto February
	Siaria Jora	Anantapur RF of Dhenkanal Division	Samakoi	Upto February
	Andhari Jora	Deogarh Forest Division area	Brahamani	Upto February
	Balijoti Nala	Seepur RF	Brahamani	Upto March
	Bulajhar Nala	Bulajhar RF	Samakoi	Upto March
	Bankadhara Jora	South expect of Bulajhar RF	Brahamani	Upto January

The contributory factors responsible for poor flowing of water during summer can be categorized as follows:

i) Low porosity of under-lying rocks and less water holding capacity.

ii) Rapid run-off of rainwater from hill slopes during rainy season due to denudation of forest cover, which also contributes to lesser porosity.

iii) In-adequate numbers of soil and moisture conservation structures and their poor maintenance.

iv) Excess use of under ground water.

12.8 Wetlands in forest areas

Wetlands are one of the crucial nature resources. Wetlands are areas of land that are either temporarily or permanently covered by water, which exhibit enormous diversity according to geographical location water regime and its characteristics. Some of the wetlands are exited in the forest area. It had might be created by the Ex-king during their rulling period for supply of drinking water and improvement of wildlife habitat. The list of old water bodies is listed in the table.12.8.1

Range	Name of the Forest Block	No. of Water bodies
Angul	Krushnachakra PRF	2
Bantala	Balanga RF	1
Chhendipada	Durgapur RF (Compt – 9)	1
Chhendipada	Kosala RF	1
Jarapada	Similipathara RF (Compt – 2)	1
Kaniha	Arakhadahi RF	1
Kaniha	Nialu-Lodhajhari-Sapakata RF (Compt – 3)	1
Kaniha	Dalak-Poipal-Danda RF	1
Kaniha	Phuljhari RF (Compt- 2)	1
Talcher	Kandhala RF	1
Talcher	Kandhaberini PRF	1
Talcher	Gopalprasad RF	1
Talcher	Malibandha RF	2
Total		**15**

12.9 Creation of Wetland (water bodies): - Many of nallahs and streams are flowing in the forest area of the division which provide water to wildlife. But most of them are seasonal in nature and became dry up during summer season. Scarcity of water is felt from January to June. To mitigate this problems a number of water bodies were created during the out going plan period. The list of water bodies with their location is given in above Part – I, Table. 11.17

12.10 Water level in the wells inthe vicinity (up to 5km) offorest area

Periodic monitoring of water level has been done by the Director of Ground Water Development, Odisha from time to time in some of ear marked dog well, tube well, bore well. The depth of ground water for last twelve year i.e. from 2007 to 2018 during summer, rainy & winter season has been recorded by the above department at different location of Angul Forest Division (in Angul, Banarapal, Chhendipada, Kaniha &Talcher Block) shown in table 12.10.1. This data will be helpful for allotting the area for plantation and for the purpose like watershed management.

Table no. 12.10.1 **GROUND WATER RESOURCES ANGUL DIVISION**

Sl. No.	District	Block	Dynamic GW Resources (HM)	GW Draft (HM)				Stage of GW Development (%)
				Irrigation Use	Domestic Use	Industrial Use	Total Uses	
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1	Angul	*Angul*	6220	1618	454	23	2095	33.68
2	Angul	Athamallik	5990	1069	256		1325	22.12
3	Angul	*Banarpal*	7728	2132	487	62	2681	34.69
4	Angul	*Chhendipada*	6377	2290	366	492	3148	49.36
5	Angul	Kaniha	6033	2510	283	56	2849	47.22
6	Angul	Kishorenagar	4348	975	226	131	1332	30.63
7	Angul	Pallahara	6468	1400	280		1680	25.97
8	Angul	Talcher	2913	939	563	21	1523	52.28
		District Total	*46077*	*12933*	*2915*	*785*	*16633*	*36.10*

12.11 Status of aquifers

Aquifers may occur at various depths. Those closer to the surface are not only more likely to be used for water supply and irrigation, but are also more likely to be topped up by the local rainfall.

12.11.1 In the recent years emphasis has been given for irrigation. A few irrigation projects have come up in the territory of the Division, details of which are given below:

12.11.2 Rengali Multipurpose Project (Major Irrigation Project**):** Rengali multi purpose project has been constructed for the purpose of power generation, flood control and irrigation facilities. The main component of the project is a masonry gravity dam of 1040 Mt. length, with a maximum height of 75M across river Brahmani near village Rengali in Angul

District. The live storage capacity of the reservoir at Full Reservior Level (FRL) is 3412 million cubic meters and its water-spread area at Maximum Water Level (MWL) is 414.08 sq. km. There is a dam foot powerhouse with installation capacity of 250 MW, 5 units of 50 M.W. each. The discharge from each unit varies from 140 cusecs to 170 cusecs. Through reservoir, recurring flood havoc in Dhenkanal, Jajpur & Kendrapara Districts has been redressed significantly. The over all cost of the dam and powerhouse was Rs.200 crores approximately.

12.11.3Samal Barrage:In stage-II construction of Rengali multipurpose Project, a barrage has been constructed at Samal. The water released from the Rengali powerhouse is picked up in the Barrage at about 35 km. down stream of the dam to provide Industrial water use and extend irrigation facilities on either bank of the river in an area of 3,36,400 ha. lying in Angul, Dhenkanal, Cuttack, Jajpur & Keonjhar districts.The length of the barrage is 533.40 m having two head regulators on either side having discharge capacities of 270.00 cusecs & 140.37 cusecs respectively. The cost of construction of the barrage proper was Rs. 60.00 crores. The canal net works are under construction.

12.11.4 Derjang Irrigation Project (Medium Irrigation Project): The Derjang Irrigation Project is a reservoir scheme constructed across river Ningara & Matalia near village Majhika in Angul Block. The catchment area is 399 sq.km at reservoir. The main canal is 13.19 km. having 33 nos. of minors & sub-minors. This project is having Culturable Cultivable Area (CCA) of 7392 ha. in Kharif including recent extension ayacut of 8 nos. of minors executed under National Bank of Agricultural & Rural Development (NABARD) assistance {Rural Infrastructure Development Fund (RIDF – I)}.

Previously the canals were unlined earthen canals. So after constant use it could not supply water to its full capacity. Hence in the year 1995-96, the project was included under Water Resources Consolidation Project (WRCP) to achieve its full capacity at an estimated cost of Rs. 352.70 lakhs & the work was completed in the year 2002-03.

Farmers are being involved in operation & maintenance of the canal system, through Water Users Associations (WUA), known as Pani Panchayats. The entire command area has been divided into 17 chakas. One WUA has been formed in each chaka. 13 chakas have been handed over to 13 no. of WUAs. The remaining area will be handed over to 4 WUAs soon. The WUAs have been federated into an Apex Committee.

The prevailing cropping pattern as decided in consultation with the local farmers, Department of Agriculture has been engaged to determine the crop water requirement of the project for different months during khariff water supply & accordingly a detailed O & M Plan of the canal system is worked-out to guide the Pani Panchayats for smooth operation & management of the canal system.

At present the Pani Panchayats are provided a grant-in-aid of Rs. 35/- per ha. for maintenance of the canal system which is likely to be increase to Rs.100/- per ha. Government of Orissa has issued guidelines for utilisation of O & M grant & its distribution.

12.11.5 Aunli Irrigation Project: The Aunli Irrigation Project is a diversion weir scheme constructed across river Aunli near village Kanaloi in Chhendipada Block of Angul District. The catchment area is 150 sq.km at weir site. The major component of this system consists of diversion weir of 56 mtr. length with automatic falling shutters of 0.9 mtr. height. The main canal is 4.656 km. having 8 Nos. of Minors & Sub-Minors. This project was completed in 1987-88 at a cost of Rs.299.87 lakhs. This project is having C.C.A. of 1746 ha. in Kharif & 300 ha. in Rabi.

Previously the canals were unlined earthen canals passing over sandy zone. So after constant use & due to lack of proper maintenance, it could not supply water to its full capacity. Hence in the year 1995-96, the project was included under Water Resources Consolidation Project (WRCP) to achieve its full capacity at an estimated cost of Rs. 310.38 lakhs. Farmers organisation and turnover programme was introduced in Aunli Irrigation Project Area during March 1998 as a Pilot Scheme. The purpose of the scheme is for optimum use and equitable distribution of Irrigation water through participation of farmers in operation and maintenance of canals as well as water management. For this purpose four nos. WUAs have been formed in the command area. The canal system under SIFT component of Orissa Water Resources Consolidation Project was handed over to the farmers for its operation & maintenance as per FOT guidelines. An APEX Committee has been formed to facilitate the activities of Pani Panchayat. One Pani Panchayat has been formed with only women farmers as members. The success story of these Pani Panchayats has received good attention. Farmers from all parts of the state visit this project to get a feel of the success of the Pani Panchayats.

The prevailing cropping pattern as decided in consultation with the local farmers, Department of Agriculture has been engaged to determine the crop water requirement of the project for different months during agricultural season & accordingly a detailed O & M Plan of the canal system is worked-out to guide the Pani Panchayats for smooth operation & management of the canal system.

Periodic monitoring of river flow pattern with reference to annual rainfall/duration of flow may be provided to show the status of improvements, if any.

12.12 Conclusion & Recommendation

Increase in Population, Industrialization & Rapid Urbanization createsstress onWater Resources

• Ground water being ubiquitous and easily accessible is often the mostpreferred source of water for domestic, irrigation and industrial use

• If this trend of ground water abstraction remains uncontrolled, a plethoraof problems is likely to crop up – Decline in Water level, Quality relatedissues,mitigating extreme climatic events and natural hazards

• Planning for judicious use is necessary to optimize our water usage

• Water use efficiency, conjunctive use of surface and ground water, aquifermapping and management, water conservation, rain water harvesting andartificial recharge to ground water are some of the cost effective and easymethods for the same

• Ultimate aim is not only for sustainable development but sustainablemanagement of all natural resources

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	8.0 (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
TSS	Total alkalinity	COD	NH4-N	Free NH3-N	TKN	FC
(mg/l)		(mg/l)				(MPN/100ml)
73 (14-140)	85 (68-104)	8.3 (5.8-12.1)	0.332 (0.112-0.715)	0.020(0-0.046)	2.65(1.12-4.50)	802(230-2700)

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.

12.13 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 - 13

CLIMATE CHANGE

13.1 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(CO_2), 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.

13.2 Effects of climate change on natural resources:

13.2.1Climate 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)

13.2.2 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.

13.2.3 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

13.2.4 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

13.2.5 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

13.2.6 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
- Fish diseases such as viral hemorrhagic septicemia may become more common

13.2.7 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

13.2.8 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

13.3 Climatic parameters:

13.3.1 Climate:-The climatic condition of Angul Division is much varied. It has mainly four seasons. Summer starts from the month of March and continues up to mid June, followed by rainy season, which continues up to the month of September. Winter begins from December and remains effective up to February. The period from October to November may be treated as post monsoon season, when sporadic rains occur.

13.3.2 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.

13.3.3 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.

13.3.4 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.

13.3.5 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 Angul division, the nearest recording station is located in Talcher. 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.

13.3.6 Rainfall:-

Bulk of precipitation occurs in the rainy season by the influence of south-western monsoon. In general, rains break in the third week of June and continue up to middle or end of September. Occasionally, pre monsoon showers are also experienced in the 1st or 2nd week of June. Post monsoon showers are also experienced in the month of October and November. During April and May, thunderstorms occur in the division. On an average, there are 70 rainy days in a year. Average annual rainfall in the division over last 15 years (1990 – 2004) is 1309 mm. The average during the years from 1979 to 1988 was 1136 mm. and 1294.16 mm. in the 1st half of the 20th century as recorded in the Dhenkanal Gazettier 1981. Close examination of rainfall data of last fifteen years reveals that rainfall in 9 years remained below the annual average (i.e. 1309 mm). Rainfall was above annual average in six years, of which below 1400 mm in one year, within 1500 – 1600 mm in four years and more than 2200 mm in one year. Although average rainfall is 1309 mm, but deviation from the annual average in different years is high. Distribution of rainfall is also quite erratic, causing wide spread drought year after year. The average rainfall data of Angul Forest Division (taking average of five representative stations i.e Angul, Banarapal, Chhendipada, Jarapada, Kaniha & Talcher) for the period from 1990 to 2004 is given in the Table No. – 1.4.6. Bulk of precipitation occurs in the rainy season by the influence of south-western monsoon. In general, rain breaks in the third week of June and continues up to middle or end of September. Occasionally, pre monsoon showers are also experienced in the 1st or 2nd week of June. Post monsoon showers are also experienced in the month of October and November. During April and May, thunderstorms occur in the division. On an average, there are 72 rainy days in a year. Average annual rainfall have been recorded in four station at Block head quarter of Angul, Banarpal, Chhendipada, Kaniha, Talcher from 2005 to 2017.

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.

13.3.7 Temperature:-

Summer is experienced with rise in temperature in the month from 3rd week of February to 2nd week of June. Summer months are very hot and maximum day temperature varies from 39^0 C to 48^0 C and some times in the month of May it goes beyond 48^0 C. In the October &mid November the day temperature remains up to 33^0 C, while the night temperature falls and night become cooler. December is the coolest month experienced when temperature during night varies between 9^0 C to 13^0 C. Some times during December & January severe cold is felt due to western wind blow from North India & temperature falls up to 7^0 C in Angul District.

Extreme heat during summer is being experienced in the last few years in & around in Talcher & Angul town due to deforestation for mining activities, different developmental activities, establishment of Large plant like NTPC at Kaniha, TTPS at Talcher, JITPL at Kaniha, NALCO at Angul, BHUSAN at Meramandali, GMR at Kamalang, JSPL at Parang, MONNET at Nisha and other small industries. Open Cast Coal mines, burning of coal, exposure rock, and boulder& Fire occurrence in coal stock yard increases temperature in this area.

13.3.8 Relative Humidity:-

The atmosphere remains humid during the rainy season and in the months of October and November. It is around 80 percent in July, August, and September. In other months, it varies between 60-70 %. The humidity reduces towards March, April, and May and is minimum in March. In summer afternoons, the relative humidity varies between 25 to 40 %. An account of relative humidity for the last ten years from 2005 to 2014

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.

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

13.3.10 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**.**

13.3.11 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.

13.4 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 No13.1**. as below.

Table No. 13.1 PHENOLOGY OF PLANTS

Sl .No	Local Name	Botanical Name	Flowering Period	Fruiting Period	Period of seed collection	No of seeds per Kg	Period of leaf shedding	Period of leaf renewal
01	Arjun	*Terminalia arjuna*	May-July	Dec	Feb-May	1600	Evergreen	----
02	Asan	*Terminalia tomentosa*	June-Aug	April-May	April-May	530-600	Jan-Feb	April-May
03	Amla	*Emblica officinalis*	Feb-May	May-Oct	Mar-Apl	------	Dec-Jan	Feb-Mar
04	Anchu	*Morinda tinctoria*	May-Aug	Oct-Nov	January	-----	------	------

05	Amba	*Mangifera indica*	Februar y	Apl-May	June-July	--------	Evergree n	
06	Asthwa	*Ficus religiosa*	June	Dec-Jan	Mar-May	-----	------	------
07	Karanja	*Pongamia pinnata*	April	May-June	Mar-Apl	5000	Evergree n	------
08	Krushnach uda		Apl-May	July-Aug	Apl-May	2000	March	June
09	Kamalagu ndi	*Mallotus philippinensis*	Oct-Nov	Feb-Mar	April	---	Evergree n	
10	Kasi	*Bridelia retusa*	Aug-Oct	Nov-Jan	January	---	----	----
11	Karada	*Cleistanthus collinus*	Apl-May	May	May-June	----	Mar-Apl	-----
12	Kangada	*Xylia xylocarpa*	Apl-May	Jan-Feb	April	-----	Feb-Apl	Apl-May
13	Kumbhi	*Careya arborea*	Mar-Apl	July	------	-----	Feb	Mar-Apl
14	Kadamba	*Anthocephalus cadamba*	June-Aug	Aug-Nov	Feb-Apl	-----	Jan-Feb	Feb-Mar
15	Kansa	*Hymenodictyo n excellsum*	June-Aug	Nov-Dec	Apl-May	1,70,00 0	Nov	May
16	Kaju	*Anacardimum occidentale*	March	April	May	180	Evergree n	-------
17	Kusuma	*Schleichera oleosa*	Mar-Apl	May-June	Aug-Sept	1800	Jan-Feb	Mar-Apl
18	Kuruma	Adina cordifolia	June-Aug	October	May-June	------	Feb	May
19	Kendu	*Diospyros melanoxylon*	May	May-June	May-June	------	Evergree n	-----
20	Kochila	*Strychnos nuxvomica*	Mar-Apl	May-June	Dec-Jan	------	Mar-Apl	May-June

21	Gambhari	*Gmelina arborea*	March	Apl-May	May-June	1600	Jan	March
22	Gohira	*Acacia leucophloea*	Aug-Oct	Jan-Apl	April	45000	Evergreen	Evergreen
23	Champa	Micelia champaca	Apl-July	July-Aug	Aug-Sept	7,000	Evergreen	Evergreen
24	Chandan	Santalum album	May-June	Oct-Dec	Jan	6000	Evergreen	Evergreen
25	Chakunda	*Cassia siamea*	Sept-Dec	March	May	35000	Evergreen	-----
26	Jamun	*Syzygium cumini*	March	May-June	June-July	-----	Evergreen	Evergreen
27	Jaun	*Casuarina equisetifolia*	Feb-Sept	May-Dec	Jan-June	700000	Evergreen	Evergreen
28	Tentuli	*Tamarindus indica*	April	May	April	----	Evergreen	-----
29	Dhaura	*Anogeissus latifolia*	May-Aug	Dec-Feb	March	120000	Feb	April
30	Dhamana	*Grewia tiliifolia*	Apl-May	Sept-Oct	Nov	-----	Apl-May	July
31	Nimba	*Azadirachta indica*	March	Apl-May	June-July	4400	Feb	May
32	Nilgiri	Eucalyptus hybrid	Throughout the year	Throught the year	Sept-Mar	270000	----	----
33	Panasa	*Artocarpus integrifolia*	January	March	June-Aug	----	Evergreen	Evergreen
34	Palasa	*Butea monosperma*	Feb-Mar	Mar-Apl	May	----	Feb	April
35	Piasala	*Pterocarpus marsupium*	Oct-Nov	Dec	May	1500	April	June
36	Polanga	*Calophyllum*	May-	Oct-Apl	----	200	Evergree	Evergree

		inophyllum	Oct				n	n
37	Babul	*Acacia nilotica*	Decemb er	January	April	7500	April	May
38	Baruna	*Crateva religiosa*	March-Apl	May	July-Aug	22000	Feb	May
39	Bara	*Ficus bengalensis*	May	June	May	----	Feb	March
40	Baunsa	*Dendrocalamu s strictus*	----	-----	May-June	----	----	-----
41	Bahada	*Bauhinia purpurea*	Mar-May	Apl-June	Mar-Apl	----	Jan	March
42	Bela	*Aegle marmelos*	May	June	Apl-May	5300	Apl-May	May-June
43	Bheru	*Chloroxylon swietenia*	Mar-Apl	May	August	----	Feb-March	April-May
44	Mahula	*Madhuca indica*	Jan-Feb	Apl-May	July-Aug	----	Mar-May	May-June
45	Mahanimb a	*Ailanthus excelsa*	March	April	May-June	----	----	----
46	Moi	*Lannea coromandelica*	Mar-Apl	June-July	July-Aug	-----	Mar-May	-----
47	Mahala		Jan-Feb	May	May-June	9000	Apl-May	May-June
48	Rohini	*Soymida febrifuga*	Feb-Mar	Apl-May	June	10000	Mar-May	May-June
49	Rai		Mar-Apl	May-June	June-July	46000	February	May
50	Sal	*Shorea robusta*	Feb-Mar	Apl-May	June-July	500	Feb-mar	Mar-Apl
51	Teak	*Tectona grandis*	June-Aug	Aug-Nov	Feb-Mar	1700	January	May
52	Simli	*Bombax ceiba*	January	March	May	26000	Jan-Mar	Mar-Apl

53	Sisoo	*Dalbergia sissoo*	Jan-June	Mar-Sept	June-January	53000	Jan-Feb	Feb-Mar
54	Sirisa		May-June	January	April	7000	Apl-May	May-June
55	Sidha	*Lagerstroemia parviflora*	Ap;-May	August	Dec-Jan	50000	Feb-Mar	Apl-May
56	Sunari	*Cassia fistula*	Apl-July	Nov-Dec	Mar-Apl	5500	Mar-Apl	Apl_July
57	Sunajhari		Sept-Nov	Dec-Jan	Jan-Mar	40000	Evergreen	Evergreen
58	Subabul		April	June	Feb-Mar	----	-----	------
59	Harida	*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.

13.5 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.

(a) 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-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.

CHAPTER - 15

FINANCIAL FORECAST FOR THE REVISED WORKING PLAN 2021-22 TO 2030-31

15.1 FINANCIAL FORECAST

15.2 Establishment:

The total cost establishment of Angul Division during the year 2017-18 was Rs. 54663937/-. Besides, there is rise in pay due to annual increments and increase in D.A. Hence, the annual escalation in the cost on establishment is taken as 10 percent every year.

15.3 Treatment of Improvement Working Circle

The total area allotted to this Working Circle is 27586.678 ha. The year wise expenditure in the working circle has been calculated following to the PCCF, Odisha norm fixed. The minimum rate of wages has been taken as Rs 280/- per man day.

Annexure-8

COST NORM FOR AIDED NATURAL REGENERATION (ANR without gap) PER HECTARE
Wage rate ₹ 280/- per Day.

Sl. No.	Item of Work	Preferable period of Execution	Person days	Lobour Cost (₹)	Material Cost (₹)	Total Cost in (₹)
	0TH YEAR					
1	Survey, Demarcation and Pillar Posting, GPS Reading with mapping	Nov/Dec	2	560	0	560
2	Site Preparation	Nov/Dec	2	560	0	560
3	Cutting of high stumps	Nov/Dec	5	1400		1400
	SUB TOTAL		**9**	**2520**	**0**	**2520**
4	Monitoring & Supervision charge 5% of the total cost					126
	GRAND TOTAL		**9**	**2520**	**0**	**2646**
	1ST YEAR OPERATION					
1	Silvicultural Operation involving clearance of weeds, cutting of climbers, singling of shoots etc.	Sep/Oct	15	4200	0	4200
2	Soil Conservation Measures (Staggered trenches of dimension 2 m X 0.5 m X 0.5 m @ 60 nos per ha) or its equivalent	Sep/Oct	20	5600	0	5600
3	Fireline Tracing and Inspection Path	Feb/Mar	3	840	0	840
4	Watch & ward	Aug-Mar	5	1400	0	1400
5	Contingency and Unforeseen Expenditures		0	0	500	500
	SUB TOTAL		**43**	**12040**	**500**	**12540**
6	Monitoring & Supervision charge 5% of the total cost					627
	GRAND TOTAL		**43**	**12040**	**500**	**13167**
	2ND YEAR OPERATION					
1	Soil Conservation Measures (Renovation of staggered trenches etc.)	Sep/Oct	8	2240	0	2240
2	Fireline Tracing and Inspection Path	Feb/Mar	1	280	0	280
3	Watch & ward (whole year)	Apr-Mar	7	1960	0	1960
4	Contingency and Unforeseen Expenditures		0	0	300	300
	SUB TOTAL		**16**	**4480**	**300**	**4780**
5	Monitoring & Supervision charge 5% of the total cost					239
	GRAND TOTAL		**16**	**4480**	**300**	**5019**
	3RD YEAR OPERATION					
1	Fireline Tracing and Inspection Path	Feb/Mar	1	280	0	280
2	Watch & ward (whole year)	Apr-Mar	7	1960	0	1960
3	Contingency and Unforeseen Expenditures		0	0	300	300
	SUB TOTAL		**8**	**2240**	**300**	**2540**
4	Monitoring & Supervision charge 5% of the total cost					127
	GRAND TOTAL		**8**	**2240**	**300**	**2667**
	4TH YEAR OPERATION					
1	Fireline Tracing and Inspection Path	Feb/Mar	1	280	0	280
2	Watch & ward and cultural operations	Apr-Mar	2	560	0	560
3	Contingency and Unforeseen Expenditures			0	100	100
	SUB TOTAL		**3**	**840**	**100**	**940**
4	Monitoring & Supervision charge 5% of the total cost					47
	GRAND TOTAL		**3**	**840**	**100**	**987**

ABSTRACT						
SL. No.	Item of Work	No. Person Day	Labour cost @ ₹ 280/- per day	Material cost (₹)	Monitoring & Supervision charge 5% of the total cost	Total cost in (₹)
1	0th Year operation	9	2520	0	126	2646
2	1st Year operation	43	12040	500	627	13167
3	2nd Year operation	16	4480	300	239	5019
4	3rd Year operation	8	2240	300	127	2667
5	4th Year operation	3	840	100	47	987
TOTAL		**79**	**22120**	**1200**	**1166**	**24486**

2021-22

2021-22 – 3010.852 ha. 0th year & 1st year Rs. 76683389/-

2022-23 – 2792.941 ha. 0th year @Rs.2646/- per ha. Rs. 7001316/-

Total Rs. 83684705/-

Or say Rs. 837 lakhs

2022-23

2021-22 – 3010.852 ha. 2nd year @Rs.5019/- per ha. Rs. 15111466/-

2012-23 – 2792.941 ha. 1st year @Rs.13167/- per ha. Rs. 36774654/-

2023-24 – 2835.261 ha. 0thyear @ Rs.2646/- per ha. Rs. 7502100/-

Total Rs. 59388220/-

Or say Rs. 594 lakhs

2023-24

2021-22 – 3010.852 ha. 3rd year @Rs.2667/- per ha. Rs. 8029942/-

2022-23 – 2792.941 ha. 2nd year @Rs.5019/- per ha. Rs. 14017770/-

2023-24 – 2835.261 ha. 1styear @ Rs.13167/- per ha. Rs. 37331881/-

2024-25 – 2742.555 ha. 0thyear @ Rs.2646/- per ha. Rs. 7256800/-

Total Rs. 66636393/-

Or say Rs. 666 lakhs

2024-25

2021-22 – 3010.852 ha. 4th year @Rs.987/- per ha.	Rs. 2971710/-
2022-23 – 2792.941 ha. 3rd year @Rs.2667/- per ha.	Rs. 7448773/-
2023-24 – 2835.261 ha. 2nd year @ Rs.5019/- per ha.	Rs. 14230174/-
2024-25 – 2742.555 ha. 1st year @ Rs.13167/- per ha.	Rs. 36111169/-
2025-26 – 2960.634 ha. 0th year @ Rs.2646/- per ha.	Rs. 7833837/-
Total	Rs. 68595663/-
Or say	Rs. 686 lakhs

2025-26

2022-23 – 2792.941 ha. 4th year @Rs.987/- per ha.	Rs. 2756632/-
2023-24 – 2835.261 ha. 3rd year @ Rs.2667/- per ha.	Rs. 7561641/-
2024-25 – 2742.555 ha. 2nd year @ Rs.5019/- per ha.	Rs. 13764863/-
2025-26 – 2960.634 ha. 1st year @ Rs.13167/- per ha.	Rs. 38982667/-
2026-27 – 2534.055 ha. 0th year @ Rs.2646/- per ha.	Rs. 6705109/-
Total	Rs. 69770912/-
Or say	Rs. 698 lakhs

2026-27

2023-24 – 2835.261 ha. 4th year @ Rs.987/- per ha.	Rs. 2798402/-
2024-25 – 2742.555 ha. 3rd year @ Rs.2667/- per ha.	Rs. 7314383/-
2025-26 – 2960.634 ha. 2nd year @ Rs.5019/- per ha.	Rs. 14859422/-
2026-27 – 2534.055 ha. 1st year @ Rs.13167/- per ha.	Rs. 33365902/-
2027-28 – 2641.785 ha. 0th year @ Rs.2646/- per ha.	Rs. 6990163/-
Total	Rs. 65328272/-
Or say	Rs. 653 lakhs

2027-28

2024-25 – 2742.555 ha. 4th year @ Rs.987/- per ha. Rs. 2706897/-

2025-26 – 2960.634 ha. 3rd year @ Rs.2667/- per ha. Rs. 7896010/-

2026-27 – 2534.055 ha. 2nd year @ Rs.5019/- per ha. Rs. 12718422/-

2027-28 – 2641.785 ha. 1st year @ Rs.13167/- per ha. Rs. 34784383/-

2028-29 – 2774.334 ha. 0th year @ Rs.2646/- per ha. Rs. 7340887/-

Total Rs. 65446599/-

Or say Rs. 654 lakhs

2028-29

2025-26 – 2960.634 ha. 4th year @ Rs.987/- per ha. Rs. 2922145/-

2026-27 – 2534.055 ha. 3rd year @ Rs.2667/- per ha. Rs. 6798324/-

2027-28 – 2641.785 ha. 2nd year @ Rs.5019/- per ha. Rs. 13259118/-

2028-29 – 2774.334 ha. 1st year @ Rs.13167/- per ha. Rs. 36529665/-

2029-30 – 2814.473 ha. 0th year @ Rs.2646/- per ha. Rs. 7447095/-

Total Rs. 66916347/-

Or say Rs. 669 lakhs

2029-30

2026-27 – 2534.055 ha. 4th year @ Rs. 987/- per ha. Rs. 2501112/-

2027-28 – 2641.785 ha. 3rd year @ Rs.2667/- per ha. Rs. 7045640/-

2028-29 – 2774.334 ha. 2nd year @ Rs.5019/- per ha. Rs. 13924382/-

2029-30 – 2814.473 ha. 1st year @ Rs.13167/- per ha. Rs. 37058165/-

2030-31 – 2479.788 ha. 0th year @ Rs.2646/- per ha. Rs. 6561519/-

Total Rs. 67090818/-

Or say Rs. 671 lakhs

2030-31

2027-28 – 2641.785 ha. 4th year @ Rs.987/- per ha. Rs. 2607441/-

2028-29 – 2774.334 ha. 3rd year @ Rs.2667/- per ha. Rs. 7399148/-

2029-30 – 2814.473 ha. 2nd year @ Rs.5019/- per ha. Rs. 14125839/-

2030-31 – 2479.788 ha. 1st year @ Rs.13167/- per ha. Rs. 32651368/-

Total Rs. 56783796/-

Or say Rs. 568 lakhs

15.4 Treatment of Rehabilitation Working Circle

The total area allotted to this Working Circle is 23280.239 ha. The year wise expenditure in the working circle has been calculated following to the PCCF, Odisha norm fixed. As the degradation of the forest block taken under this working circle is Stage – I, The ANR with Gap plantation with 200 seedlings model has been adopted. The minimum rate of wages has been taken as Rs 280/- per man day.

Annexure-9

COST NORM FOR AIDED NATURAL REGENERATION (ANR) @ 200 PLANTS PER HECTARE
Wage rate ₹ 280/Day.

Sl. No.	Item of Work	Preferable period of Execution	Labour in Mandays	Lobour Cost (₹)	Material Cost (₹)	Total Cost in (₹)
	0TH YEAR					
1	Survey, Demarcation and Pillar Posting, GPS Reading with mapping	Nov/Dec	2	560	0	560
2	Site Preparation	Nov/Dec	2	560	0	560
3	Silvicultural Operation including clearance of weed, climber cutting, high stump cutting, singling of shoots etc.	Jan/Feb	5	1400	0	1400
4	Nursery cost (6 months old seedling)part @ Rs.12.43/- seedling (Rs.8.67 in 0th year + Rs.3.76 in 1st year) for 220 seedlings (200+20)	Jan-March	5.5	1540	367	1907
5	Contingency and Unforeseen Expenditures		0	0	133	133
	SUB TOTAL		**14.5**	**4060**	**500**	**4560**
6	Monitoring & Supervision charge 5% of the total cost					228
	GRAND TOTAL		**14.5**	**4060**	**500**	**4788**
	1ST YEAR OPERATION					
1	Nursery cost (6 months old seedling) balance @ Rs.3.76 for 220 seedlings	Apr-June	2.5	700	128	828
2	Pitting 30 cm cube size	Feb/Mar	6	1680	0	1680
3	Carriage and planting including casualty replacement	Jul/Aug	5	1400	0	1400
4	Complete weeding, Soil working, Manuring	Aug/Sep	6	1680	0	1680
5	Cost of Vermi compost @200 gms/plant @ Rs.20/- per kg = Rs.800.00 and Granular Insecticide 5 gms/plant @ Rs.80/- per kg. =Rs.80.00	Aug/Sep	0	0	880	880
6	Cost of Chemical fertiliser (a) Urea 70 gms/plant in two subsequent doses @ Rs.6/- per kg =Rs.84.00 (b) NPK 50 gms/plant @ Rs.24/- per kg=Rs.240.00 as basal dose	Jul/Aug	0	0	324	324
7	Silvicultural Operation involving clearance of weeds, cutting of climbers, singling of shoots etc.	Sep/Oct	15	4200	0	4200
8	Soil Conservation Measures (Staggered trenches of dimension 2 m X 0.5 m X 0.5 m @ 60 nos per ha) or its equivalent	Sep/Oct	20	5600	0	5600
9	Fireline Tracing and Inspection Path	Feb/Mar	3	840	0	840
10	Watch & ward	Aug-Mar	7	1960	0	1960
11	Contingency and Unforeseen Expenditures		0	0	304	304
	SUB TOTAL		**64.5**	**18060**	**1636**	**19696**
12	Monitoring & Supervision charge 5% of the total cost					985
	GRAND TOTAL		**64.5**	**18060**	**1636**	**20681**
	2ND YEAR OPERATION					
1	Casualty Replacement including cost of seedling, carriage and planting	Jul/Aug	1	280	248.60	528.60
2	Complete weeding and cultural operations	Sep/Oct	2	560	0	560
3	Soil working and manuring	Sep/Oct	2	560	0	560
4	Cost of Fertiliserand insecticide (a) Vermicompost 200gms/plant @ Rs.20/- per kg=Rs.800.00 (b) Granular Insecticides 5 gms/plant for 20 plants 100 gms @ Rs.80/- per kg=Rs.8.00	Sep/Oct	0	0	808	808
5	Soil Conservation Measures (Renovation of staggered trenches etc.)	Sep/Oct	8	2240	0	2240
6	Fireline Tracing and Inspection Path	Feb/Mar	1	280	0	280
7	Watch & ward (whole year)	Apr-Mar	7	1960	0	1960
8	Contingency and Unforeseen Expenditures		0	0	181	181
	SUB TOTAL		**21**	**5880**	**1238**	**7118**
9	Monitoring & Supervision charge 5% of the total cost					356
	GRAND TOTAL		**21**	**5880**	**1238**	**7473**

.o.	Item of Work	Preferable period of Execution	Labour in Mandays	Lobour Cost (₹)	Material Cost (₹)	Total Cost in (₹)
	3RD YEAR OPERATION					
1	Complete weeding and cultural operations	Aug/Sep	1	280	0	280
2	Soil working	Aug/Sep	1	280	0	280
3	Fireline Tracing and Inspection Path	Feb/Mar	1	280	0	280
4	Watch & ward (whole year)	Apr-Mar	7	1960	0	1960
5	Contingency		0	0	200	200
	SUB TOTAL		**10**	**2800**	**200**	**3000**
6	Monitoring & Supervision charge 5% of the total cost					150
	GRAND TOTAL		**10**	**2800**	**200**	**3150**
	4TH YEAR OPERATION					
1	Fireline Tracing and Inspection Path	Feb/Mar	1	280	0	280
2	Watch & ward and cultural operations	Apr-Mar	2	560	0	560
	SUB TOTAL		**3**	**840**	**0**	**840**
3	Monitoring & Supervision charge 5% of the total cost					42
	GRAND TOTAL		**3**	**840**	**0**	**882**

ABSTRACT

SL. No.	Item of Work	No. Person Day	Labour cost @ ₹ 280/- per day	Material cost (₹)	Monitoring & Supervision charge 5% of the total cost	Total cost in (₹)
1	0th Year operation	14.5	4060	500	228	4788
2	1st Year operation	64.5	18060	1636	985	20681
3	2nd Year operation	21	5880	1238	356	7473
4	3rd Year operation	10	2800	200	150	3150
5	4th Year operation	3	840	0	42	882
	TOTAL	**113**	**31640**	**3574**	**1761**	**36974**

2021-22		Area in ha.	Year	Per ha. in Rs.			
	2021-22	2128.358	1st	20681	Rs.	44016571.00	
	2022-23	2219.489	0th	4788	Rs.	10626913.00	
				Total		Rs.	54643484.00
				Or Say		Rs.	546 lakhs
2022-23							
	2021-22	2128.358	2nd	7473	Rs.	15905219.00	
	2022-23	2219.489	1st	20681	Rs.	45901252.00	
	2023-24	2128.98	0th	4788	Rs.	10193556.00	
				Total		Rs.	72000027.00
				Or Say		Rs.	720 lakhs
2023-24							
	2021-22	2128.358	3rd	3150	Rs.	6704327.00	
	2022-23	2219.489	2nd	7473	Rs.	16586241.00	
	2023-24	2128.98	1st	20681	Rs.	44029435.00	
	2024-25	2233.953	0th	4788	Rs.	10696166.00	
				Total		Rs.	78016169.00
				Or Say		Rs.	780 lakhs
2024-25							
	2021-22	2128.358	4th	882	Rs.	1877211.00	
	2022-23	2219.489	3rd	3150	Rs.	6991390.00	
	2023-24	2128.98	2nd	7473	Rs.	15909867.00	
	2024-25	2233.953	1st	20681	Rs.	46200381.00	
	2025-26	2444.655	0th	4788	Rs.	11705008.00	

			Total			Rs.	82683857.00
			Or Say			Rs.	827 lakhs
2025-26							
	2022-23	2219.489	4th	882	Rs.	1957589.00	
	2023-24	2128.98	3rd	3150	Rs.	6706287.00	
	2024-25	2233.953	2nd	7473	Rs.	16694330.00	
	2025-26	2444.655	1st	20681	Rs.	50557910.00	
	2026-27	2569.75	0th	4788	Rs.	12303963.00	
			Total			Rs.	88220079.00
			Or Say			Rs.	882 lakhs
2026-27							
	2023-24	2128.98	4th	882	Rs.	1877760.00	
	2024-25	2233.953	3rd	3150	Rs.	7036951.00	
	2025-26	2444.655	2nd	7473	Rs.	18268906.00	
	2026-27	2569.75	1st	20681	Rs.	53144999.00	
	2027-28	2259.215	0th	4788	Rs.	10817121.00	
			Total			Rs.	91145737.00
			Or Say			Rs.	911 lakhs
2027-28							
	2024-25	2233.953	4th	882	Rs.	1970346.00	
	2025-26	2444.655	3rd	3150	Rs.	7700663.00	
	2026-27	2569.75	2nd	7473	Rs.	19203741.00	
	2027-28	2259.215	1st	20681	Rs.	46722825.00	
	2028-29	2403.247	0th	4788	Rs.	11506746.00	
			Total			Rs.	87104321.00
			Or Say			Rs.	871 lakhs
2028-29							
	2026-27	2444.655	4th	882	Rs.	2156185.00	
	2027-28	2569.75	3rd	3150	Rs.	8094712.00	
	2028-29	2259.215	2nd	7473	Rs.	16883113.00	
	2029-30	2403.247	1st	20681	Rs.	49701551.00	
	2030-31	3112.377	0th	4788	Rs.	14902061.00	
			Total			Rs.	91737622.00
			Or Say			Rs.	917 lakhs
2029-30							
	2026-27	2569.75	4th	882	Rs.	2266519.00	
	2027-28	2259.215	3rd	3150	Rs.	7116527.00	
	2028-29	2403.247	2nd	7473	Rs.	17959464.00	
	2029-30	3112.377	1st	20681	Rs.	64367068.00	
	2030-31	1780.215	0th	4788	Rs.	8523669.00	
			Total			Rs.	100233247.00
			Or Say			Rs.	1002 lakhs

2030-31

2027-28	2259.215	4th	882	Rs.	1992627.00
2028-29	2403.247	3rd	3150	Rs.	7570228.00
2029-30	3112.377	2nd	7473	Rs.	23258793.00
2030-31	1780.215	1st	20681	Rs.	36816626.00
			Total	Rs.	69638274.00
			Or Say	Rs.	696 lakhs

15.6 Treatment of Plantation Working Circle.

No new plantation adopted in this Working Circle. Only tending operation is proposed in old plantation (teak, misc. plantation, compensatory plantation, Bamboo plantation) raised during and prior to outgoing plan period. The total area allotted to this working circle 7448.106 ha. and the average annual tending operation is 745 ha. For further improvement of the plantation it removal of dead trees cutting of climber, pruning, thinning in congested crop etc. so an estimate is prepared for tending the plantation per ha. @ the wage rate 280/- per mandays.

1.	Survey Demarcation – 2 MD	-	560.00
2.	Pillar Posting with stone cairn – 2 MD	-	560.00
3.	Tending operation to old plantation – 15 MD	-	4200.00
4.	SMC as per site requirement – 20 MD	-	5600.00
5.	Misc. expenditure -	-	1080.00
	Total	-	**12000.00**

The cost per year will be 12000.00 X 745 ha. - 8940000/-

With subsequent rise of 10% every year.

15.7 Treatment of Protection (Overlapping) Working Circle.

The total area allotted to this Working Circle is 6295.027 ha. The average annual treatment area is roughly 630 ha. The principal protection measures are directed for tackling problems like illicit felling, encroachment, forest fire, communication net work etc. The annual cost of the protection of forest per ha. should be as follows.

SL No.	Item	Amount in Rs.
I	Cost of protection is annual 2800 per ha. X 630 ha.	1764000.00
2	Engagement of Anti Smuggling Squads on Six Protection Unit with 10 Squads per each Unit – 60 Squad @ 280/- per Mandays X 30 days X 12 months	6048000.00
3	Fire Protection Creation Awareness under publicity. – 94 beat areas 300000/- Engagement of Fire Watcher – 4 months @ 10 nos. per each Range – 60 nos. Fire Watcher - @ 8400/- per month X 4 months. 2016000/- Providing Vehicle – 12 nos. stationing at Fire prone area @ 20000/- per months 960000/- d. Incentive 50000/- per each Range 2 VSS over 6 Ranges 300000/- e. Equipment for Fire extinguish 500000/-	4076000.00
	Total	11888000.00 Or Say 119 lakhs

The cost per year will be 119 lakh with subsequent rise of 10% every year.

15.8 Treatment of Bamboo (Overlapping) Working Circle.

The total area allotted to this working circle is 6513.201 ha.

SL No.	Item	Amount in Rs.
1	Demarcation of annual coupe for 1 ha. 0.5 MD @ 280 per MD	140.00
2	Silvicultural operation ,@ 8 MD/ ha. @ 280 per MD	2240.00
3	Miscellaneous regulations for 1 ha. 0.5 MD @ 280 per MD	140.00
	Total cost per ha.	2520.00

Year wise Expenditure

Year	Area in ha.	Cost per ha. in Rs.	Amount in Rs.
2021-22	2347.817	2520.00	5916499.00
2022-23	1734.469	2520.00	4370862.00
2023-24	1038.987	2520.00	2618247.00
2024-25	1391.928	2520.00	3507659.00
2025-26	2347.817	2520.00	5916499.00
2026-27	1734.469	2520.00	4370862.00
2027-28	1038.987	2520.00	2618247.00
2028-29	1391.928	2520.00	3507659.00
2029-30	2347.817	2520.00	5916499.00
2030-31	1734.469	2520.00	4370862.00
	Total		43113895.00

15.9 Treatment of Wildlife(Overlapping) Working Circle.

The total area allotted to this Circle is 64610.05 ha. and the average annual treatment area is 6461 ha. The treatment includes habitat improvement, prevention of wildlife crime, reducing man-animal conflict, creation of waterholes, game tanks, grass land development, protection, research and publicity etc.

SL No.	Item	Amount in Rs.
1	Renovation of exiting Water Body 10 nos. per year @ 60000/- per each.	600000.00
2	Creation of new Water Body 6 nos. per year @ 350000/-	2100000.00
3	Engagement of Anti depredation squads 6 nos. per each Range Engagement of Elephant tracker 2 nos. per each Range Engagement of Gajabandhu 2 nos. per each Range Total 10 nos. per each Range over 6 ranges 60 nos. @ 8400/- per month for 12 months	6048000.00
4	Training meeting etc @ 20000/- per each Range	120000.00
5	Cost of cracker and Misc. expenditure @ 30000/- per each Range	180000.00
	Total	9048000.00

Annual expenditure is 9048000.00 which will be increase 10% per year accordingly year wise expenditure has been calculated as uner

15.10 Year wise Expenditure

Year	Amount in Rs.
2021-22	9048000.00
2022-23	9952800.00
2023-24	10948000.00
2024-25	12042800.00
2025-26	13247080.00
2026-27	14571788.00
2027-28	16002846.00
2028-29	17631863.00
2029-30	19395049.00
2030-31	21334554.00
Total	144174780.00

15.11 Treatment of Joint Forest Management (Overlapping) Working Circle.

The total area allotted to this Circle is 47416.323 ha. over 354 VSS and the average annual area for Survey Demarcation and Pillar posting of assignment area is 4741.632 per year.

1. For demarcation and pillar posting with boundary clearance of the assignment area to the VSS @ 2 MD per ha. wage rage Rs. 280/- over 4741 ha. -
   2654960.00
2. Pillar posting 30 nos. pillar each per VSS over 70 VSS @300 per pillar
   630000.00
3. Capacity Building to VSS executive member on sustainable management @ 3000/- per each VSS -
   1062000.00

Total **4346960.00**

The amount required for overlapping circle would be 4346960.00 per year with an escalation of 5% annually.

15.12 Collection of Timber, Firewood and Irregular Exploitation.

The expenditure on these collections is kept on lumpsum basis of Rs. 2 lakhs per Range. There are six ranges in the Tract and the total amount required will be Rs.12 lakhs, with subsequent rise of 5% every year.

15.13 Forest Consolidation.

There are 29 PRF blocks notified long back. At least consolidation works should be prioritized in few blocks. The annual cost required for the consolidation work is projected at Rs.2 lakhs with 5% annual escalation.

15.15 Maintenance of Forest Boundary.

Total length of RF/PRF/DPF boundary is 1369.60 km. A five year cycle of maintenance of boundaries is prescribed. Annually, length of the boundary to be maintained is tentatively 260 km. and the same area would be maintained after five year. There are 2678 pillars need to be constructed and in some of the blocks the details of boundary pillars are not available. Hence it is taken that on an average 270 pillars need to be constructed annually. The pillars should be made permanent and the concept of stone cairns should go away, as the cairns cannot be maintained even after two years. The average cost of one pillar should Rs. 3000.00. 2365 nos. of pillars need to be repaired. So average number of pillars to be repaired is kept at 236 and the average repair cost per pillar is Rs. 800/-.

Boundary clearance @5 mandays per Km.	= 260 x 5 x 280	= Rs. 3,64,000.00
Construction of pillars @ Rs. 3000 per pillar	= 3000 x 270	= Rs. 8,10,000.00
Repair of existing pillars @ Rs.800 per pillar	= 800 x 236	= Rs. 1,88,800.00
Total Cost		= Rs. 13,62,800.00

The Annual cost of expenditure for boundary maintenance & pillar posting will be 1362800/- It will be increased 5% annually.

15.16 Infrastructure Development and Maintenance.

For replacement of old vehicles, purchase of new vehicles, maintenance of VHF sets, purchase of new VHF sets, expenditure on arms and ammunition and other miscellaneous works, an approximate cost of Rs.5 lakhs is to be incurred annually with an escalation of 5% annually.

15.17 Maintenance of Forest Roads.

There are nine forest roads in Angul Division, The total length of these roads is 75.5 km. The condition of the roads is mesearable. The existing road repair norms are very nominal. Minimum of ruppes one lakh need to be spent per km. On an average the road length that can be maintained per annum would be 7.55 km. The total annual amount required for the maintenance of forest roads is Rs. 15.10 lakhs.

PROJECTED COST OF THE IMPLEMENTATION OF THE PLAN

	PROJECTED COST OF THE WORKING PLAN (in lakhs)										
Budget Head	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	Total
1	2	3	4	5	6	7	8	9	10	11	12
Establishment	547	602	662	728	801	881	969	1066	1173	1290	8719
Improvement W.C.	837	594	660	686	698	653	654	669	671	568	6690
Rehabilitation W.C	546	720	780	827	882	911	871	917	1002	696	8152
Bamboo(O) W.C	59	44	26	35	59	44	26	35	59	44	431
Plantation W.C.	89	98	108	119	131	144	158	174	191	210	1422
Protection W.C.	119	131	144	158	174	191	210	231	254	299	1911
Wildlife O.W.C.	90	99	109	120	132	146	166	176	194	213	1445
Timber Collection	12	12.6	13.2	13.8	14.5	15.2	16	16.8	17.6	18.5	150.2
Forest Consolidation	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	24.5
Forest Roads	15	15.7	16.2	17	17.8	18.7	19.6	20.5	21.5	22.6	184.6
Buildings	30	31.5	33	34.6	36	37.8	39.6	41.5	43.5	45.6	373.1
Boundary	13.6	14.3	15	15.8	16.6	17.5	18.4	19.3	20.3	21.3	172.1
Infrastructure	5	5.2	5.5	5.8	6	6.3	6.6	6.9	7.2	7.6	62.1
Eco-tourism	5	5.2	5.5	5.8	6	6.3	6.6	6.9	7.2	7.6	62.1
Library,Tools etc.	3	3	3	3	3	3	3	3	3	3	30
Misc. contigency.	5	5.2	5.5	5.8	6	6.3	6.6	6.9	7.2	7.6	62.1
Total	2377.6	2382.8	2588.1	2776.9	2985.3	3083.6	3173	3392.5	3674.3	3456.7	29890.8

15.18 Eco--Tourism.

There are several eco-tourist spots in the Division. These spots need to be developed. For this an annual expenditure of Rs.500000/- is required with 5% annual increase.

15.19 Library, Equipments, Maps and Tools.

An amount of Rs. 3 lakhs is estimated on lump sum basis.

15.20 Miscellaneous Contingencies.

An amount of Rs. 5 lakhs per annum is estimated with subsequent rise of 5% every year.

CHAPTER-16

TREE OUTSIDE FOREST

16.1 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.

16.2 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.

16.3 Status of forest cover in Angul Forest Division:

As per India State of Forest Report published in the year 2017, the Forest Cover under various category is furnished as below.

Sl. No.	Category of Forest Cover	Area as per report,2017.(Ha)
01	Very Dense Forest	5127.37
02	Moderately DensForest	37138.92
03	Open Forest	44410.56
	TOTAL	**86676.85**
04	Scrub	3199.10
Source: FITGC, ARANYA BHAWAN, Bhubaneswar.		

The total geographical area of Angul Forest Division is 282363.84 ha. Thus Forest cover constitutes 30.69 % of the geographical area.

The land details excluding the Forest Cover of Angul Forest Division stand as follows.

Sl. No.	Category of Land	Area as per report,2017.(Ha)
01	Non Forest	187720.56
02	Water	4767.42
Source: FITGC, ARANYA BHAWAN, Bhubaneswar.		

16.4 Status of trees outside Forest (TOF) in Angul Forest Division:

No information is available as regards to status of trees outside forest of Angul 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.

16.5 Activities undertaken for development of TOF :

During previous working plan period; the following activities are taken up for development of tree cover.

16.5.1 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 **2007-08 to 2017-18** is furnished in **Table No.16.2.**

Year wise	Name of the organization	Name of Scheme (furnish scheme wise)	Seedlings distributed in lakh	Species Planted
2007-08	Horticulturist, Angul		0.11	Mango
	OFDC, Angul		0.225	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2008-09	Horticulturist, Angul		0.4854	Mango, Cashew
	OFDC, Angul		0.22475	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2009-10	Horticulturist, Angul		0.3514	Mango, Cashew, Amla
	OFDC, Angul		0.44075	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2010-11	Forest Department	CAMPA APO 2009-10	3.1	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0.47760	Mango, Cashew, Amla
	OFDC, Angul		.28050	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc

2011-12	Forest Department	State Plan – 13th FC Grant	5.0	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0	
	OFDC, Angul		0.47725	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2012-13	Forest Department	State Plan – 13th FC Grant	5.0	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0	
	OFDC, Angul		0.34250	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2013-14	Forest Department	State Plan – 13th FC Grant	7.4	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0	
	OFDC, Angul		.10150	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2014-15	Forest Department	Non Plan – 13th FC Grant	7.4	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		State Plan – Increase Tree Cover outside the Forest	7.0	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0	
	OFDC, Angul		0.05	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2015-16	Forest Department	State Plan – Increase Tree Cover outside the Forest	7.4	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		State – Plan Agro Forestry	7.0	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0.462	Mango, Cashew, Amla
	OFDC, Angul		0.04	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2016-17	Forest Department	State – Plan Agro Forestry	7.0	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		CAMPA Interest Money – Increase tree Cover outside Forest (TOF) Nursery for 2016-17	5.43	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		Shree Jagannath Bana Prakalpa	2.0	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0.4315	Mango, Cashew, Amla

	OFDC, Angul		0.2496	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2017-18	Forest Department	MGNREGS (Convergence)	0.33	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
	Horticulturist, Angul		0.415	Mango, Cashew, Amla
	OFDC, Angul		0.5757	Karanja, Sirisa, Jack Fruit, Sisoo, Mango etc
2018-19	Forest Department	CAMPA-Wildlife-Site Specific Conservation Plan	0.48000	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		MGNREGS-AGRO-FORESTRY	2.04830	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		MGNREGS-TOF	0.50300	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
2019-20		Green Mohanadi Mission	1.15000	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		MGNREGS-Agro Forestry	2.87625	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		MGNREGS-TOF	1.50475	Teak, Sisoo, Ghambar, Amla, Bamboo etc.
		MGNREGS-Permanent Nursery	2.02390	Teak, Sisoo, Ghambar, Amla, Bamboo etc
	Total		**80.38665**	

Avenue & Urban Plantation during 2009-10 to 2019-20 of Angul Forest Division

Year 2009-10 to 2019-20)	Name of the Scheme	Name of the Range	Name of the Site	Avenue Plt (in RKM)	Seedlings Planted (in Lakh)	UTP in lakh
6	7	3	5	11	12	13
2011-12	State-Plan-Urban Area Plantation	Angul	Angul	0	0	0.1400
2011-12	State-Plan-Urban Area Plantation	Talcher	Talcher	0	0	0.0650
2011-12	State-Plan-Urban Area Plantation	Kaniha	Kaniha	0	0	0.0180
			Total	**0**	**0**	**0.2230**
			Grand Total -2011-12	**0.000**	**0.000**	**0.223**
2012-13	**State Plan**- Urban Plantation	Angul	Angul		0	0.0500
2012-13	**State Plan**- Urban Plantation	Talcher	Talcher		0	0.0500
			Total	**0**	**0**	**0.10000**
	State-Plan-13th Finance Commision Grant					
2012-13	State-Plan-13th FC Grant	Bantala	Bantala Range	0	0	
2012-13		Jarapada	Jarada Range	0	0	
2012-13		Chhendi pada	Chhendipada Range	0	0	
2012-13		Angul	Angul Range	0	0	
2012-13		Talcher	Talcher Range	0	0	
2012-13		Kaniha	Kaniha Range	0	0	
			Total	**0**	**0**	
2012-13	**State Plan**- C.O.L-On Forests (Avenue Plantation)	Angul	Andhru-Manikjodi	15	0.0375	
			Total -2012-13	**15**	**0.0375**	**0.1000**
2013-14	State Plan-13th F.C.	Bantala	Bantala Range	0	0	
2013-14		Jarapada	Jarapada Range	0	0	
2013-14		Chhendi pada	Chhendipada Range	0	0	
2013-14		Angul	Angul Range	0	0	
2013-14		Talcher	Talcher Range	0	0	
2013-14		Kaniha	Kaniha Range	0	0	
			Total	**0**	**0.0000**	
2013-14	State-Plan Urban Plantation	Angul	Angul Town	0	0	0.0500
2013-14		Talcher	Talcher Town	0	0	0.0500
			Total	**0**	**0**	**0.1000**
2013-14	State Plan- Avenue	Jarapada	Antulia-Tabada Road	2	0.0050	

2013-14	State Plan- Avenue	Jarapada	Baragotha-Hingogola Road	4	0.0100	
2013-14	State Plan- Avenue	Jarapada	Tabadhol-Roadsingha Road	14	0.0350	
			Total	**20**	**0.0500**	
2013-14	Forest Deposit	Bantala	Bantala-Champtimunda	6	0.0240	
2013-14	Forest Deposit	Chhendi pada	Chhendipada to Tentuloi	6	0.0240	
2013-14	Forest Deposit	Angul	Angul-Chhendipada Road	6	0.0240	
2013-14	Forest Deposit	Talcher	N.H-Kandal-Gurujanga	2	0.0080	
2013-14	Forest Deposit	Talcher	Godibandha-Kaniha Road	4	0.0160	
2013-14	Forest Deposit	Talcher	Gaham- Biru Road	4	0.0160	
2013-14	Forest Deposit	Kaniha	Jarada to Sardhapur	6	0.0240	
			Total	**34**	**0.1360**	
2013-14	MGNREGS	Bantala	Bantala Range Office to Mundadhipa	6	0.0150	
2013-14	MGNREGS	Bantala	Bantala to Sankhapur	0.5	0.0013	
2013-14	MGNREGS	Bantala	Sankhapur to Jamunda	4	0.0100	
2013-14	MGNREGS	Bantala	Kangulei to Banamira	3	0.0075	
2013-14	MGNREGS	Bantala	Labangi Chhaka to Balanga	5	0.0125	
2013-14	MGNREGS	Bantala	Garatarasha to Nuakheta	1.5	0.0038	
2013-14	MGNREGS	Jarapada	Antulia to Antulia compt-4	4	0.0100	
2013-14	MGNREGS	Jarapada	Antulia to Tapdol	5	0.0125	
2013-14	MGNREGS	Jarapada	Laxmanpur to Dandasinga	6	0.0150	
2013-14	MGNREGS	Jarapada	Laxmanpur to Kadalibereni	5	0.0125	
2013-14	MGNREGS	Jarapada	Mundasahi to Lembutala Chhak	15	0.0375	
2013-14	MGNREGS	Chhendi pada	Bagedia to Pattakumunda	10	0.0250	
2013-14	MGNREGS	Chhendi pada	Chhendipada to Kampasala	14	0.0350	
2013-14	MGNREGS	Chhendi pada	Nuagaon to Dangapal	8	0.0200	
2013-14	MGNREGS	Chhendi pada	Kankurpal to Changudia	8	0.0200	
2013-14	MGNREGS	Chhendi pada	Bhatapal to Nuagaon	10	0.0250	
2013-14	MGNREGS	Talcher	Biru to Balijharan	10	0.0250	
2013-14	MGNREGS	Talcher	Banarpal to Bauligarh	20	0.0500	
2013-14	MGNREGS	Kaniha	Dangersingha to Kaniha	5	0.0125	

2013-14	MGNREGS	Kaniha	Badagunduri to Santrabandha	6	0.0150	
2013-14	MGNREGS	Kaniha	Badhira to Santrabandha	10	0.0250	
2013-14	MGNREGS	Kaniha	Badhara to Kosala	8	0.0200	
2013-14	MGNREGS	Kaniha	Sardhapur to Badgunduri	3	0.0075	
2013-14	MGNREGS	Kaniha	Kaniha to Chhelia	3	0.0075	
2013-14	MGNREGS	Kaniha	Jherbereni to Bajrakote	6	0.0150	
2013-14	MGNREGS	Kaniha	Gunduri to Nalam	5	0.0125	
2013-14	MGNREGS	Kaniha	Hanumanpur to Talpada	6	0.0150	
2013-14	MGNREGS	Kaniha	Dalak to Durgapur	6	0.0150	
2013-14	MGNREGS	Kaniha	Khajuria to Sapkata	4	0.0100	
2013-14	MGNREGS	Kaniha	Barpada to Kaliadama	10	0.0250	
2013-14	MGNREGS	Kaniha	Rengali to Kuluma	6	0.0150	
2013-14	MGNREGS	Kaniha	Arakili to Gandamala	6	0.0150	
2013-14	MGNREGS	Kaniha	Gandmala to Podagada	6	0.0150	
2013-14	MGNREGS	Kaniha	Rengali Dam to Khamer	10	0.0250	
2013-14	MGNREGS	Kaniha	Gunduri Chhaka to Bajrakota	10	0.0250	
	Total			**245**	**0.6125**	
	Grand Total-2013-14			**299.00**	**0.80**	**0.100**
2014-15	State Plan-Avenue	Talcher	Kulei- to Baruan	6	0.0150	
2014-15	State Plan-Avenue	Talcher	Parabilla to Burkuna	4	0.0100	
2014-15	State Plan-Avenue	Talcher	Balangi to Solada	10	0.0250	
			Total	**20**	**0.0500**	
2014-15	State-Plan Urban Plantation	Angul	Angul Town	0	0	0.1000
2014-15	State-Plan Urban Plantation	Talcher	Talcher Town	0	0	0.1000
2014-15	State-Plan Urban Plantation	Kaniha	Kaniha Town	0	0	0.1000
			Total	**0**	**0**	**0.3000**
2014-15	Non-Plan-13th FC Grant	Bantala	Bantala Range	0	0	
2014-15	Non-Plan-13th FC Grant	Jarpada	Jarapada Range	0	0	
2014-15	Non-Plan-13th FC Grant	Chhendi pada	Chhendipada Range	0	0	
2014-15	Non-Plan-13th FC Grant	Angul	Angul Range	0	0	
2014-15	Non-Plan-13th FC Grant	Talcher	Talcher Range	0	0	
2014-15	Non-Plan-13th FC Grant	Kaniha	Kaniha Range	0	0	
			Total	**0**	**0**	
2014-15	State-Plan-Agro Forestry	Bantala	Bantala Range	0	0	
2014-15	State-Plan-Agro Forestry	Jarpada	Jarapada Range	0	0	
2014-15	State-Plan-Agro	Chhendi	Chhendipada Range	0	0	

	Forestry	pada				
2014-15	State-Plan-Agro Forestry	Angul	Angul Range	0	0	
2014-15	State-Plan-Agro Forestry	Talcher	Talcher Range	0	0	
2014-15	State-Plan-Agro Forestry	Kaniha	Kaniha Range	0	0	
			Total	**0**	**0**	
2014-15	MGNREGS	Bantala	Angul to Mahidhapur	9	0.0225	
2014-15	MGNREGS	Bantala	Jamunda to Nuakheta	2.6	0.0065	
2014-15	MGNREGS	Bantala	PWD Road to Humabira	2	0.0050	
2014-15	MGNREGS	Bantala	R.D.Road to Badakantakula	2	0.0050	
2014-15	MGNREGS	Bantala	Khalgon to Talgarh	4	0.0100	
2014-15	MGNREGS	Jarpada	Bhagirathipur to Laxmidharpur	6	0.0150	
2014-15	MGNREGS	Jarpada	PWD Road to Jarapada Jangal Mauva	4	0.0100	
2014-15	MGNREGS	Jarpada	Balipata to Kisinda	4	0.0100	
2014-15	MGNREGS	Chhendi pada	Charibati to Baramancha	9	0.0225	
2014-15	MGNREGS	Chhendi pada	Bhatapal to Kanloi	0.5	0.0013	
2014-15	MGNREGS	Angul	Pathargarh to Saradhapur	6.80	0.0170	
2014-15	MGNREGS	Angul	Karatpata to Bantala	1.96	0.0049	
2014-15	MGNREGS	Talcher	Talcher Kankili to Luhundi	3	0.0075	
2014-15	MGNREGS	Talcher	Seepur to Karnapal	5	0.0125	
2014-15	MGNREGS	Talcher	Bonda to Godasantiri	2	0.0050	
2014-15	MGNREGS	Talcher	Santri to Arahat	5	0.0125	
2014-15	MGNREGS	Kaniha	Badahira to Santrabandha	10	0.0250	
2014-15	MGNREGS	Kaniha	Jharabereni to Bajrakote	10	0.0250	
2014-15	MGNREGS	Kaniha	Barapada to Bajrakote	10	0.0250	
			Total	**96.86**	**0.24215**	
	Grand Total-2014-15			**116.86**	**0.29**	**0.30**
2015-16	State-Plan Urban Plantation	Angul	Angul Town	0	0	0.100
2015-16	State-Plan Urban Plantation	Talcher	Talcher Town	0	0	0.100
2015-16	State-Plan Urban Plantation	Kaniha	Kaniha Town	0	0	0.100
			Total	**0**	**0**	**0.300**
2015-16	State Plan- Avenue	Kaniha	Badatribeda to Sardhapur	10	0.025	0.000
2015-16	State Plan- Avenue	Kaniha	Rengali to Khinda	10	0.025	0.000

			Total	**20**	**0.05**	**0**
2015-16	Non-Plan-13th FC Grant	Bantala	Bantala Range	0	0	0
2015-16	Non-Plan-13th FC Grant	Jarapada	Jarapada Range	0	0	0
2015-16	Non-Plan-13th FC Grant	Chhendi pada	Chhendipada Range	0	0	0
2015-16	Non-Plan-13th FC Grant	Angul	Angul Range	0	0	0
2015-16	Non-Plan-13th FC Grant	Talcher	Talcher Range	0	0	0
2015-16	Non-Plan-13th FC Grant	Kaniha	Kaniha Range	0	0	0
			Total	**0**	**0**	**0**
2015-16	State-Plan-Agro Forestry	Bantala	Bantala Range	0	0	0
2015-16	State-Plan-Agro Forestry	Jarapada	Jarapada Range	0	0	0
2015-16	State-Plan-Agro Forestry	Chhendi pada	Chhendipada Range	0	0	0
2015-16	State-Plan-Agro Forestry	Angul	Angul Range	0	0	0
2015-16	State-Plan-Agro Forestry	Talcher	Talcher Range	0	0	0
2015-16	State-Plan-Agro Forestry	Kaniha	Kaniha Range	0	0	0
			Total	**0**	**0**	**0**
2015-16	MGNREGS	Bantala	Madhupur to Bantala Chhak	2.6	0.007	0
2015-16	MGNREGS	Bantala	Bantala Chhak to Kumurusinga	3	0.008	0
2015-16	MGNREGS	Bantala	Beda Chhak to Ekarbandha	2.6	0.007	0
2015-16	MGNREGS	Bantala	Sarangapur to Nuapada	2	0.005	0
2015-16	MGNREGS	Bantala	Angul to Mahidharpur	5	0.013	0
2015-16	MGNREGS	Chhendi pada	Bhatapal to Kanloi	6	0.015	0
2015-16	MGNREGS	Angul	Purunagarh to Karatpata	8	0.020	0
2015-16	MGNREGS	Angul	Madhapur Chhak to Pokutunga	2	0.005	0
2015-16	MGNREGS	Angul	Paranga BahalaSahi the Mukundapasi	5	0.013	0
2015-16	MGNREGS	Talcher	Dharampur to Kankili	5	0.013	0
2015-16	MGNREGS	Talcher	NH-53 to Lingirakata Chainpal Road	5	0.013	0
2015-16	MGNREGS	Kaniha	Poipal to Talapada	10	0.025	0
			Total	**56.2**	**1.933**	**0**
	Total-2015-16			**76.2**	**1.9825**	**0.3**
2016-17	**State-Plan** - Agro Forestry	Bantala	Bantala Range	0	0	0
2016-17	**State-Plan** - Agro Forestry	Jarapada	Jarapada Range	0	0	0
2016-17	**State-Plan** - Agro	Chhendi	Chhendipada Range	0	0	0

	Forestry	pada				
2016-17	**State-Plan** - Agro Forestry	Angul	Angul Range	0	0	0
2016-17	**State-Plan** - Agro Forestry	Talcher	Talcher Range	0	0	0
2016-17	**State-Plan** - Agro Forestry	Kaniha	Kaniha Range	0	0	0
			Total			**0**
2016-17	Maintnance of Permanent Nursery	Bantala	Bantala Range	0	0	0
2016-17	Maintnance of Permanent Nursery	Jarapada	Jarapada Range	0	0	0
2016-17	Maintnance of Permanent Nursery	Chhendi pada	Chhendipada Range	0	0	0
2016-17	Maintnance of Permanent Nursery	Angul	Angul Range	0	0	0
2016-17	Maintnance of Permanent Nursery	Talcher	Talcher Range	0	0	0
2016-17	Maintnance of Permanent Nursery	Kaniha	Kaniha Range	0	0	0
			Total			**0**
2016-17	State-Plan Urban Plantation	Angul	Angul Town	0	0	0.1000
2016-17		Talcher	Talcher Town	0	0	0.1500
2016-17		Kaniha	Kaniha Town	0	0	0.2000
				0	**0**	**0.450**
2016-17	OMBADC	Chhendi pada	Gohirapasi	0.7	0.0018	0
2016-17	OMBADC	Chhendi pada	Languli Jungle	1.3	0.0033	0
2016-17	OMBADC	Angul	Ranigotha Village	3	0.0075	0
2016-17	OMBADC	Angul	Ranigotha Village	4	0.0100	0
2016-17	OMBADC	Talcher	Bhajanipur to Koilnagar	3	0.0075	0
2016-17	OMBADC	Talcher	Danara to Natidi Danara to Kalammchhuin & lokeipasi	6	0.0150	0
2016-17	OMBADC	Kaniha	Adweitaprasad	6	0.0150	0
2016-17	OMBADC	Kaniha	Goilanda	3	0.0075	0
2016-17	OMBADC	Kaniha	Gundurinali	3	0.0075	0
2016-17	OMBADC	Kaniha	Jamunia	3	0.0075	0
2016-17	OMBADC	Kaniha	Jarada	8.26	0.0207	0
2016-17	OMBADC	Kaniha	Malapasi	3	0.0075	0
2016-17	OMBADC	Kaniha	Banasingha	5	0.0125	0
2016-17	OMBADC	Kaniha	Bhuinpur	5	0.0125	0
2016-17	OMBADC	Kaniha	Jaipur	3	0.0075	0
2016-17	OMBADC	Kaniha	Kaniha	3	0.0075	0
2016-17	OMBADC	Kaniha	Kansamunda	6	0.0150	0

2016-17	OMBADC	Kaniha	Masunihata	3	0.0075	0
2016-17	OMBADC	Kaniha	pttakhaman	4	0.0100	0
2016-17	OMBADC	Kaniha	Pathrmunda	3	0.0075	0
2016-17	OMBADC	Kaniha	Srathipal	0.34	0.0009	0
2016-17	OMBADC	Kaniha	Takua	3	0.0075	0
2016-17	OMBADC	Kaniha	Tolakabeda	1.4	0.0035	0
				81	**0.2025**	**0**
2016-17	Shree Jagannath Bana Prakalpa (OEMF)	Bantala	Bantala Range	0	0	0
2016-17		Jarapada	Jarapda Range	0	0	0
2016-17		Chhendi pada	Chhendipada Range	0	0	0
2016-17		Angul	Angul Range	0	0	0
2016-17		Talcher	Talcher Range	0	0	0
2016-17		Kaniha	Kaniha Range	0	0	0
			Total	**0**	**0**	**0**
2016-17	MGNRGES	Jarapada	Jarapada to Chhelipada Road	5	0.0125	0
2016-17		Chhendi pada	Golagagadia to Khaman	6	0.0150	0
2016-17		Talcher	Balanda to Samal PWD	5	0.0125	0
2016-17		Talcher	Lingirakata to Talakalunhundi	5	0.0125	0
2016-17		Kaniha	Kumanda to Kosala	10	0.0250	0
			Total	**31**	**0.0775**	**0**
2016-17	MGNREGS Convergence Plan	Kaniha	Rengali Police Statation to Rengali Market	20	0.05000	0
			Total	**20**	**0.05000**	**0**
	Total-2016-17			**132**	**0.3300**	**0.4500**
2017-18	District Mineral Foundation-Urban Plantation	Angul	Derang Damsite (Peri Urban)	0	0	0.0500
2017-18	-do-	Talcher	Municipality area (Nizigarh Town)	0	0	0.0500
2017-18	-do-	Kaniha	Bijigoal	0	0	0.0500
	Total			**0**	**0**	**0.1500**
2017-18	Corporate Sector-MCL-Urban Plantation	Angul	Derang Damsite	0	0	0.0500
2017-18	-do-	Talcher	Gurujang Mouza	0	0	0.0800
2017-18	-do-	Talcher	Rodhasara Mouza	0	0	0.0700
	Total			**0**	**0**	**0.2000**
2017-18	**Forest Deposit** -Avenue Plantation	Bantala	Angul to Mahidharpur	3	0.0075	0
2017-18	MGNREGS	Talcher	NH-149 to Mohuliapasi PMGSY Road	5	0.01250	0
2017-18	**MGNREGS (Agro For.)**(Convergence)	Chhendi pada	Chhendipada (C. N.)	0	0.00000	0

	Total-2017-18			**8**	**0.020000**	**0.3500**
2018-19	Corporate Sector MCL	Angul	Derjanga Dam Site	0	0	0.10000
2018-19	Corporate Sector MCL	Talcher	Dera	0	0	0.10000
2018-19	Corporate Sector MCL	Kaniha	Telesingha	0	0	0.05000
2018-19	Corporate Sector MCL	Kaniha	Kamarei	0	0	0.15000
			Total			**0.40000**
2018-19	CAMPA-Wildlife-Site Specific Conservation	Kaniha	Balrampur C.N.	0	0	0
2018-19	MGNREGS	Chhendi pada	Kankurpal to Badaberena	6	0.015	0
2018-19	MGNREGS	Chhendi pada	Kudapal to Sandhapal	6	0.015	0
2018-19	MGNREGS	Talcher	Gounighasa to Saradhapur	5	0.013	0
2018-19	MGNREGS	Kaniha	Barihapur to Saradhapur	6	0.015	0
2018-19	MGNREGS	Kaniha	Nalam to Poipal	4	0.010	0
2018-19	MGNREGS	Kaniha	Suleipal to Arkil	10	0.025	0
			Total	**37**	**0.0925**	**0**
2018-19	MGNREGS-AGRO-FORESTRY	Bantala	Bantala Range	0	0	0
2018-19		Jarapada	Jarapada Range	0	0	0
2018-19		Chhendi pada	Chhendipada Range	0	0	0
2018-19		Angul	Angul Range	0	0	0
2018-19		Talcher	Talcher Range	0	0	0
2018-19		Kaniha	Kaniha Range	0	0	0
			Total	**0**	**0**	**0**
2018-19	MGNREGS-TOF	Bantala	Bantala Range	0	0	0
2018-19	MGNREGS-TOF	Jarapada	Jarapada Range	0	0	0
2018-19	MGNREGS-TOF	Angul	Angul Range	0	0	0
2018-19	MGNREGS-TOF	Talcher	Talcher Range	0	0	0
2018-19	MGNREGS-TOF	Kaniha	Kaniha Range	0	0	0
			Total	**0**	**0**	**0**
	Total-2018-19			**37**	**0**	**0**
2019-20	Urban Plantation under DMF	Chhendi pada	Chhendipada	0	0	0.10000
2019-20		Chhendi pada	Chhendipada	0	0	0.06000
2019-20		Talcher	Dera	0	0	0.10000
2019-20		Kaniha	Bizigoal	0	0	0.05000
	Total	**Total**		**0**	**0.00000**	**0.3100**

2019-20	Green Mohanadi Mission	Talcher	Talcher Range	0	0	**0.0000**
2019-20		Kaniha	Kaniha Range	0	0	**0.0000**
2019-20		Kaniha	Bijigol	0	0	0.0300
2019-20		Kaniha	Karadei	0	0	0.0900
2019-20		Kaniha	Tolakabeda	0	0	0.0200
2019-20		Kaniha	Poipal	0	0	0.0600
	Total	**Total**		**0**	**0**	**0.2000**
	Total			**0**	**0**	**0.51000**
2019-20	Plan for Convergence of MGNREGS	Talcher	Sibarampur Temple to Ekdal	5	0.01250	0
2019-20		Talcher	Sibarampur to Kandhaberini	5	0.01250	0
2019-20		Kaniha	Gengutia to Arkil	10	0.02500	0
	Total	**Total**		**20**	**0.05000**	**0**
2019-20	MGNREGS	Bantala	Nuakheta to New Raigoda	3	0.00750	0
2019-20	MGNREGS	Bantala	Basala to Inkarbandha	5	0.01250	0
2019-20	MGNREGS	Bantala	Mahidharpur to Banarpal	2	0.00500	0
2019-20	MGNREGS	Jarapada	Badmul to Badamul Bara	2	0.00500	0
2019-20	MGNREGS	Jarapada	Kumbhira Nala to Dhaurakhaman	5	0.01250	0
2019-20	MGNREGS	Chhendi pada	Dugapur to Raijharan	5	0.01250	0
2019-20	MGNREGS	Chhendi pada	Similipal to Bagadia	5	0.01250	0
2019-20	MGNREGS	Angul	Paranga to Kanteikulia	5	0.01250	0
2019-20	MGNREGS	Angul	Manikjodi to Kulsar	5	0.01250	0
		Total		**37**	**0.09250**	**0**
2019-20	MGNREGS-Agro Forestry	Bantala	Bantala Range	0	0	0
2019-20		Jarapada	Jarapada Range	0	0	0
2019-20		Chhendi pada	Chhendipada Range	0	0	0
2019-20		Angul	Angul Range	0	0	0
2019-20		Talcher	Talcher Range	0	0	0
2019-20		Kaniha	Kaniha Range	0	0	0
	Total			**0**	**0**	**0**
2019-20	MGNREGS-TOF	Bantala	Bantala Range	0	0	0
2019-20	MGNREGS-TOF	Jarapada	Jarapada Range	0	0	0
2019-20	MGNREGS-TOF	Chhendi pada	Chhendipada Range	0	0	0
2019-20	MGNREGS-TOF	Angul	Angul Range	0	0	0
2019-20	MGNREGS-TOF	Talcher	Talcher Range	0	0	0
2019-20	MGNREGS-TOF	Kaniha	Kaniha Range	0	0	0
	Total			**0**	**0**	**0**
2019-20	MGNREGS-Permanent	Bantala	Bantala Range	0	0	0

2019-20	Nursery	Jarapada	Jarapada Range	0	0	0
2019-20		Chhendi pada	Chhendipada Range	0	0	0
2019-20		Angul	Angul Range	0	0	0
2019-20		Talcher	Talcher Range	0	0	0
2019-20		Kaniha	Kaniha Range	0	0	0
	Total			**0**	**0**	**0**
		Total		**57**	**0**	**0.51000**

16.6 Prescription:

***** A total of 200 Ha of barren & uncultivable land be covered under block plantation.

* A total of 200 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 - 17

SUMMARY OF PRESCRIPTION

17.1. 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, forests raised by compensatory plantations (P.F), existing forests, un-classed forests, D.P.Fs and 87 RFs in the territorial jurisdiction of Angul Division. The total area in the proposed plan is 64610.0503Ha. It is proposed to create following circles in the new plan.

1. The Improvement Working Circle. - 27586.678 ha.
2. The Rehabilitation Working Circle. - 22586.2393 ha.
3. The Plantation Working Circle. - 8142.106ha.
4. The Protection Working Circle. - 6295.027 ha.
5. The Bamboo (Overlapping) Working Circle. - 6513.11 ha.
6. The Wild life (Overlapping) Working Circle. - 64610.0503 ha.
7. The NTFP (Overlapping) Working Circle. - 64610.0503 ha.
8. The JFM (Overlapping) Working Circle. - 47416.323 ha.

There are Four stand alone Working Circles having independent area where as there is proposal to constitute Four Working Circle with overlapping jurisdiction and one TOF (Tree outside the Forest Area) Working Circle, which does not cover any RF/ PRF or VF, The period of this working Plan is from 1st April, 121 to 31st March, 131. 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.

17.1.1 Improvement working circle

The total area included in this working circle is **27586.678 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 are as follows: -

I. To improve the density, condition and composition of forest cover.

II. To ensure appropriate soil and moisture conservation measures on watershed basis for improvement of site condition and eco-restoration.

III. To maintain and improve the biodiversity of the forest blocks.

IV. To build up the growing stock and improve stand structure by adopting suitable silvicultural operations.

V. To establish natural regeneration of indigenous species.

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. Area coming under proposed Tiger corridor and proposed extension of Satkosia Tiger Reserve will follow the guidelines issued vide Memo No.1681 dt.27.04.115 of Regional Chief Conservator of Forests-cum-Field Director, Satkosia Tiger Reserve, Angul. The Improvement system will be adopted with emphasis to improve the crop condition and stability of the eco-system.

17.1.2 Harvestable diameters :

The exploitable girth class is not fixed as per current plan nad no felling is recommended as the trees of exploitable girth of some species are to be retained as mother tree for natural regeneration.

17.1.3 Marking Rules

After demarcation of improvement coupe area, marking shall be done in accordance with the following rules. All trees to be marked for felling will be given two blazes opposite to each other of size 15 cm x 15 cm, one at breast height and the other as close to the ground as possible and marked with departmental hammer and numbered serially. Special attention should be given to forest areas (Nuakheta RF and part of Balanga RF) in proximity to protected areas (proposed Satkosia Tiger Reserve) which also serve as extended habitats for many rare and endangered species. The maintenance and restoration of grasslands, wetlands, wildlife corridors and water points must be identified. Threats, such as habitat loss and/or fragmentation; illegal trade; road and rail networks; etc. should be identified and appropriate corrective measures should be suggested for implementation. Similarly, areas of man animal conflict deserve special attention for amelioration.

I. Only the dead and uprooted trees shall be marked.

II. All climbers shall be cut at the time of marking (climbers shall be cut at two places, one near the ground and other 2 m above the ground)

III. On completion of marking, inspection shall be done by the A.C.F. and, if defect any shall be rectified. Marking Officer (not below the rank of a Range Officer) shall submit marking list within a week of inspection.

17.1.4Felling Series

NA

17.1.5 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.

17.2 Prescription for Rehabilitation Working Circle

The total area included in this working circle is **22586.2393 Ha**. The objectives of the management of the Rehabilation Working Circle are within the scope of general objectives of the management of the entire division are as follows: -

I. To improve quality and stocking of the existing crop through silvicultural operation..

II. To rehabilitate the area and improve soil condition by taking suitable soil and moisture conservation measure.

III. To restock the barren and under stocked area by raising plantation with suitable species.

IV. To encourage natural regeneration.

V. To provide protection against illicit removal, grazing and fire so as to check further destruction of left over forest growth.

VI. To provide adequate rehabilitation measure to protect hill slopes, nallah bank and eco-fragile area.

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.

17.2.1 Aided 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 **22586.2393 Ha**.

17.2.2 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.

17.2.3Treatment operation

According to the stage of degradation the treatment area has been divided into two broad categories.

Category 1:- It includes the areas where the forest has moderate to good regeneration of the major species and good rootstock (say 300 and more stumps/ha) are already present.

Category 2:- Includes those areas where forest growth exists, but the density of forest crop and regeneration status of many species is poor.

17.2.4. 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 firewatchers from the village adjoining to the forest blocks should form a part of the subsidiary operations.

17.2.5 Silvicultural System

The prime objective is to restock these forest blocks and to reduce the biotic pressure. Silvicultural operation like regeneration cleaning, high stump cutting, climber cutting, singling out of multiple shoots, added natural regeneration, artificial regeneration in gaps, soil & moisture conservation along with tending operation shall be carried out. In addition to silvicultural operation steps shall be taken to protect the treatment area from fire, grazing & illicit felling

17.2.6. Plantation Working Circle.

The total area allotted to this Working Circle is 8142.106 Ha. Considering the fact and vegetation condition of the plantations independent plantation working circle proposed as (a) Harvest to old teak plantation (b) Tending to the old teak plantation raised during and/ or prior to the out going plan period (c) Tending to the old existing MISC plantation, compensatory plantation, Fuel fodder plantation, NTFP plantation, Bamboo plantation, JVP plantation etc. raised during and/or prior to the out going plan.

17.2.7 Special objectives of Management

The special objective of the management of the Working Circle is within the scope of general objective of the management for the entire Division. These are as follows.

- To restock the blank areas of forest blocks through artificial regeneration.
- To rehabilitate the degraded/eroded sites with green coverage by adopting special site specific method.
- To monitor and increase the biodiversity for improvement of local ecology.

- To address the biotic pressure with sustainable development of peripheral forest through community participation.
- To remix the present crop with fodder species for improvement of habitant of Wild Life.
- To encourage people for plantation in private land to reduce pressure on natural forest for timber and fuel wood by free distribution of seedling.
- To enhance the land productivity through soil & moisture conservation measures.
- To tend the existing plantations
- To increase the production of biomass
- To restock the JVP plantation through artificial regeneration in gaps

17.3.1 Felling series, cutting sections and JFM Areas.

Here are existing teak plantations in Antulia Tabada RF.

17.3.2 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 11 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.

17.3.3 Treatment operation:

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.

17.3.4 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 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 10 plants/ Ha shall be done over 10 Ha.

17.3.5 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 permeate gap availe.

17.3.6 Protection Working Circle

This Working circle cover over an area of 6295.027 Ha cfoncist of 14 forest blocks.. 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 . The forest blocks of Angul Forest Division are in various stages of degradation due to heavy illicit felling, quarry activities, industrial operation, widening of road, urbanization, causing of forest fire. The biotic pressure from human along with bovine population plays a pivotal role in the process of degradation.

17.4.1 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.

17.4.2 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.

17.4.3 Rotation period:

10 year rotation period is proposed to coincide with the working plan period.

17.4.4 Felling cycle:

Not applicable. However the treatment is prescribed for the plan period of 10 years.

17.4.5. Fire and Animal Protection.

1. **Strengthening of Check gate –**
   - **a.** by providing adequate staff & para staff.
   - **b.** A permanent house for the check gate staffs.
   - **c.** Frequent visit by mobile staff with arms.
   - **d.** Installation of VHF
2. **Protection squad –**
   a. A divisional mobile squad with required staffs and arms shall be constituted to support field staffs as and when required.
3. **Coordination meeting** –
   a. A coordination meeting between forest staffs and VSS members in a regular basis to provide protection against illicitly felling, theft and forest fire

17.5 Bamboo improvement (Overlapping) working circle

This Working Circle includes six forest block i.e Katada RF, Balanga RF, Nuakheta RF, Balanga PRF, Talasira DPF, Labangi DPF and Burti PRF 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 **6513.11 Ha**. The Bamboo accurse in the Division as a part of second story and mainly are quality III. 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 Silvicultarul operation.

17.5.1 SPECIAL OBJECTIVES OF MANAGEMENT:

The special objectives of management in respect of this working circle are within the scope of general objectives of management. These are as follows: -

I. To ensure regular Simultaneous Silvicultural Operations to prevent detoriation of bamboo crop both in quantity and quality .

II. To enforce scientific Bamboo Cutting Rules to ensure maximum yield on sustainable basis. 3. To ensure that bamboo coupe working is not done from commercial point of view as commercially viable bamboo stocks are not available. This Silvicultural treatment should be given in shape of Bamboo regeneration activities.

III. To meet the bona fide requirements of bamboo artisans, local people and bamboo based industry.

IV. To rehabilitate the exhausted bamboo bearing areas through appropriate measures like tending, soil mounding, plantation etc.

V. To generate employment for the local poor people.

17.5.2 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 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.

17.5.3 Treatment period

The total area is divided in ten Bamboo improvement Working circle for the plan period.

17.5.4 Plantation of Bamboo:

It should be taken up in deficient areas especially where the density of bamboos is less than 1 clumps per hectare. 10 Ha should be covered under OBDP(State Plan) in each improvement series and 10 Ha should be covered under NBM in each improvement series.

17.6 WILDLIFE (OVERLAPPING) WORKING CIRCLE

Entire Working plan area of the Division, i.e., **64610.0503 hectares** have been allotted to this Overlapping Working Circle.

17.6.1 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:

I. Special emphasis is to be given to prevent Wild Life crimes and rescue of Wildlife in critical areas.
II. To protect Wild Life in general and endangered species in particular.
III. To address the issue related to man and animal conflict for safety and protection of both Wildlife and human beings outside the Forest Area.
IV. To prevent Wild Life accidents caused by electrocution and Railways.
V. To conserve, protect and improve wild life habitat with special emphasis on the proposed corridors.
VI. To protect wild life in general and endangered species in particular.
VII. To create mass awareness among the locals regarding the necessity to conserve and protect the wild life and their habitat.
VIII. To conserve and develop important wild life habitat for the purpose of eco-tourism.
IX. To increase the biodiversity and wildlife population.
X. To prevent wildlife related crimes.

17.6.2 Method of execution.

17.6.2.1 Maintainance of special habitat: -

The number of the mega animal elephant is in increasing trend in this division. The elephants are inhabiting in Chhendipada RF, Kankurpal RF, Jalatap RF, Jaypur RF, Bahianali RF, Brahmanabil RF, Similisahi RF, Sunarijharan RF of Chhendipada Range NialuLodhajharaiSapakata RF, Phulajhari RF, Biripal RF, Budhia RF, Bandhuli RF, Badakathia RF, Santarabandha RF of Kaniha Range Kanehijena RF, Bulajhara RF, Seepur RF &Mankadachua RF of Talcher Range and frequently entering into the human habitation and creating man-animal conflict, which leads to crop damage and sometimes this leads to injury or death of both elephants and human beings. The following measures shall be taken for improvement and maintenance of special habitat of the mega animal.

- Maximum plantation activities to be taken up to provide the tree cover in degraded patches of the Forests.
- To meet the requirement of food, fodder species like bamboo, sugar cane, banana, *ficus* species etc to be raised inside forest in cyclic manner.
- To restrict the movements of the elephants into human habitation the forest boundary to be shield with elephant barriers like construction of trenches with laterite lining, solar fencing and stone wall etc.
- Sufficient numbers of anti poaching, anti smugglings squads, elephant depredation squads and elephant trackers to be engaged to stop the poaching activities and also the illicit felling to protect the habitat.
- Watch tower to be constructed in a camouflage manner adjoining to the water bodies for better protection and monitoring point of views
- Awareness programmes, training and meetings will be emphasized with villagers, electrical officials and Railway officials to protect the wild animals from poaching, electrocution and railway accidents.
- Timely payment of compassionate payment should be ensured to win the confidence of the people failing which the elephant may face casualty.
- Fragmented Elephant corridors to be developed with raising plantation by planting fodder species.
- Maintenance of special habitats.
- Development of habitat.
- Maintenance of unique habitats.
- Maintenance of critical micro habitats.
- Maintenance of Water sources and wetlands.
- Maintenance of the cultural landscape.

17.6.2.2 Development of habitat-

Most of the Forest blocks of the division are rich in wild animals like Spotted deer, mouse deer, barking deer, bear, flying squirrel, porcupine, wild boar, rattles, birds and snakes which need greater input for the improvement in terms of food, water and tree cover of the area. The revival of the habitat corridors is primarily required for the reduction of the fragmentation of the habitat. This can be achieved by restocking of the exiting forest growth with suitable fodder & fruit bearing species, creation and renovation of sufficient number of water holes and maintaining the abandoned corridor linkages.

17.6.2.3 Maintenance of critical micro habitats-

Besides the forest areas there are some critical micro habitats of wild animals and birds having immense importance in this division. These will be identified during field survey and the site specific management will be prescribed to conserve the critical micro habitats of the critically endangered area and mining areas of this Division.

17.6.2.4 Maintenance of water sources and wetlands-

In forest area water scarcity is felt from January to June when most of the nallahs& streams dry. Hence it is necessary to create water holes, check dams and game tanks to enhance availability of water. The existing water wholes will be renovated.

17.6.2.5 Monitoring of Tiger ,its co-predators and prey species-

Half yearly sign survey will be carried out in the forests coming under Satkosia Tiger Landscape as well as along the proposed tiger corridor.

17.6.3 Misc. regulations

17.6.3.1 Training and Awareness

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.

17.6.3.2 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.

17.6.3.3 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.

17.6.4 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 today basis.

I. The depredation problem will be effectively tackled with the participation of the people, building, identifying the Village level leaders and keeping the communication channels open with villagers.
II. 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.
III. To address the monkey menace a special protection squad to be formed at division level equipped with tranquilizing gun and accessories.

17.6.5 Control and grazing

The wild life rich area shall be banned for grazing to avoid the destruction of the habitat and contamination of diseases from the domestic cartels. However, grazing may be controlled elsewhere as per the provisions of the Orissa Forest (Grazing of Cattle) Rules, 1980. The local people and the VSS may even be motivated to immunize their cattle which need for grazing inside the forest.

17.6.6 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. 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 are given to the member of VSS to be involved in extinguishing fire. Special awareness campaign organized to aware people for controlled burning at the time of NTFP collection. Regular training imparted to forest staffs, VSS members and fire watchers. All sections are provided with Vehicle, VHF sets and fire fighting equipments to fight the Forest Fire.

17.6.7 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 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.

17.7 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 64610.0503 hectares. Since this Working Circle overlaps the entire plan area, the details of area allotment to this circle has not been furnished.

17.7.1 SPECIAL OBJECTIVES OF MANAGEMENT:

The special objectives of management are as follows:

I. To regulate the collection and extraction of various NTFPs with a view.

II. To regulate and optimize extraction and utilization of various NTFPs in conformity with Government policy with a view to promote sustainable management of forest.

III. To enhance the value of forest by way of developing new NTFPs, creating additional opportunities for further value addition in the existing NTFPs and strengthening the marketing.

IV. To develop and extend skills to the local people including the tribals for sustainable collection, extraction and utilization of various NTFPs.

V. To protect NTFP trees, promote their regeneration and develop productivity by taking suitable silvicultural measures.

VI. To create alternate employment/ income generation by developing village and cottage industries by using the locally available NTFP items as input / raw materials.

17.7.2 Area Allotted

All the forest blocks included in the Plan have been allotted to this Overlapping Working Circle. The total area included in this working circle is **64610.0503 ha**

17.7.3 Analysis and Valuation of Crop

The potential production of various NTFPs and to ascertain impact of collection etc of such NTFPs on sustainability of the forest shall be studied in the Sample Points which shall be assessed the potentiality of NTFP.

17.7.4 Method of Execution

The primary collectors should be properly guided and trained 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. DFO shall prepare an annual action plan to develop these new NTFP area allotted in this circle. Site specific Silvicultural operation to be done in the forest area for improving the NTFP species both harvestable crop and regeneration crop. Besides that special care should be taken against fire and grazing in the area allotted, so as to enhance the natural regeneration and harvesting production. Latest technique of collection, drying and storage to be imparted to the Collector in the Vicinity area of NTFP collection.

17.7.5 Methods of Treatment of Major NTFP Species and Suggestions for their improvement

Scientific methods for improvement of some major NTFP species given in this Para, such as Sal seeds, Sal-leaves, Myrabolans, Mahua flower and Mahua seeds, hill brooms, Kendu leaf, Siali leaves and fibres etc.

17.7.6 Development of NTFP species

It is prescribed that large scale plantation of Agave along the boundary of the forest blocks should be under taken. This will not only create the additional NTFPs but also help in forest consolidation. Planting and nursery technique of Agave and Jatropha described in detail.

Annually minimum 10 Kms of agave to be planted to cover 100 Kms during Plan Period.

17.7.7 Calendar of operation

Collection cycle will be the collection period for different NTFP items from 1st October to 30th September of following year.

17.7.8 Misc. Regulation

In areas of the divisions where artificial regeneration through block plantation or gap plantation is to be taken preference in species selection should be given to species which yield NTFPs or medicines.

The Divisional Forest Officer shall contact the 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.

17.7.9 Rights and Concessions

Rights and concessions of local people shall be regulated in accordance with the provisions of the Orissa Forest Act and relevant Rules in force besides the Government policy in vogue

17.8Joint 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 **47416.323 ha.**

. A common notion says that the forest is a free resource for human kind. While the invaluable and intangible products of this precious asset is indispensable for the very existence of life on this planet, the valuable and tangible products are the essential commodities of our life. Age-old dependence of the local people on the forests is irrevocable.

Earlier people use to get forest produce for their bona-fide use through nistar or nominal charge that is royalty. In this division the per capita forest is very low where as the demand of forest produce is high. Protection of forests is extremely difficult on the part of the forest officials alone. The involvement of local people is very much felt for this purpose. Participation of the local people cannot be ensured without considering their bona-fide need. In order to make the matter broad based particularly peoples friendly, Joint Forest Management is conceptualized for protection, conservation and management of the natural forests by the forest officials and local people combined in consonance with the compelling need of the circumstances. Such change in the mode of management of forest is the call of the hour.

As already described earlier the joint forest management is regulated through a Resolution No. **16524-IF-Affn.17/111/F&E** of Forest and Environment Dept. of Odisha. Participation of local people through VSS is becoming popular day by day. It is the most suitable option for protection and management forest in the present circumstances. A sincere, specific and special effort is essential to stabilise this on-going process for sustainability. Hence Joint Forest Management (Overlapping)Working Circle is constituted for this purpose.

The different category of forest assigned to the VSS comes under the preview of this working circle. Similarly all the new area out of the plan area assigned to the VSS in course of implementation of this working plan will automatically become the part of this working circle. The prescriptions of this working circle shall be applicable to them. Further, these prescriptions should also be adopted for the areas protected by the VSS beyond the purview of plan area.

17.8.1 General Characters of vegetation:

The area of this working circle is scattered and also varied in crop composition and density, but mostly degraded forest under the perview of rehabilitation working circle are assigned to the VSS. In general the vegetation belongs to mixed deciduous tropical forest. These forests have the potentiality for speedy rejuvenation due to the availability of rooted waste, coppice shoot and pole crop.

17.8.2 Special objectives of management.

1. To spread the message of JFM to every forest fringe village by mass awareness campaign.
2. To involve communities in forest and natural resource management.
3. To make the people and Forest Department equal partners in the management process.
4. To restock the barren and blank areas through artificial regeneration.
5. To increase the productivity of soil through suitable soil and moisture conservation measures.
6. To encourage people to rational utilization of their own community resources for the betterment of the community.
7. To involve people in NTFP collection and trade.
8. To create income generating activities in the villages & reduce dependence on forest.

9. To study the scope of enhancing the network of VSS protection areas.
10. To spread the message of JFM to every Forest fringe village by adopting entry point activities & organizing mass awareness campaign.
11. To achieve all round socio economic development of the village by involving other line departments like Agriculture ,Horticulture, Soil Conservation, Veterinary, Health, Mass Education etc.

17.8.3 Method of execution.

1. Demarcation of VSS area
2. Preparation of micro plans
3. Entry point activities
4. Plantation of small timber and fuel wood needs of villagers.
5. Creating of sustainable income generating activities.
6. Capacity building of executive committee members and VSS member in regeneration cleaning, thinning, subsidiary silvicultural operation, soil & moisture conservation, book keeping, maintenance of VSS records, fund management, non-destructive NTFP harvesting, processing, value addition, etc.

17.8.4 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 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.

17.8.5 Rotation

No rotation period is possible for prescription in general due to variable nature of crop composition and condition in scatted manner.

17.8.6 Execution

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.
2. **Capacity Building**-Regular training camp and awareness campaigning shall be organized to ensure this aspect. Only through such process the VSS can be stabilized and built up necessary capacity to discharge their function effectively.
3. **Preparation of Microplan-** 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.

17.8.7 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.

17.8.8 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.

17.8.9 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.

17.8.10 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.

17.8.11 Associated measures

It will be executed as provided in the micro plan for individual VSS.

17.8.12 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.

17.9 FOREST PROTECTION.

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 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.

17.10 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 Rengali & Samal Dam side.

The nature camp should be created at Nuakheta.

17.11 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.

17.11.1 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.

17.12 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.

17.12.1 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.

17.12.2 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.

17.13 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.

17.13.1 Prescribed activity:

The study of carbon stock should be done every year in the earmarked sample points to ascertain the change.

17.14 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.

17.14.1 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, Angul as the member secretary. The CDVO of the District, the District Panchayt Officer, the District Welfare Officer, the Block Development Officer, Angul, Banarpal, Talcher, Kaniha & Chhendipada 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.

17.15 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.

17.16. Establishment And Labour

The following activates will be carried out including minor and major repairs quarters and roads purches of instruments.

17.17. TREE OUTSIDE FOREST

The tree out side forest cover working circle comprises the forest out side 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.

17.17.1 Prescription:

* A total of 200 Ha of barren & uncultivable land be covered under block plantation.

* A total of 200 ha of pasture & grazing lands be covered with fodder and grass plantation.

* 100 Rkm of roads (PWD, RD, Canal) be covered under road side avenue plantation.

17.18. 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 Wagees calation, the cost of implementation will be hiked by minimum 1% of the estimated cost.

17.19 Source of Funding:

The division receives funds from State Plan, Central Plan, CAMPA, ICZMP, CSR fund of companies, The level of present resource allocation is to a tune of 5.00 Crores to6.00 Crores. For restoration of Phani damaged area government is keen on more plantations, Green Belt creation and better wildlife management. Hence funds for implementation of working plan prescription will not be a problem.

Appendix - I

Details regarding Ranges, Beats their Head Quarters and area

Range Sl. No.	Name of Range	Range Head Quaqrter	Area in Sq Kms	Section Sl. No.	Name of Section	Section Head Quarter	Area in Sq Kms	Beat Sl. No.	Name of Beat	Beat Head Quarter	Area in Sq Kms	Area of Jurisdiction (Name of RF/PRF/DPF)
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Angul	Angul	575.47	1	Purunagarh	Purunagarh	120.41	1	Purunagarh North	Purunagarh	25.53	Badadandasahi RF, Sorispal RF, Kalapat PRF(Comp.No 2,3 & 4)
								2	Purunagarh South	Purunagarh	27.19	Kulsingha PRF(Comp No 1 & 2),Chandanpur PRF,Gurunga RF
								3	Ballijerang	Ballijerang	14.86	Burti RF(1&2),
								4	Hinsar	Hinsar	40.91	Hinsar RF, Sorispal PRF, Kalapat PRF (Comp No 1)
								5	Badakera	Badakera	11.92	-
				2	Pokunda	Pokunda	57.16	6	Pokunda	Pokunda	19.55	Pokunda PRF,Burti PRF(Comp No 3&4)
								7	Manikjodi	Manikjodi	19.64	Manikjodi RF,Burti PRF(5,6&7)
								8	Kulasar	Kulasar	17.97	Kurudu PRF(1), KrushnachakraPRF(1&2)
				3	Karatpata	Karatpata	54.66	9	Karatpata-I	Karatpata	21.37	Krushnachakra PRF(5), Kurudu PRF(2)
								10	Karatpata-II	Karatpata	14.87	Nandapur RF, Madhapur RF
								11	Hinsirida-I	Hinsirida	12.22	Krushnachakra PRF(3)
								12	Hinsirida-II	Hinsirida	6.2	Krushnachakra PRF(4), Bhogapal RF
				4	Nisa	Nisa	132.49	13	Paranga	Paranga	38.68	Parang RF, Malibrahmani RF, Kaliakata RF
								14	Nisa	Nisa	54.55	Nisa RF, Durgapur RF(9&10)
								15	Sankerjang	Sankerjang	39.26	Kerjang PRF, Derjang – Golabandha RF & PRF
				5	Angul Town	Angul Town	210.75	16	Chandrabahal	Chandrabahal	75.06	Mandargiri-Kalima RF, Nanda RF, Saharagoda RF
								17	Kuio	Kuio	33.51	Kuio RF, Kuio-Sakasinga RF, Kumuda-Talatalia RF

								18	Angul Town	Angul Town	42.67	-
								19	Nalco	Nalco	59.51	-
2	Bantala	Bantala	295	6	Pampasar	Pampasar	42.18	20	Labongi-I	Labongi	4.54	Talasira DPF,
								21	Labongi-II	Labongi	6.75	Labingi DPF, Bolong RF(13),
								22	Pampasar	Pampasar	20.02	Bolong RF(1,2&3)
								23	Bolanga	Bolanga	10.87	Bolong PRF, Bolong RF(7p)
				7	Khinda	Bantala	132.8	24	Pokutunga	Pokutunga	66.92	Bolong RF(4)
								25	Kanthamegha-I	Kanthamegha	14.83	Bolong RF(5)
								26	Kanthamegha-II	Kanthamegha	11.83	Bolong RF(6&8)
								27	Baragounia	Baragounia	39.22	Bargounia RF, Bolong RF(9&10)
				8	Nuakheta	Nuakheta	55.13	28	Nuakheta-I	Nuakheta	8.08	Nuakheta RF(6&7P)
								29	Nuakheta-II	Nuakheta	28.32	Nuakheta RF(4&5)
								30	Saruali	Saruali	18.73	Nuakheta RF(7P,8&9)
				9	Kanja	Kanja	64.89	31	Kanja	Kanja	39.35	Kanloi PRF, Nuakheta RF(1&2P),
								32	Karabira	Karabira	6.02	Nuakheta RF(2P &3)
								33	Maidharpur	Maidharpur	19.52	-
3	Jarapada	Jarapada	310.22	10	Jarapada	Jarapada	153.32	34	Jarapada	Jarapada	33.17	Aurisul-Sulia RF, Para PRF(P), Katada RF(4&5)
								35	Ugi	Ugi	17.95	Pathargarh PRF(3&4)
								36	Katada-I	Katada	30.9	Similipathar RF(7&8), Durgapur RF & PRF,Kandhakuruda RF
								37	Katada-II	Katada	22.41	Katada RF(1,2&3)
								38	Pathargarh	Pathargarh	22.69	Pathargarh PRF(1&2)
								39	Para	Para	26.08	Para PRF(P), Katada RF(6&7)
				11	Antulia	Antulia	61.79	40	Antulia-I	Antulia	9.33	Antulia-Tabada RF(3&4)
								41	Antulia-II	Antulia	14.01	Tabada PRF, Antulia-Tabada RF(9&10), Dandasira-Bhagatpur PRF

								42	Rodasingha	Rodasingha	10.96	Rodhsinga PRF, Antulia-Tabada RF(1&2)
								43	Kandhakoili	Kandhakoili	14.83	Antuli-Tabada RF(6,7&8)
								44	Lembutoila-I	Lembutoila	4.99	Antulia-Tabada RF(5P)
								45	Lembutoila-II	Lembutoila	7.67	Antulia-Tabada RF(5P)
				12	Balipata	Balipata	95.23	46	Balipata-I	Balipata	28.66	SimilipatharRF(1&2), Sadagoleswar PRF, Devinagar PRF(P)
								47	Balipata-II	Balipata	13.91	Similipathar RF(3&4),Pitachira PRF
								48	Badamul	Badamul	9.49	Similipathar RF(5&6)
								49	Basantapur	Basantapur	43.17	Devinagar PRF(p)
4	Chhendipada	Chhendipada	635.32	13	Chhendipada-I	Chhendipada	155.56	50	Chhendipada-I	Chhendipada	53.37	Chendipada RF(p)
								51	Chhendipada-II	Chhendipada	25.63	Chendipada RF(p)
								52	Kampsala	Kampsala	76.56	Kankurpal RF, Sunarijharan PRF
				14	Chhendipada-II	Patrapada	242.09	53	Similipal	Similipal	72.54	Devinagar PRF(p),
								54	Patrapada	Patrapada	37.4	Kanloi PRF, Devinagar PRF(P), Kanloi RF(6,7&8)
								55	Dangapal	Dangapal	62.4	Dangapal PRF,
								56	Kanloi	Kanloi	69.75	Kanloi RF(1,2,3,4&5), Marudhip PRF,Nunmati PRF
				15	Raijharan	Raijharan	140.81	57	Raijharan	Raijharan	48.64	Durgapur RF(3,4,5&8)
								58	Durgapur	Durgapur	48.52	Durgapur RF(1&2), Putagadia RF
								59	Jamunda	Jamunda	43.65	Durgapur RF(6&7)
				16	Kosala	Kosala	96.86	60	Jaltap-I	Jaltap	33.58	Jaltap RF,Brahmanbil RF, Similisahi RF
								61	Jaltap-II	Jaltap	18.43	Bahianali RF, Khalpal RF, Jaipur RF
								62	Kosala	Kosala	44.85	Kosala RF, Chakundapal DPF
5	Talcher	Talcher	622.93	17	Talcher Sadar	Talcher	173.32	63	Talcher	Talcher	22.12	-

								64	Samal	Samal	26.06	Kanheijena RF(p)
								65	Sibarampur	Sibarampur	37.03	Kanheijena RF(p), Sibrampur PRF, Kanteikulia RF
								66	Godibandha	Godibandha	45.98	Petchira-Pathuria RF
								67	Santhapada	Santhapada	21.75	-
								68	Kandhal	Kandhal	20.38	Kandhal RF, Gengutia RF
				18	Dera	Dera	202.21	69	Dera	Dera	37.92	Dera PRF, Rakas RF(p),Makundanali RF,Baishnabrugudi RF
								70	Rakas	Rakas	37.16	Rakas PRF(p), Kauchiakhol RF(p), Hirapur RF(p)
								71	Kalamachhuin	Kalamachhuin	32.73	Gopalprasad RF, Nuabhuin RF
								72	Kandhabereni	Kandhabereni	58.33	Kandhabereni RF, Rabipur RF
								73	Kauchiakhola	Kauchiakhola	36.07	Kauchiakhol RF(p),Hirapur RF(p)
				19	Seepur	Seepur	151.98	74	Seepur	Seepur	58.41	Seepur RF, Silling RF
								75	Gaham	Gaham	16.9	Bulajhar RF(1,3&4)
								76	Kulei	Kulei	23.63	Bulajhar RF(2&5)
								77	Bulajhar-I	Bulajhar	18.54	Bulajhar RF(6,7&8)
								78	Bulajhar-II	Bulajhar	34.5	Mankadchua RF,Langalkhol RF,Bulajhar RF(9&10)
				20	FCI Section	Vikrampur	135.42	79	Balaramprasad	Balaramprasad	53.16	Balaramprasad RF
								80	Ganthigadia	Ganthigadia	82.26	Ganthigadia DPF(I &II)
6	Kaniha	Kaniha	560.01	21	Kaniha-I	Kaniha	191.37	81	Kaniha	Kaniha	51.58	Gohiradanda RF,Pital hill RF,Matharugudi RF
								82	Saradhapur	Saradhapur	46.49	Saradhapur RF,
								83	Kumunda	Kumunda	44.3	Badakathia RF
								84	Deranga	Deranga	49	Chandanpur RF, Bhan RF,Jaghani RF, santrabandh RF

				22	Kaniha-II	Hanumanpur	153.42	85	Sapkata	Sapkata	36.22	Nialu-Lodhajhari Sapkata RF,Silakhani-Phuljhari RF(2,3&4),Arakhdiha RF
								86	Durgapur	Durgapur	39.35	Durgapurdanda RF,Gumpha hill RF,Poipaldanda RF(p), Dalak RF,
								87	Lodhajhari	Lodhajhari	23.87	Dhankoili RF,Poipaldanda RF(p)
								88	Dalak	Dalak	32.34	Nialu-Lodhajhari-Sapkata RF(1,2,3&4)
								89	Hanumanpur	Hanumanpur	21.64	Kukurkhai RF,Patkhaman RF, Kiajhar RF
				23	Rangali	Rangali	215.21	90	Rengali	Rengali	45.63	Rameswar hill RF,Saliamedha RF,Sadarkhol RF(p)
								91	Gandamala	Gandamala	74.16	Biripal RF, Bandhuli RF,Budhia RF,Sakchi RF, Khajuria RF
								92	Khindo	Khindo	22.27	Sadarkhol RF(p),
								93	Ballipasi	Ballipasi	35.89	Pedi RF, Tangiri RF
								94	Bajrakot	Bajrakot	37.26	Godigotha RF, Silakhani RF(1&5)

Appendix - II

SL No.	Name of the Range	Forest Block	Compartment No.	PH Value	Electric Conductiv	Other Micronutr	Phospours	Patas	PH Value	Electric Conduct	Other Micronutr	Phospours	Patas	PH Value	Electric Conductiv	Other Micronutr	Phospours	Patas
				Top soil	Top soil	Top soil	Top soil	Top soil	Middle	Middle	Middle	Middle	Middle	Bottom	Bottom	Bottom	Bottom	Bottom
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	Jarapada	Patharagarh RF	1	6.8	0.06	0.56	4	159	7.2	0.06	0.51	4	196	7.15	0.07	0.55	4	180
	Jarapada		2	7.05	0.15	0.57	2	162	7.14	0.18	0.51	2	171	7.13	0.07	0.53	2	174
	Jarapada		3	5.72	0.07	1.06	2	198	5.15	0.3	0.61	2	139	5.62	0.12	0.8	2	140
	Jarapada		4	5.75	0.05	1.02	4	298	5.92	0.07	1.14	6	243	5.6	0.28	0.74	2	271
	Jarapada	Antulia Tabeda RF	6	5.75	0.41	0.99	4	364	5.67	0.05	0.67	2	255	5.54	0.06	0.48	4	224
	Jarapada		7	5.68	0.07	1.07	4	501	5.71	0.06	1.08	4	380	5.7	0.07	0.85	8	248
	Jarapada		8	6.2	0.33	0.98	8	711	5.93	0.25	1.04	8	278	6.2	0.09	1.1	8	531
	Jarapada		9	5.46	0.14	0.73	2	224	5.45	0.07	0.69	2	222	5.63	0.07	0.64	2	170
	Jarapada		10	5.98	0.26	0.88	2	181	5.68	0.08	0.85	2	129	6.24	0.08	0.55	2	123
	Jarapada		5	5.64	0.08	0.24	2	426	5.56	0.31	0.98	2	283	5.51	0.05	0.9	4	252
	Jarapada		4	5.82	0.05	0.85	10	156	5.88	0.06	0.42	2	117	6.04	0.05	0.28	2	100
	Jarapada		3	5.7	0.06	0.47	2	233	5.65	0.11	0.38	24	206	5.8	0.09	0.43	12	181
	Jarapada		2	7.05	0.06	1.06	2	229	6.06	0.23	0.84	34	218	7	0.16	0.27	2	108
	Jarapada		1	5.78	0.33	1.19	34	258	5.62	0.07	1.06	24	313	5.92	0.08	0.97	16	277
	Jarapada	Tabeda PRF		5.9	0.09	0.51	2	117	5.97	0.08	0.37	2	109	5.93	0.24	0.39	2	110
	Jarapada	Dandasinga Bhagatpur PRF		5.75	0.05	1	2	359	6.08	0.06	0.73	6	258	5.98	0.07	0.52	10	318
	Jarapada	Para PRF	PTG - VIII	5.6	0.21	0.61	22	140	5.62	0.07	0.59	32	301	5.84	0.07	0.52	28	170
	Jarapada	Para PRF	PTG - IX	5.66	0.14	1.14	22	411	5.7	0.24	1.05	22	255	5.7	0.38	0.9	26	303
	Jarapada		PTG - X	5.65	0.09	0.83	26	233	5.7	0.09	0.63	16	186	5.8	0.16	0.58	26	176
	Jarapada	Katada RF	5	5.7	0.19	1.02	14	149	6	0.05	0.62	16	147	6.08	0.06	0.45	14	116
	Jarapada		6	5.45	0.1	1.18	18	144	5.64	0.08	0.91	14	124	5.58	0.08	0.65	22	108
	Jarapada		7	5.64	0.04	1.15	12	151	5.8	0.04	1.1	10	141	5.8	0.04	1.21	8	152
	Jarapada		1	6.55	0.05	0.6	4	187	6.48	0.38	0.58	6	250	6.54	0.21	0.49	16	222
	Jarapada		2	6.46	0.05	0.57	6	186	6.2	0.07	0.53	4	94	5.93	0.18	0.64	2	120
	Jarapada		3	6.52	0.24	0.56	6	217	6.52	0.09	0.48	12	148	6.45	0.3	0.57	16	212
	Jarapada		4	6.8	0.08	0.59	6	177	7.4	0.08	0.61	18	152	7.52	0.12	0.6	12	164
	Jarapada	Roadasinga PRF		7.1	0.11	0.62	2	191	5.98	0.15	0.98	8	217	5.7	0.22	0.73	8	154
	Jarapada	Arisulia Sulia RF		7.32	0.09	0.67	2	168	7.8	0.08	0.45	8	125	7.72	0.09	0.81	2	270
	Jarapada	Kandhakorada RF		7.1	0.08	0.74	26	327	7.4	0.04	0.91	32	454	7.38	0.12	0.9	36	485
	Jarapada	Dugapur A RF		6.4	0.23	0.57	12	295	6.1	0.08	0.72	6	247	6.1	0.08	0.68	10	230
	Jarapada	Durgapur PRF		5.95	0.32	0.78	8	260	5.93	0.14	0.62	10	200	5.6	0.29	0.73	8	227
	Jarapada	Similipathar RF	8	5.3	0.06	0.49	2	151	5.32	0.05	0.58	2	170	5.82	0.13	0.62	2	161
	Jarapada		7	6.58	0.09	0.48	10	228	6.7	0.08	0.96	6	132	6.42	0.08	0.9	18	334
	Jarapada		6	6.2	0.07	1.18	2	371	6.25	0.07	1.1	2	381	6.2	0.07	1.06	2	498
	Jarapada		5	6.72	0.08	0.9	2	287	6.8	0.06	0.6	2	214	7.2	0.11	0.7	2	277
	Jarapada		4	5.85	0.23	0.58	2	120	5.5	0.14	0.48	4	169	5.4	0.05	0.33	2	127
	Jarapada		3	6.62	0.05	0.42	2	153	6.3	0.13	0.32	2	161	6.3	0.06	0.24	2	183
	Jarapada		2	6.15	0.26	0.28	8	146	5.12	0.07	0.29	2	150	5.25	0.07	0.33	4	162

	Jarapada		1	5.27	0.04	0.36	4	165	5.18	0.018	0.27	6	144	5.25	0.04	0.26	10	148
	Jarapada	Pitachari PRF		5.61	0.05	0.48	2	164	6	0.04	0.25	2	161	6.52	0.05	0.29	2	152
	Jarapada	Sudgoleswar PRF		5.01	0.13	0.49	10	128	4.84	0.22	0.29	12	128	4.9	0.019	0.3	10	127
	Jarapada	Devinagar RF	DVN - VI	5.17	0.05	0.57	20	192	4.94	0.06	0.38	26	166	5.14	0.08	0.37	14	185
	Jarapada		DVN - VII	5.38	0.31	0.38	12	191	5.38	0.28	0.29	8	105	5.32	0.11	0.3	8	111
	Jarapada		DVN - VIII	6.05	0.07	1.06	20	178	5.75	0.06	0.72	16	149	5.58	0.07	0.69	6	94
	Jarapada		DVN - IX	5.66	0.07	0.82	36	216	5.1	0.06	0.49	18	128	4.9	0.06	0.38	2	99
	Bantala	Kangulei PRF												5.84	0.04	0.35	8	58
	Bantala	Baragaounia RF		5.62	0.04	1.08	6	202	5.45	0.05	0.95	8	269	5.52	0.05	0.89	4	246
	Bantala	Lanbangi DPF		5.27	0.05	1.11	8	295	5.12	0.04	1.12	6	298	5.24	0.05	0.94	4	256
	Bantala	Talasira DPF		5.11	0.08	1.12	4	246	5.17	0.07	0.95	12	71	5.08	0.05	0.94	6	106
	Bantala	Balanga PRF		5.65	0.04	1.09	4	250	5.67	0.04	0.61	6	234	5.6	0.05	0.65	2	291
	Bantala	Balanga RF	1	5.7	0.04	0.58	2	235	5.4	0.05	0.79	2	167	5.6	0.04	0.9	4	52
	Bantala		2	5.75	0.07	0.98	6	145	5.8	0.07	0.54	2	191	5.82	0.05	0.69	4	120
	Bantala		3	5.52	0.04	1.18	4	219	5.4	0.06	0.96	8	165	5.42	0.05	0.64	4	140
	Bantala		4	6.12	0.07	0.47	4	46	5.98	0.09	0.94	4	58	5.76	0.05	0.98	4	307
	Bantala		5	5.93	0.06	1.3	8	450	5.9	0.05	0.93	6	261	6.2	0.11	1.15	6	290
	Bantala		6	5.68	0.2	1.13	4	269	5.55	0.07	1.1	6	240	5.64	0.09	1.02	2	255
	Bantala		7	5.68	0.08	1.16	2	232	5.68	0.05	0.98	2	49	5.66	0.14	0.9	2	65
	Bantala		8	5.77	0.09	1.13	2	262	5.68	0.16	0.81	2	129	5.6	0.05	0.66	2	169
	Bantala		9	6.22	0.04	0.97	8	233	5.88	0.11	0.94	2	285	6.02	0.2	1	2	328
	Bantala		10	6.53	0.38	1.21	4	558	7.48	0.05	1.14	8	570	6.44	0.03	1.12	12	397
	Bantala		13	5.55	0.05	1.16	6	272	5.48	0.05	0.73	2	199	5.45	0.09	0.71	12	191
	Bantala	Nuakheta RF	1	5.94	0.12	1.1	2	278	6.08	0.08	0.87	2	256	6.4	0.21	0.7	2	186
	Bantala		2	5.88	0.08	1.12	2	30	5.8	0.23	1.08	2	262	5.8	0.07	0.83	2	214
	Bantala		3	5.52	0.05	1.1	2	277	5.53	0.19	0.82	8	255	5.6	0.12	0.53	4	169
	Bantala		4	5.62	0.23	0.9	2	120	5.55	0.06	1	10	221	5.8	0.06	1.09	8	125
	Bantala		5	5.55	0.13	1.03	6	245	5.6	0.05	0.82	2	268	5.82	0.07	0.63	4	286
	Bantala		6	5.48	0.08	1.12	2	246	5.28	0.17	1	2	242	4.85	0.32	0.68	2	233
	Bantala		7	5.36	0.09	1.18	4	477	5.35	0.11	124	2	452	5.55	0.11	1.2	2	419
	Bantala		8	5.36	0.2	1.19	4	355	5.1	0.09	1.04	6	247	5.25	0.08	1.18	2	292
	Bantala		9	5.73	0.08	1.12	2	490	5.86	0.07	1	2	336	5.94	0.05	0.81	2	293
	Talcher	Seepur RF		6.36	0.08	0.39	4	237	6.3	0.08	0.4	4	219	5.63	0.09	0.35	2	290
	Talcher	Silling RF		6.18	0.05	0.56	8	167	6.2	0.06	0.52	8	176	6.05	0.05	0.32	2	172
	Talcher	Mankadachua RF		5.65	0.04	0.37	4	107	5.5	0.05	0.34	4	100	5.5	0.06	0.41	2	190
	Talcher	Langalkhol RF		5.25	0.11	0.63	4	157	5.24	0.08	0.64	4	155	5.27	0.05	0.57	2	163
	Talcher	Bulajhar RF	10	5.5	0.07	0.59	2	148	5.33	0.09	0.52	6	264	5.3	0.25	0.46	2	241
	Talcher		9	5.42	0.13	0.42	4	354	5.35	0.08	0.56	2	394	5.05	0.07	0.26	4	282
	Talcher		8	5.25	0.08	0.28	4	114	5.65	0.08	0.34	2	274	5.21	0.05	0.58	2	179
	Talcher		7	5.83	0.05	0.4	4	209	5.6	0.45	0.48	4	210	5.74	0.38	0.57	2	119
	Talcher		6	5.05	0.33	0.41	2	249	4.91	0.41	0.35	4	236	5.2	0.08	0.59	2	248
	Talcher		5	5.22	0.08	0.8	4	259	5.6	0.21	0.57	6	297	5.65	0.07	0.49	2	168
	Talcher		4	5.4	0.05	0.6	6	224	5.53	0.32	0.41	6	268	5.52	0.05	0.36	2	203
	Talcher		3	5.22	0.07	0.68	2	232	5.4	0.09	1.05	2	265	5.5	0.11	0.96	4	301
	Talcher		2	5.31	0.41	1.12	6	340	5.05	0.2	0.98	4	333	5.4	0.14	0.72	6	376

	Talcher		1	5.31	0.08	0.42	4	167	5.13	0.05	0.47	6	195	5.15	0.16	0.28	18	331
	Talcher	Kanehijena RF	DER - VIII	5.87	0.19	1.09	8	241	6.53	0.05	0.56	4	223	6.34	0.05	0.73	2	203
	Talcher		DER - IX	4.74	0.05	0.42	2	107	5.52	0.04	0.45	2	215	5.15	0.03	0.35	2	186
	Talcher		DER - X	6.16	0.04	1.1	2	267	6.64	0.05	0.52	2	238	6.32	0.08	0.69	2	240
	Talcher	Shibarampur PRF		5.7	0.15	0.63	6	263	5.74	0.18	0.44	2	217	6.3	0.09	0.49	2	179
	Talcher	Kanteikulia RF		5.27	0.08	0.38	2	151	5.65	0.08	0.48	2	201	4.83	0.07	0.36	2	114
	Talcher	Kandal RF		6.03	0.09	0.9	4	253	6.03	0.1	1.05	2	233	5.98	0.07	0.7	4	229
	Talcher	Pathuria Petachira RF		6.1	0.08	0.51	4	116	7.15	0.07	0.52	4	209	7.35	0.08	0.48	2	176
	Talcher	Gengutia RF		5.14	0.08	0.36	4	134	4.6	0.08	0.27	4	69	4.7	0.07	0.29	2	84
	Talcher	Balaramprasad RF		5.58	0.08	0.35	4	141	5.75	0.06	0.25	2	133	5.8	0.06	0.23	2	116
	Talcher	Ganthigadia A DPF		6.3	0.04	0.78	2	134	6.7	0.05	0.65	4	184	7.3	0.05	0.54	4	180
	Talcher	Ganthigadia B DPF		7.88	0.03	0.58	2	199	8.15	0.04	0.46	4	249	8.2	0.05	0.39	2	229
	Talcher	Kauchiakhole RF		6.28	0.09	0.4	4	209	4.94	0.08	0.35	4	108	5.28	0.09	0.36	6	115
	Talcher	Hirapur RF		5.57	0.08	0.64	4	182	5.94	0.13	0.39	2	213	5.99	0.24	0.35	2	275
	Talcher	Baistambaragadi RF		5.5	0.16	0.7	6	268	4.77	0.17	0.98	2	364	5.06	0.09	1.1	4	179
	Talcher	Dera PRF		5.54	0.25	1.15	6	108	4.52	0.08	0.81	14	97	4.43	0.07	0.83	8	114
	Talcher	Makundanali RF		4.3	0.31	0.48	2	148	4.4	0.08	0.37	2	176	4.8	0.08	0.43	4	193
	Talcher	Rakash RF		4.58	0.05	0.44	2	221	4.93	0.26	0.65	2	145	4.64	0.04	0.42	4	212
	Talcher	Kandhabereni PRF		4.64	0.05	0.24	4	135	5.22	0.05	0.37	4	297	4.9	0.08	0.39	2	149
	Talcher	Rabipur RF	DER - V	5.14	0.09	0.27	2	239	4.72	0.08	0.31	4	152	5.14	0.11	0.38	4	186
	Talcher		DER - VI	4.9	0.1	0.32	2	228	4.98	0.07	0.33	4	254	5.2	0.08	0.34	4	278
	Talcher	Gopalprasad RF		4.8	0.06	0.45	2	112	4.75	0.06	0.64	2	157	4.75	0.05	0.36	4	149
	Talcher	Nuabhuin (Malibandha RF)		4.8	0.07	0.24	2	156	4.8	0.08	0.25	4	176	4.88	0.08	0.34	4	167
	Angul	Durgapur RF	9	4.82	0.07	0.54	2	208	4.85	0.18	0.45	4	103	4.75	0.12	0.44	4	110
	Angul		10	7.16	0.24	0.44	2	135	5.98	0.09	0.58	4	601	7.07	0.13	0.4	2	105
	Angul	Kaliakata RF		4.9	0.05	0.86	2	94	4.66	0.06	0.39	2	115	5.05	0.12	0.19	2	66
	Angul	Malibrahmani RF		4.8	0.24	0.45	2	87	4.65	0.3	0.32	2	196	4.43	0.19	0.34	2	257
	Angul	Nisha RF	CDP-VIII	4.26	0.11	0.55	2	85	4.68	0.05	0.32	2	92	5.02	0.07	0.31	2	102
	Angul		CDP -IX	4.75	0.06	0.45	6	96	4.57	0.24	0.36	2	102	4.82	0.18	0.4	2	109
	Angul	Paranga RF		4.91	0.07	0.52	2	115	4.7	0.08	0.38	2	110	4.52	0.09	0.27	2	110
	Angul	Kuio RF		4.64	0.09	0.36	2	197	4.61	0.08	0.29	2	268	4.85	0.09	0.31	2	257
	Angul	Kuio Sakasinga RF		5.32	0.05	0.48	2	112	5.65	0.04	0.42	2	125	5.8	0.05	0.47	2	122
	Angul	Kumanda- Talataila RF		5.05	0.04	0.6	2	158	5.26	0.1	0.63	2	138	5.4	0.09	0.31	2	86
	Angul	Derjang Golabanda RF		5.4	0.07	0.49	4	157	5.7	0.08	0.56	2	126	6.33	0.05	0.31	2	82
	Angul	Derjang Golabanda PRF		5.2	0.11	0.48	2	81	5.63	0.09	0.28	2	62	4.95	0.1	0.78	4	116
	Angul	Kerjang PRF		6.55	0.05	0.74	2	181	6.38	0.04	0.29	2	74	6.7	0.04	0.3	2	67
	Angul	Saharagoda RF		5.08	0.07	0.97	6	278	4.83	0.09	0.81	6	105	5.68	0.07	1.2	2	116
	Angul	Nandapur-Berhampur RF		6.1	0.06	1.31	2	127	6.02	0.05	0.74	4	104	6.2	0.05	0.63	2	76

	Angul	Madhapur RF		7.2	0.05	0.29	6	117	7.48	0.11	0.24	2	85	7.82	0.09	0.25	2	89
	Angul	Badadandasahi RF		6.3	0.1	0.46	2	212	5.7	0.09	0.46	4	214	5.52	0.08	0.44	2	191
	Angul	Guranga RF		5.48	0.09	1.13	2	186	5.35	0.05	0.61	2	157	5.4	0.18	0.48	2	92
	Angul	Nanda RF		5.52	0.05	1.02	2	223	5.53	0.04	0.46	2	272	5.36	0.04	0.44	2	294
	Angul	Mandargiri Kalima RF		5.3	0.17	0.45	2	201	5.36	0.09	0.43	4	155	5.62	0.16	0.56	2	151
	Angul	Pokunda PRF		5.8	0.08	1.2	2	131	6.1	0.08	0.94	2	73	6.7	0.04	0.93	2	77
	Angul	Chandanpur PRF		5.98	0.05	0.86	4	211	5.8	0.13	0.48	2	110	6.66	0.2	0.52	2	181
	Angul	Kulasinga PRF	1	7.3	0.21	0.42	4	224	7.19	0.11	0.56	2	165	7.04	0.14	0.41	4	163
	Angul	Kulaginga PRF	2	5.18	0.09	0.6	4	331	5.68	0.08	0.66	2	495	5.77	0.06	0.58	2	536
	Angul	Sorisapal RF		5.5	0.06	0.98	2	268	5.66	0.13	1.07	2	356	5.67	0.09	1.08	2	235
	Angul	Hinsar Sorispal PRF	PTG - V	6.22	0.08	0.81	2	180	6.25	0.07	0.84	4	188	5.85	0.08	0.93	2	260
	Angul		PTG - VI	5.63	0.07	0.62	2	274	6.16	0.07	0.56	2	190	6.2	0.12	1.02	4	249
	Angul	Kalapata PRF	1	5.88	0.03	0.84	2	284	5.9	0.04	0.97	4	317	5.48	0.05	0.7	2	222
	Angul		2	5.8	0.12	1.03	2	412	5.74	0.2	0.8	2	356	5.48	0.09	0.52	2	311
	Angul		3	5.75	0.08	0.78	2	204	5.72	0.08	0.63	8	146	5.88	0.08	0.52	2	150
	Angul		4	5.27	0.05	0.85	2	134	5.42	0.14	0.77	2	119	5.46	0.21	0.74	2	125
	Angul	Kurudu PRF	1	5.72	0.03	0.9	2	290	5.4	0.04	0.84	2	208	5.4	0.03	0.73	2	231
	Angul		2	5.6	0.04	1.08	2	245	5.91	0.11	0.96	2	181	6.14	0.09	0.67	2	129
	Angul	Burti PRF	1	6.3	0.1	1.4	2	345	6.28	0.06	1.12	4	244	6.24	0.07	1.07	2	167
	Angul		2	5.65	0.06	1.26	2	227	5.6	0.05	0.98	2	187	5.53	0.13	0.59	4	162
	Angul		3	6.2	0.14	1.18	6	302	6.05	0.04	0.96	4	221	6.03	0.03	0.77	2	207
	Angul		4	5.48	0.04	0.35	2	212	5.47	0.04	0.67	2	245	5.52	0.04	0.36	4	186
	Angul		5	5.77	0.2	1.09	4	230	5.82	0.14	1.09	2	291	6.3	0.09	1.16	2	481
	Angul		6	6.53	0.08	1.22	12	598	6.05	0.18	1.13	2	435	5.77	0.11	0.99	2	346
	Angul		7	5.72	0.05	1.05	2	475	5.38	0.04	0.57	4	315	5.5	0.04	0.42	2	286
	Angul	Krushnachakra PRF	1	5.8	0.03	1.29	4	326	5.85	0.19	1.16	2	296	5.71	0.15	1.06	2	259
	Angul		2	5.85	0.21	1.16	6	405	5.75	0.06	1.16	4	340	5.72	0.06	0.93	4	342
	Angul		3	6.63	0.23	1.37	26	894	6.7	0.31	1.08	12	927	7.02	0.05	1.12	36	812
	Angul		4	6065	0.06	1.16	2	433	6.15	0.05	0.62	4	484	5.94	0.1	0.54	2	181
	Angul		5	5.84	0.09	0.92	6	276	5.42	0.07	0.6	2	210	6.15	0.24	0.68	2	443
	Angul	Bhogapal RF		6.04	0.19	0.95	2	214	6.05	0.1	1.1	4	192	6.1	0.11	1.19	2	292
	Chhendipada	Putagadia RF		5.16	0.04	0.56	2	142	5.16	0.03	0.57	2	200	5.14	0.04	0.37	2	267
	Chhendipada	Devinagar PRF	DVN - I	4.74	0.03	0.58	10	91	4.85	0.04	0.52	4	92	5.42	0.19	0.45	6	76
	Chhendipada		DVN - II	5.4	0.09	0.53	6	84	5.63	0.11	0.57	6	85	5.7	0.23	0.56	4	112
	Chhendipada		DVN - III	4.84	0.44	0.31	6	95	4.93	0.08	0.32	2	102	5.02	0.08	0.41	8	103
	Chhendipada		DVN - IV	5.03	0.07	0.47	6	150	4.94	0.06	0.48	2	173	4.88	0.23	0.44	4	152
	Chhendipada		DVN - V	6	0.05	0.44	2	84	6.3	0.07	0.43	2	105	7.53	0.06	0.44	2	101
	Chhendipada	Kanloi PRF		5.4	0.05	0.61	4	193	5.3	0.05	0.81	2	344	4.88	0.32	0.57	4	188
	Chhendipada	Kanloi RF	8	4.92	0.18	0.42	4	132	4.96	0.09	0.45	2	121	5.15	0.1	0.49	2	105
	Chhendipada		7	5.58	0.08	1.2	6	145	5.6	0.07	0.92	4	127	5.58	0.08	1.23	2	98
	Chhendipada		6	4.9	0.42	0.49	2	237	4.98	0.09	0.69	4	240	5.18	0.04	0.33	2	163
	Chhendipada		5	5.7	0.05	0.74	20	203	5.56	0.04	0.38	10	174	5.48	0.04	0.52	8	169
	Chhendipada		4	6.65	0.03	0.47	2	209	5.46	0.16	0.63	2	227	5.5	0.34	0.8	4	194

	Chhendipada		3	6.54	0.09	0.65	2	189	5.67	0.08	0.78	4	173	5.34	0.33	0.63	4	200
	Chhendipada		2	5.32	0.07	0.79	2	177	5.12	0.07	0.61	4	117	5.26	0.06	0.53	6	196
	Chhendipada		1	5.58	0.09	0.8	2	143	5.65	0.09	0.52	16	275	5.34	0.26	0.84	2	149
	Chhendipada	Marudhipa PRF	MDP-I	6.12	0.35	0.51	4	119	6.95	0.08	0.23	2	106	5.32	0.22	0.27	2	147
	Chhendipada		MDP-II	5.33	0.08	0.83	4	198	5.32	0.05	0.59	4	238	5.3	0.05	0.53	2	281
	Chhendipada		MDP-III	6.8	0.11	0.44	2	177	7.05	0.09	0.37	2	215	7.24	0.04	0.45	2	189
	Chhendipada		MDP-IV	7.56	0.13	0.31	4	297	7.36	0.09	0.51	4	189	7.24	0.14	0.52	4	235
	Chhendipada	Nunmati PRF		5.9	0.08	0.36	2	185	5.38	0.08	0.31	2	167	5.47	0.04	0.21	2	145
	Chhendipada	Dangapal PRF	MDP - VI	5.47	0.17	0.32	4	188	5.5	0.05	0.35	2	153	5.54	0.04	0.3	4	152
	Chhendipada		MDP - VII	5.18	0.08	0.89	4	119	5.12	0.1	0.4	2	159	5.28	0.06	0.45	2	139
	Chhendipada	Sunarijharan PRF		5.39	0.09	1.4	2	157	5.8	0.07	1.26	4	247	5.54	0.11	1.42	4	239
	Chhendipada	Kankurapal RF	MDP - VIII	5.8	0.05	0.8	2	200	5.82	0.15	0.78	4	192	5.78	0.32	0.55	2	183
	Chhendipada		MDP - IX	5.86	0.05	0.51	2	203	5.8	0.14	0.42	2	156	5.91	0.09	0.47	2	158
	Chhendipada	Chhendipada RF	CDP - IV	6.98	0.14	0.46	4	218	7.52	0.15	0.45	2	167	7.68	0.09	0.53	2	166
	Chhendipada		CDP - V	7.62	0.09	0.39	4	205	7.57	0.22	0.33	4	189	7.62	0.08	0.28	2	171
	Chhendipada		CDP - VI	7.26	0.04	0.6	4	148	7.3	0.09	0.43	2	168	7.7	0.42	0.31	2	186
	Chhendipada		CDP - VII	7.68	0.33	0.28	2	244	7.48	0.04	0.23	2	184	7.26	0.06	0.24	4	183
	Chhendipada	Kosala RF		7.78	0.05	0.66	4	134	8.02	0.07	0.34	4	91	8.11	0.07	0.29	2	102
	Chhendipada	Chakundapal DPF		6.9	0.22	0.55	14	156	5.97	0.51	0.37	2	190	4.73	0.05	0.41	4	265
	Chhendipada	Durgapur RF	1	4.7	0.06	0.62	18	189	4.81	0.07	0.49	2	183	4.83	0.06	0.48	2	250
	Chhendipada		2	4.9	0.05	0.54	12	126	4.7	0.04	0.51	2	217	5.03	0.07	0.31	2	208
	Chhendipada		3	4.54	0.06	0.51	4	139	4.82	0.07	0.39	2	155	4.97	0.06	0.35	2	159
	Chhendipada		4	7.07	0.07	0.54	2	213	7.9	0.08	0.49	2	188	8.12	0.05	0.48	4	186
	Chhendipada		5	8.05	0.05	0.92	2	260	8.1	0.05	0.72	2	197	8.13	0.06	0.61	4	181
	Chhendipada		6	6.9	0.06	0.65	2	142	6.54	0.06	0.51	2	144	6.95	0.06	0.48	4	193
	Chhendipada		7	6.26	0.05	1.12	4	185	6.05	0.07	1.05	8	186	6.44	0.07	0.66	4	130
	Chhendipada		8	5.94	0.05	0.77		237	5.96	0.04	0.33	2	178	5.72	0.11	0.33	2	156
	Chhendipada	Brahmanabil RF		4.67	0.03	0.38	4	151	4.8	0.03	0.33	2	211	5.02	0.03	0.39	2	243
	Chhendipada	Bahianali RF		4.78	0.08	0.34	16	189	5.08	0.04	0.35	16	240	5.14	0.05	0.37	4	185
	Chhendipada	Khalpal RF		4.48	0.03	0.43	14	136	4.6	0.02	0.34	2	158	4.95	0.05	0.48	4	182
	Chhendipada	Similisahi RF		4.52	0.03	0.42	8	150	4.7	0.09	0.4	2	137	4.92	0.04	0.35	4	186
	Chhendipada	Jayapur RF		7.95	0.02	0.38	2	143	7.8	0.04	0.3	2	129	5.12	0.04	0.32	2	197
	Chhendipada	Jaltap RF		5.6	0.02	0.6	20	251	5.14	0.02	0.48	2	215	8.24	0.04	0.27	2	108
	Kaniha	Badakathia RF	KNH - IV	5.2	0.03	0.44	2	320	5.7	0.08	0.49	4	273	5.85	0.08	0.35	4	313
	Kaniha		KNH - III	5.54	0.04	0.39	2	405	5.5	0.05	0.31	2	243	5.84	0.05	0.29	4	204
	Kaniha		KNH - II	4.77	0.11	0.59	4	462	5.08	0.13	0.43	6	465	5.3	0.08	0.41	6	448
	Kaniha		KNH - I	4.8	0.07	0.42	6	408	4.95	0.06	0.27	6	266	5.43	0.05	0.26	4	290
	Kaniha	Saradhapur RF		6.85	0.06	0.97	4	388	5.82	0.07	0.98	6	171	7.58	0.04	0.89	4	170
	Kaniha	Matharagadi RF		5.3	0.02	0.39	4	141	5.25	0.08	0.32	2	151	5.2	0.05	0.36	2	172
	Kaniha	Pital Hill RF		4.84	0.04	0.39	4	166	4.98	0.04	0.32	2	127	5.18	0.03	0.39	2	143
	Kaniha	Gohiradanda RF		4.95	0.04	0.33	2	193	5.08	0.05	0.34	4	143	5.26	0.07	0.26	4	110
	Kaniha	Sanrarabandha RF		5.48	0.07	0.6	6	166	5.35	0.08	0.37	6	133	5.4	0.11	0.37	2	160
	Kaniha	Jaghani RF		5.92	0.23	0.4	2	167	5.4	0.07	0.56	2	206	5.98	0.07	0.72	4	195
	Kaniha	Bhana RF		4.72	0.24	0.42	2	106	4.93	0.09	0.38	4	96	5.83	0.1	0.44	2	98

	Kaniha	Chandrapada RF		5.36	0.09	0.37	4	149	5.52	0.05	0.39	2	117	5.56	0.05	0.33	4	144
	Kaniha	Nialu Lodhajhari Sapakata RF	3	6.25	0.06	1.34	4	473	6.9	0.11	1.28	2	457	6.85	0.2	1.32	4	463
	Kaniha		2	6.05	0.07	1.04	2	410	6.03	0.07	1.1	2	372	5.94	0.08	0.93	4	416
	Kaniha		1	6.03	0.14	1.34	2	374	5.9	0.16	1	6	292	5.98	0.08	0.81	4	313
	Kaniha		4	6.92	0.08	1.42	6	261	6.76	0.25	1.41	2	311	6.55	0.32	0.92	2	322
	Kaniha		5	6.6	0.18	1.26	4	401	6.85	0.6	1.06	2	290	6.92	0.42	1.02	2	331
	Kaniha	Arakhadahi RF		5.3	0.07	0.56	4	171	6.15	0.07	0.53	2	204	6.1	0.06	0.36	4	205
	Kaniha	Kiajhar RF		6.58	0.13	1.03	2	247	6.64	0.14	0.87	2	335	5.58	0.09	0.79	4	295
	Kaniha	Kukurkhai RF		5.6	0.08	0.72	2	315	5.87	0.07	0.53	4	259	5.96	0.2	0.58	2	214
	Kaniha	Patakhaman RF		5.54	0.28	0.56	2	223	5.75	0.14	0.56	2	210	6.02	0.39	0.43	4	173
	Kaniha	Gumpha Hill RF		5.14	0.26	0.52	4	131	5.52	0.09	0.53	2	176	5.6	0.31	0.69	4	194
	Kaniha	Durgapur Danda RF		6.02	0.42	1.26	2	278	5.32	0.36	0.93	2	240	5.45	0.21	0.86	2	242
	Kaniha	Dalak Poipal Danda RF		5.25	0.13	0.77	4	175	4.81	0.2	0.49	4	221	4.8	0.13	0.47	2	189
	Kaniha	Dhankoili RF		5.22	0.05	0.73	4	187	5.24	0.06	0.49	4	174	5.21	0.05	0.47	4	176
	Kaniha	Phuljhari RF	4	5.96	0.05	1.42	4	399	6.26	0.11	1.18	2	343	6.2	0.1	1.3	2	254
	Kaniha		3	6.3	0.13	1.24	4	397	6.15	0.09	1.26	4	331	6.34	0.13	0.98	2	284
	Kaniha		2	6.46	0.08	1.44	2	271	7.1	0.08	1.25	2	307	6.45	0.08	1.23	2	323
	Kaniha		1	5.88	0.12	1.19	6	407	6.28	0.1	1.27	4	358	5.94	0.15	1.12	2	378
	Kaniha		5	5.02	0.09	0.77	2	324	5.7	0.13	0.73	4	162	7.14	0.24	0.43	2	183
	Kaniha	Godigotha RF		7.3	0.12	0.77	2	182	6.45	0.08	1.06	4	258	7.16	0.06	0.59	2	231
	Kaniha	Tangiri RF	RGL - I	5.9	0.08	1.14	2	473	5.25	0.06	0.86	6	506	5.8	0.11	0.63	2	471
	Kaniha		RGL - II	5.6	0.32	0.96	6	316	5.31	0.07	0.45	6	377	5.36	0.07	0.58	2	276
	Kaniha	Pedi RF		5.58	0.4	1	2	344	5.8	0.23	0.74	4	315	5.9	0.08	0.64	2	304
	Kaniha	Sadarkhole RF	RGL - VIII	5.6	0.08	1.08	8	244	5.98	0.31	0.3	6	234	6.24	0.06	0.34	8	229
	Kaniha		RGL - III	5.64	0.06	0.93	2	273	5.9	0.05	0.69	4	183	6.15	0.06	0.57	2	198
	Kaniha	Rameswar Hill RF		5.21	0.14	1.36	8	449	5.06	0.02	1.15	8	327	4.92	0.03	1.26	6	244
	Kaniha	Saluimada RF		5.98	0.09	1.39	8	344	6.2	0.16	1.19	6	416	5.93	0.23	1.27	6	326
	Kaniha	Biripal RF	RGL - IV	5.94	0.08	1.13	2	391	6.05	0.08	1.08	2	247	5.96	0.31	1.42	4	281
	Kaniha		RGL - V	5.84	0.07	0.89	6	298	6	0.07	0.64	6	263	6.6	0.08	0.68	2	273
	Kaniha		RGL - VI	6.28	0.08	0.95	2	255	6.18	0.06	0.92	4	361	6.18	0.05	0.84	8	181
	Kaniha	Bandhuli RF		5.7	0.06	0.43	4	164	5.88	0.12	0.36	2	210	5.98	0.07	0.34	2	148
	Kaniha	Budhia RF		5.4	0.08	1.1	4	169	5.61	0.07	1.12	14	201	5.84	0.05	1.08	2	134
	Kaniha	Sachi RF		6.11	0.08	1.04	4	143	6.2	0.26	0.56	12	228	6.26	0.38	0.65	14	153
	Kaniha	Khajuaria RF		6.15	0.52	0.74	2	132	6.52	0.07	0.7	4	189	6.58	0.07	0.48	4	168

Area adopted in Revised Working Plan 2021-22 to 2030-31 Appendix - III

SL No.	Name of the Forest Block		Area in Ha.		Range	Section	Beat				Area transfer to Satkosia Tiger Reserve vide Notification No. 8F(WL) 15/2018-26865 dt. 14.12.2018.	Area under revised plan in ha.
			Area as per Notification	Area as per GIS				FRA	Under FC Act	Under Misc. regulation		
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Antulia- Tabda	RF	2324.192	2259.8	Jarapada	Antulia	Antulia-I		16.624	12.63		2230.546
2	Arakhadahi	RF	738.173	679.496								679.496
3	Arisulia - Sulia	RF	145.692	142.044								142.044
4	Badadandasahi	RF	294.622	284.431								284.431
5	Badakathia	RF B	1257.403	1581.145	Kaniha	Kaniha-I	Kumanda		0.800			1580.345
6	Bahianali	RF	68.394	33.690								33.690
7	Baishnabaragudi	RF	58.196	62.77	Talcher	Dera	Dera		30.576			32.194
8	Balaramprasad	RF	43.404	51.421								51.421
9	Bandhuli	RF B	291.384	65.361								65.361
10	Baragounia	RF	80.839	70.634								70.634
11	Bhana	RF	54.635	63.214	Kaniha	Kaniha-I	Dereng		0.606			62.608
12	Bhogpal	RF	198.910	184.56								184.560
13	Biripal	RF	1295.040	1239.34	Kaniha	Rengali	Gandamala		4.160			1235.180
14	Bolonga (P)	RF	3111.998	3097.126	Bantanla	Pampasar	Balanga		0.360		1832.313	1264.453
15	Bramhanbil	RF	208.421	203.108								203.108
16	Budhia	RF	95.105	116.725								116.725
17	Bulajhar	RF	1620.419	1948.152	Talcher	Seepur	Kulei		0.300			1947.852
18	Chandrapada	RF	339.657	303.143								303.143
19	Chhendipada	RF	1770.158	1852.968	Chhendipada	Chhendipada-I	Chhendipada-I			28		1824.968
20	Derjang-Golabandha(P)	RF	166.160	176.649								176.649
21	Dhankoili	RF	718.747	694.667	Kaniha	Kaniha-II	Hanumanpur		8.262			686.405
22	Durgapur (A)	RF	46.702	55.486								55.486
23	Durgapur		3660.916	3630.121	Chhendipada	Raijharan	Raijharan		20.750			3609.371
24	Durgapur Danda	RF	247.676	227.963								227.963
25	Gengutia	RF	38.924	56.178	Talcher	Talcher	Kandhala		15.344			40.834
26	Godigotha	RF B	369.086	346.45								346.450
27	Gohiradanda	RF	27.398	29.755								29.755
28	Gopalprasad	RF	174.021	154.057	Talcher	Dera	Kalamchuin		0.630			153.427
29	Gumpha	RF	49.373	37.359								37.359
30	Guranga	RF	49.778	59.007								59.007
31	Hirapur R.F.B	RF	284.099	209.577	Talcher	Dera	Rakas		41.570			168.007
32	Jaghani	RF	25.901	38.856								38.856
33	Jaltap	RF	471.071	444.978								444.978
34	Jaypore	RF	488.675	478.263								478.263
35	Kaliakata	RF	200.731	205.691								205.691
36	Kandhakurudu	RF	63.133	98.948								98.948
37	Kandhal	RF	211.253	189.7								189.700
38	Kanheijena	RF	946.998	1393.382								1393.382
39	Kankurpal	RF	1016.121	929.905								929.905
40	Kanloi	RF	2042.521	2066.120								2066.120
41	Kanteikulia R.F.B	RF	350.956	299.493								299.493
42	Katada	RF	3183.289	3142.494								3142.494
43	Kauchiakhol R.F.B	RF	545.131	549.995	Talcher	Dera	Kauchiakhol		403.780			146.215
44	Khajuria	RF B	518.016	136.076								136.076
45	khalpal	RF	102.794	101.698								101.698
46	Kiajhar	RF	284.909	277.085	Kaniha	Kaniha-II	Hanumanpur		2.888			274.197
47	Kosala	RF	244.344	319.127	Chhendipada	Kosala	Kosala			76.000		243.127
48	Kuio	RF	564.152	534.329								534.329
49	Kuio-Sakasinga	RF	137.598	88.722								88.722
50	Kukurkhai	RF	19.426	16.735								16.735
51	Kumanda-Talataila	RF	55.671	38.779								38.779
52	Langalkhol R.F.B	RF	111.293	125.123								125.123
53	Madhapur	RF	229.870	221.793								221.793
54	Makundanali	RF	160.237	66.153								66.153
55	Malibrahmani	RF	154.284	150.391	Angul	Nisa	Paranga		7.850			142.541
56	Mandargiri-Kalima	RF	586.730	606.995								606.995
57	Mankadachua	RF	438.695	402.188								402.188

SL No.	Name of the Forest Block		Area in Ha.		Range	Section	Beat				Area transfer to Satkosia Tiger Reserve vide Notification No. 8F(WL) 15/2018-26865 dt. 14.12.2018.	Area under revised plan in ha.
			Area as per Notification	Area as per GIS				FRA	Under FC Act	Under Misc. regulation		
58	Matharagadi	RF	46.945	45.855								45.855
59	Nanda	RF	92.150	55.408								55.408
60	Nandapur-Berhampur	RF	40.470	40.975								40.975
61	Nialu- Lodhajhari & Sapakata	RF	1495.771	1225.276								1225.276
62	Nisa	RF	610.692	625.6	Angul	Nisa	Nisa		135.800			489.800
63	Nuabhuin	RF	271.958	293.076	Talcher	Dera	Kalamchuin		178.310			114.766
64	Nuakheta RF	RF	3011.777	2917.85						0.000	2917.85	0.000
65	Paranga	RF	258.199	222.077	Angul	Nisa	Paranga		5.690			216.387
66	Pattakhaman	RF B	485.640	438.412	Kaniha	Kaniha-II	Hanumanpur		25.012			413.400
67	Pedi	RF B	563.342	392.464								392.464
68	Petachira-Pathuria	RF	607.050	289.763								289.763
69	Pital Hill	RF	26.306	27.903								27.903
70	Poipal Danda (Dalak)	RF	702.559	645.413								645.413
71	Putagadia	RF	70.418	68.159								68.159
72	Rabipur R.F.B	RF	1251.332	1182.925	Talcher	Dera	Kandhaberini		8.606			1174.319
73	Rakas R.F.B	RF	487.259	564.549	Talcher	Dera	Rakas		249.637			314.912
74	Rameswar hil	RF	79.192	84.033								84.033
75	Sachi	RF	106.841	97.13								97.130
76	Sadarkhol	RF	1165.536	1077.441	Kaniha	Rengali	Balipasi		19.704			1057.737
77	Saharagoda	RF	184.422	184.713								184.713
78	Saleimada	RF	364.230	356.095								356.095
79	Santrabandha	R.F B	174.830	172.556								172.556
80	Saradhapur	RF	137.193	113.778	Kaniha	Kaniha-I	Saradhapur		5.8884			107.890
81	Seepur R.F.B	RF	310.810	242.085								242.085
82	Silakhani (Phulajhari)	RF	946.998	933.211								933.211
83	Silling 'A'	RF	77.702	106.47								106.470
84	Similipathar	RF	4014.624	2593.972	Jarapada	Balipata	Balipata-I	68.799	0.270			2524.903
85	Similisahi	RF	307.977	307.148								307.148
86	Sorispal	RF	222.585	216.198	Angul	Purunagarh	Purunagarh (N)		4.991			211.207
87	Tangiri	RF	259.008	265.847								265.847
	Total		**51357.137**	**48625.798**				**68.799**	**1188.409**	**116.630**	**4750.163**	**42501.797**
1	Balanga	PRF	55.849	53.522								53.522
2	Burti	PRF	2958.357	3135.584								3135.584
3	Chandanpur	PRF	470.262	446.364								446.364
4	Dandasingha-Bhagatpur	PRF	178.068	221.38								221.380
5	Dangapal	PRF	835.706	831.814								831.814
6	Dera	PRF	93.587	76.229								76.229
7	Derjang-Golabandha	PRF	8.670	27.844								27.844
8	Devinagar	PRF	3318.135	3202.93								3202.930
9	Durgapur	PRF	97.937	56.305								56.305
10	Hinsar-Sorispal	PRF	779.048	763.359								763.359
11	Kalapat	PRF	1202.364	1214.713								1214.713
12	Kandhaberini	PRF	240.999	243.076								243.076
13	Kangulei	PRF	52.514	46.009								46.009
14	Kanloi	PRF	86.606	69.769								69.769
15	Kerjang	PRF	498.590	466.011								466.011
16	Krushnachakra	PRF	2430.628	2489.598								2489.598
17	Kulasingha	PRF	625.262	641.715								641.715
18	Kurudu	PRF	842.585	712.221								712.221
19	Marudhipa	PRF	1800.915	1351.149								1351.149
20	Nunmati	PRF	516.397	440.620								440.620
21	Para	PRF	986.254	1052.774								1052.774
22	Pathargarh	PRF	1688.004	1633.068								1633.068
23	Pitachari	PRF	521.254	60.853								60.853
24	Pokunda	PRF	375.562	371.416								371.416
25	Rodasingha	PRF	139.622	143.939								143.939
26	Sibarampur	PRF	307.928	290.559								290.559
27	Sudagolasar	PRF	75.679	98.876								98.876
28	Sunarijharan	PRF	457.311	450.817								450.817

SL No.	Name of the Forest Block		Area in Ha.		Range	Section	Beat				Area transfer to Satkosia Tiger Reserve vide Notification No. 8F(WL) 15/2018-26865 dt. 14.12.2018.	Area under revised plan in ha.
			Area as per Notification	Area as per GIS				FRA	Under FC Act	Under Misc. regulation		
29	Tabada	PRF	201.541	210.582								210.582
	Total		**21845.634**	**20803.096**				**0**	**0**	**0**	**0**	**20803.096**
1	Chakundapal	DPF	205.992	178.821								178.821
2	Ganthigadia 'A'	DPF	130.03	87.976	Talcher	FCI	Ganthigadia		3.237			84.739
3	Ganthigadia 'B'	DPF	31.850	21.259								21.259
4	Labangi	DPF	70.823	69.96								69.960
5	Talisara	DPF	49.373	49.564								49.564
	Total		**488.068**	**407.580**				**0.000**	**3.237**	**0.000**	**0.000**	**404.343**
1	Baudabeda	PF	33.722	33.722								33.722
2	Jukub	PF	4.860	4.860								4.860
3	Talagarh, Kantamegha, Ragudiapada	PF	168.232	168.232								168.232
	Total		**206.814**	**206.814**				**0**	**0**	**0**	**0**	206.814
1	Badagunduri	VF	5	5								5.000
2	Badahar	VF	10	10								10.000
3	Badahar	VF	12.52	12.52								12.520
4	Badahar	VF	4.83	4.83								4.830
5	Badatribida	VF	5	5								5.000
6	Balipata	VF	0.25	0.25								0.250
7	Banabaspur	VF	14	14								14.000
8	Barapali	VF	4.55	4.55								4.550
9	Barapali	VF	3.84	3.84								3.840
10	Bedasasan	VF	1.38	1.38								1.380
11	Belpada	VF	5	5								5.000
12	Bhagirathipur	VF	13.5	13.5								13.500
13	Bikisar	VF	5	5								5.000
14	Bilinda	VF	30	30								30.000
15	Brahmanbil	VF	5	5								5.000
16	Brahmanbil	VF	5	5								5.000
17	Budakera	VF	5	5								5.000
18	Chakundapal	VF	5	5								5.000
19	Chhelia	VF	10	10								10.000
20	Chitalpur	VF	10	10								10.000
21	Danara	VF	6.78	6.78								6.780
22	Dumduma	VF	10	10								10.000
23	Gopalprasad	VF	2.13	2.13								2.130
24	Gundurinali	VF	6	6								6.000
25	Gurjanga	VF	5	5								5.000
26	Inkarbandha	VF	1.52	1.52								1.520
27	Inkarbandha	VF	0.71	0.71								0.710
28	Jadunathpur	VF	10	10								10.000
29	Jadunathpur	VF	10	10								10.000
30	Jamunali	VF	0.6	0.6								0.600
31	Jamunali	VF	17.57	17.57								17.570
32	Jamunali	VF	10	10								10.000
33	Jarada	VF	10	10								10.000
34	Jarasingha	VF	3	3								3.000
35	Jarasingha	VF	1.02	1.02								1.020
36	Jhulakhuntia	VF	10	10								10.000
37	Joragadia	VF	1.18	1.18								1.180
38	Joragadia(kuria)	VF	6.43	6.43								6.430
39	Jukub	VF	4	4								4.000
40	Kaliakata	VF	10	10								10.000
41	Kandhabereni	VF	10	10								10.000
42	Katrapada	VF	10	10								10.000
43	Katarapada	VF	10	10								10.000
44	Katrapalli	VF	10	10								10.000
45	Kuluma	VF	20	20								20.000
46	Kuluma	VF	30	30								30.000
47	Kumanda	VF	5	5								5.000
48	Kuruhuni	VF	4.27	4.27								4.270

SL No.	Name of the Forest Block		Area in Ha.		Range	Section	Beat				Area transfer to Satkosia Tiger Reserve vide Notification No. 8F(WL) 15/2018-26865 dt. 14.12.2018.	Area under revised plan in ha.
			Area as per Notification	Area as per GIS				FRA	Under FC Act	Under Misc. regulation		
49	Lodhabandha	VF	5	5								5.000
50	Lokeipasi	VF	0.48	0.48								0.480
51	Lokeipasi	VF	0.58	0.58								0.580
52	Mahuliapasi	VF	8.66	8.66								8.660
53	Malibandha	VF	5.48	5.48								5.480
54	Malibrahmani	VF	10	10								10.000
55	Mardharipur(kumunda)	VF	8	8								8.000
56	Natada	VF	6	6								6.000
57	Nisa	VF	10	10								10.000
58	Nisa	VF	5	5								5.000
59	Nua-Jarasingha	VF	2.73	2.73								2.730
60	Olanda	VF	5	5								5.000
61	Padmabatipur	VF	4.43	4.43								4.430
62	Padmbatipur	VF	1.21	1.21								1.210
63	Phulapada	VF	5	5								5.000
64	Phulpada	VF	4	4								4.000
65	Raghunathpur	VF	20	20								20.000
66	Ranjagola	VF	12	12								12.000
67	Ranjagola	VF	15	15								15.000
68	Rankasingha	VF	4	4								4.000
69	Rengali	VF	8	8								8.000
70	Rutubhuin	VF	8	8								8.000
71	Rutubhuin	VF	8	8								8.000
72	Sahadagoda	VF	3	3								3.000
73	Samal	VF	10	10								10.000
74	Samal	VF	5	5								5.000
75	Samal	VF	5	5								5.000
76	Sanhar	VF	10	10								10.000
77	Santarabandha	VF	5	5								5.000
78	Santribida	VF	15	15								15.000
79	Santribida	VF	8	8								8.000
80	Sarangi	VF	15	15								15.000
81	Sibarampur	VF	12.08	12.08								12.080
82	Sibarampur	VF	3	3								3.000
83	Sibarampur	VF	10	10								10.000
84	Solada	VF	5	5								5.000
85	Solada	VF	5.27	5.27								5.270
86	Solada	VF	29	29								29.000
87	Sunakhani	VF	5	5								5.000
88	Surendrapur	VF	1	1								1.000
89	Susab	VF	3	3								3.000
90	Tubey	VF	5	5								5.000
91	Tumuni	VF	3	3								3.000
	Total		**694**	**694**				**0**	**0**	**0**	**0**	694.000
	Grand Total		**74591.653**	**70737.288**				**68.799**	**1191.6457**	**116.63**	**4750.163**	**64610.050**

Area adopted in Revised Working Plan

Appendix - IV

SL No.	Name of the Forest Block		Area in Ha.			Area transfer to Satkosia Tiger Reserve			Area under revised plan in ha.	Area alloted to different Working Circle in Ha.									Remarks
			Area as per Notification	Area as per Computed	Area as per GIS		Under FC Act	Under Misc. regulation		IWC	RWC	Plantation WC	Protection WC	Total	Bamboo (O) WC	Wild life (O) WC	NTFP (O) WC	JFM (O) WC	Any other WC
1	2	3	4	5	7		9	10	11	12	13	14	15	16	17	18	19	20	21
1	Antulia- Tabda	RF	2324.192	2280.25	2259.8		16.624	12.63	2230.5460	1119.611	0	688.270	422.665	2230.546	0	2230.546	2230.546	510	
2	Arakhadahi	RF	738.173	698.140	679.496				679.4960	0	305.496	374.000	0.000	679.496	0	679.496	679.496	300.496	
3	Arisulia - Sulia	RF	145.692	149.84	142.044				142.0440	0	122.044	20.000	0.000	142.044	0	142.044	142.044	142.044	
4	Badadandasahi	RF	294.622	280.232	284.431				284.4310	0	196.631	87.800	0.000	284.431	0	284.431	284.431	196.631	
5	Badakathia	RF B	1257.403	1608.840	1581.145		0.800		1580.3450	1027.987		552.358	0.000	1580.345	0	1580.345	1580.345	906.27	
6	Bahianali	RF	68.394	42.827	33.690				33.6900	33.69	0	0.000	0.000	33.690	0	33.690	33.690	0	
7	Baishnabaragudi	RF	58.196	58.230	62.77		30.576		32.1937	0	12.1937	20.000	0.000	32.194	0	32.194	32.194	32.194	
8	Balaramprasad	RF	43.404	29.170	51.421				51.4210	0	51.421	0.000	0.000	51.421	0	51.421	51.421	51.421	
9	Bandhuli	RF B	291.384	70.915	65.361				65.3610	0	65.361	0.000	0.000	65.361	0	65.361	65.361	65.361	
10	Baragounia	RF	80.839	80.130	70.634				70.6340	0	55.634	15.000	0.000	70.634	0	70.634	70.634	70.634	
11	Bhana	RF	54.635	63.810	63.214		0.606		62.6080	0	62.608	0.000	0.000	62.608	0	62.608	62.608	62.608	
12	Bhogpal	RF	198.910	184.724	184.56				184.5600	0		25.866	158.694	184.560	0	184.560	184.560	158.694	
13	Biripal	RF	1295.040	1241.029	1239.34		4.160		1235.1800	0	1147.18	88.000	0.000	1235.180	0	1235.180	1235.180	1035.97	
14	Bolonga (P)	RF	3111.998	3040.231	3097.126	1832.313	0.360		1264.4530	0	0	0.000	1264.453	1264.453	1264.453	1264.453	1264.453	1264.813	
15	Bramhanbil	RF	208.421	208.096	203.108				203.1080	201.108	0	2.000	0.000	203.108	0	203.108	203.108	203.108	
16	Budhia	RF	95.105	124.740	116.725				116.7250	0	116.725	0.000	0.000	116.725	0	116.725	116.725	116.725	
17	Bulajhar	RF	1620.419	1977.073	1948.152		0.300		1947.8520	1876.852	0	71.000	0.000	1947.852	0	1947.852	1947.852	1027.12	
18	Chandrapada	RF	339.657	302.81	303.143				303.1430	0	303.143	0.000	0.000	303.143	0	303.143	303.143	303.143	
19	Chhendipada	RF	1770.158	1918.481	1852.968			28	1824.9680	0	0	524.000	1300.968	1824.968	0	1824.968	1824.968	1297.4	
20	Derjang-Golabandha(P)	RF	166.160	166.160	176.649				176.6490	0	0	53.000	123.649	176.649	0	176.649	176.649	176.649	
21	Dhankoili	RF	718.747	722.17	694.667		8.262		686.4050	680.905		5.500	0.000	686.405	0	686.405	686.405	390	
22	Durgapur (A)	RF	46.702	45.4	55.486				55.4860	0	35.486	20.000	0.000	55.486	0	55.486	55.486	55.486	
23	Durgapur		3660.916	3760.780	3630.121		20.750		3609.3710	3431.551	0	177.820	0.000	3609.371	0	3609.371	3609.371	3574.86	
24	Durgapur Danda	RF	247.676	246.12	227.963				227.9630	0	169.963	58.000	0.000	227.963	0	227.963	227.963	227.963	
25	Gengutia	RF	38.924	51.030	56.178		15.344		40.8340	0	30.834	10.000	0.000	40.834	0	40.834	40.834	30.834	
26	Godigotha	RF B	369.086	340.62	346.45				346.4500	0	321.45	25.000	0.000	346.450	0	346.450	346.450	346.45	
27	Gohiradanda	RF	27.398	25.25	29.755				29.7550	19.755		10.000	0.000	29.755	0	29.755	29.755	0	
28	Gopalprasad	RF	174.021	161.524	154.057		0.630		153.4270	0	102.254	51.173	0.000	153.427	0	153.427	153.427	102.254	
29	Gumpha	RF	49.373	38.12	37.359				37.3590	0	37.359	0.000	0.000	37.359	0	37.359	37.359	37.359	
30	Guranga	RF	49.778	55.447	59.007				59.0070	0	59.007	0.000	0.000	59.007	0	59.007	59.007	59.007	
31	Hirapur R.F.B	RF	284.099	284.100	209.577		41.570		168.0070	0	168.007	0.000	0.000	168.007	0	168.007	168.007	168.007	
32	Jaghani	RF	25.901	22.75	38.856				38.8560	0	38.856	0.000	0.000	38.856	0	38.856	38.856	38.856	
33	Jaltap	RF	471.071	440.593	444.978				444.9780	0	0	43.000	401.978	444.978	0	444.978	444.978	315	
34	Jaypore	RF	488.675	494.567	478.263				478.2630	0	347.263	131.000	0.000	478.263	0	478.263	478.263	368.263	
35	Kaliakata	RF	200.731	208.170	205.691				205.6910	0	180.241	25.450	0.000	205.691	0	205.691	205.691	205.691	
36	Kandhakurudu	RF	63.133	69.2	98.948				98.9480	98.948	0	0.000	0.000	98.948	0	98.948	98.948	98.948	
37	Kandhal	RF	211.253	193.385	189.7				189.7000	173.861	0	15.839	0.000	189.700	0	189.700	189.700	173.861	
38	Kanheijena	RF	946.998	1426.215	1393.382				1393.3820	1258.382	0	135.000	0.000	1393.382	0	1393.382	1393.382	845.382	
39	Kankurpal	RF	1016.121	938.109	929.905				929.9050	0	0	42.000	887.905	929.905	0	929.905	929.905	205.5	
40	Kanloi	RF	2042.521	2110.383	2066.120				2066.1200	2045.12	0	21.000	0.000	2066.120	0	2066.120	2066.120	1376.87	
41	Kanteikulia R.F.B	RF	350.956	304.550	299.493				299.4930	259.493	0	40.000	0.000	299.493	0	299.493	299.493	259.493	
42	Katada	RF	3183.289	3171.794	3142.494				3142.4940	2905.494	0	237.000	0.000	3142.494	3142.494	3142.494	3142.494	2225.25	
43	Kauchiakhol R.F.B	RF	545.131	571.422	549.995		403.780		146.2150	0	146.215	0.000	0.000	146.215	0	146.215	146.215	146.215	
44	Khajuria	RF B	518.016	137.828	136.076				136.0760	0	136.076	0.000	0.000	136.076	0	136.076	136.076	136.076	
45	khalpal	RF	102.794	102.254	101.698				101.6980	0	101.698	0.000	0.000	101.698	0	101.698	101.698	101.698	
46	Kiajhar	RF	284.909	286.5	277.085		2.888		274.1970	0	272.197	2.000	0.000	274.197	0	274.197	274.197	103.17	

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47	Kosala	RF	244.344	311.524	319.127			76.000	243.1270	179.127	0	64.000	0.000	243.127	0	243.127	243.127	189.7	
48	Kuio	RF	564.152	556.460	534.329				534.3290	501.329		33.000	0.000	534.329	0	534.329	534.329	534.329	
49	Kuio-Sakasinga	RF	137.598	85.340	88.722				88.7220	0	68.722	20.000	0.000	88.722	0	88.722	88.722	88.722	
50	Kukurkhai	RF	19.426	19.09	16.735				16.7350	16.735	0	0.000	0.000	16.735	0	16.735	16.735	0	
51	Kumanda-Talataila	RF	55.671	36.460	38.779				38.7790	0	0	21.000	17.779	38.779	0	38.779	38.779	38.779	
52	Langalkhol R.F.B	RF	111.293	126.135	125.123				125.1230	125.123	0	0.000	0.000	125.123	0	125.123	125.123	55.123	
53	Madhapur	RF	229.870	222.470	221.793				221.7930	0	173.917	47.876	0.000	221.793	0	221.793	221.793	221.793	
54	Makundanali	RF	160.237	65.955	66.153				66.1530	0	32.66	33.493	0.000	66.153	0	66.153	66.153	66.153	
55	Malibrahmani	RF	154.284	153.040	150.391		7.850		142.5410	0	102.541	40.000	0.000	142.541	0	142.541	142.541	142.541	
56	Mandargiri-Kalima	RF	586.730	596.490	606.995				606.9950	0	0	163.000	443.995	606.995	0	606.995	606.995	606.995	
57	Mankadachua	RF	438.695	420.348	402.188				402.1880	0	339.188	63.000	0.000	402.188	0	402.188	402.188	352.188	
58	Matharagadi	RF	46.945	46.68	45.855				45.8550	0	45.855	0.000	0.000	45.855	0	45.855	45.855	45.855	
59	Nanda	RF	92.150	55.734	55.408				55.4080	0	55.408	0.000	0.000	55.408	0	55.408	55.408	55.408	
60	Nandapur-Berhampur	RF	40.470	46.896	40.975				40.9750	0	40.975	0.000	0.000	40.975	0	40.975	40.975	40.975	
61	Nialu- Lodhajhari & Sapakata	RF	1495.771	1343.485	1225.276				1225.2760	1201.276		24.000	0.000	1225.276	0	1225.276	1225.276	680	
62	Nisa	RF	610.692	630.830	625.6		135.800		489.8000	0	444.93	44.870	0.000	489.800	0	489.800	489.800	489.8	
63	Nuabhuin	RF	271.958	293.924	293.076		178.310		114.7660	0	114.766	0.000	0.000	114.766	0	114.766	114.766	114.766	
64	Nuakheta RF	RF	3011.777	3000.810	2917.85	2917.85		0.000	0.0000	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0	
65	Paranga	RF	258.199	231.160	222.077		5.690		216.3870	0	166.387	50.000	0.000	216.387	0	216.387	216.387	216.387	
66	Pattakhaman	RF B	485.640	464.55	438.412		25.012		413.4000	301.4	0	112.000	0.000	413.400	0	413.400	413.400	314.11	
67	Pedi	RF B	563.342	542.45	392.464				392.4640	0	392.464	0.000	0.000	392.464	0	392.464	392.464	319.77	
68	Petachira-Pathuria	RF	607.050	290.404	289.763				289.7630	0	289.763	0.000	0.000	289.763	0	289.763	289.763	289.763	
69	Pital Hill	RF	26.306	26.52	27.903				27.9030	0	27.903	0.000	0.000	27.903	0	27.903	27.903	27.903	
70	Poipal Danda (Dalak)	RF	702.559	707.00	645.413				645.4130	0	573.413	72.000	0.000	645.413	0	645.413	645.413	553.9	
71	Putagadia	RF	70.418	69.770	68.159				68.1590	68.159	0	0.000	0.000	68.159	0	68.159	68.159	13.15	
72	Rabipur R.F.B	RF	1251.332	1200.109	1182.925		8.606		1174.3190	0	1052.799	121.520	0.000	1174.319	0	1174.319	1174.319	1174.319	
73	Rakas R.F.B	RF	487.259	571.422	564.549		249.637		314.9120	0	0	0.000	314.912	314.912	0	314.912	314.912	215	
74	Rameswar hil	RF	79.192	80.69	84.033				84.0330	0	74.033	10.000	0.000	84.033	0	84.033	84.033	64.41	
75	Sachi	RF	106.841	104.086	97.13				97.1300	0	91.13	6.000	0.000	97.130	0	97.130	97.130	97.13	
76	Sadarkhol	RF	1165.536	1137.54	1077.441		19.704		1057.7370	0	956.737	101.000	0.000	1057.737	0	1057.737	1057.737	1021.51	
77	Saharagoda	RF	184.422	184.150	184.713				184.7130	0	159.713	25.000	0.000	184.713	0	184.713	184.713	184.713	
78	Saleimada	RF	364.230	365.18	356.095				356.0950	0	326.095	30.000	0.000	356.095	0	356.095	356.095	356.095	
79	Santrabandha	R.F B	174.830	168.87	172.556				172.5560	134.556		38.000	0.000	172.556	0	172.556	172.556	151.16	
80	Saradhapur	RF	137.193	108.12	113.778		5.8884		107.8896	0	50.8896	57.000	0.000	107.890	0	107.890	107.890	107.89	
81	Seepur R.F.B	RF	310.810	251.065	242.085				242.0850	0	107.085	135.000	0.000	242.085	0	242.085	242.085	107.085	
82	Silakhani (Phulajhari)	RF	946.998	947.298	933.211				933.2110	933.211		0.000	0.000	933.211	0	933.211	933.211	233	
83	Silling 'A'	RF	77.702	105.230	106.47				106.4700	0	39.003	67.467	0.000	106.470	0	106.470	106.470	106.47	
84	Similipathar	RF	4014.624	2656.379	2593.972		0.270	68.799	2524.9030	2201.903	0	323.000	0.000	2524.903	0	2524.903	2524.903	2189.07	
85	Similisahi	RF	307.977	320.431	307.148				307.1480	307.148	0	0.000	0.000	307.148	0	307.148	307.148	110	
86	Sorispal	RF	222.585	216.750	216.198		4.991		211.2070	0	191.207	20.000	0.000	211.207	0	211.207	211.207	211.207	
87	Tangiri	RF	259.008	255.93	265.847				265.8470	0	254.847	11.000	0.000	265.847	0	265.847	265.847	238.07	
	Total		**51357.137**	**49750.784**	**48625.798**	**4750.163**	**1188.409**	**185.429**	**42501.7973**	**21102.724**	**10757.773**	**5304.302**	**5336.998**	**42501.797**	**4406.947**	**42501.798**	**42501.798**	**31539.013**	
1	Balanga	PRF	55.849	54.902	53.522				53.5220	0	0	20.000	33.522	53.522	53.522	53.522	53.522	33.522	
2	Burti	PRF	2958.357	2978.050	3135.584				3135.5840	2511.852		204.850	418.882	3135.584	1933.208	3135.584	3135.584	1235	
3	Chandanpur	PRF	470.262	442.081	446.364				446.3640	411.364	0	35.000	0.000	446.364	0	446.364	446.364	226.364	
4	Dandasingha- Bhagatpur	PRF	178.068	235.052	221.38				221.3800	210.380	0	11.000	0.000	221.380	0	221.380	221.380	186.05	
5	Dangapal	PRF	835.706	872.723	831.814				831.8140	0	667.242	164.572	0.000	831.814	0	831.814	831.814	831.814	
6	Dera	PRF	93.587	82.134	76.229				76.2290	0	76.229	0.000	0.000	76.229	0	76.229	76.229	76.229	

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7	Derjang-Golabandha	PRF	8.670	28.616	27.844				27.8440	0	0	0.000	27.844	27.844	0	27.844	27.844	27.844	
8	Devinagar	PRF	3318.135	3307.31	3202.93				3202.9300	0	3043.93	159.000	0.000	3202.930	0	3202.930	3202.930	3202.93	
9	Durgapur	PRF	97.937	62.9	56.305				56.3050	0	45.305	11.000	0.000	56.305	0	56.305	56.305	56.305	
10	Hinsar-Sorispal	PRF	779.048	764.060	763.359				763.3590	0	685.699	77.660	0.000	763.359	0	763.359	763.359	400.39	
11	Kalapat	PRF	1202.364	1214.010	1214.713				1214.7130	0	1110.713	104.000	0.000	1214.713	0	1214.713	1214.713	827.47	
12	Kandhaberini	PRF	240.999	242.230	243.076				243.0760	0	219.576	23.500	0.000	243.076	0	243.076	243.076	243.076	
13	Kangulei	PRF	52.514	49.860	46.009				46.0090	0	46.009	0.000	0.000	46.009	0	46.009	46.009	46.009	
14	Kanloi	PRF	86.606	75.491	69.769				69.7690	0	57.769	12.000	0.000	69.769	0	69.769	69.769	69.769	
15	Kerjang	PRF	498.590	499.043	466.011				466.0110	0	421.011	45.000	0.000	466.011	0	466.011	466.011	466.011	
16	Krushnachakra	PRF	2430.628	2515.800	2489.598				2489.5980	2005.881		79.460	404.257	2489.598	0	2489.598	2489.598	1266	
17	Kulasingha	PRF	625.262	674.273	641.715				641.7150	411.715	0	230.000	0.000	641.715	0	641.715	641.715	296.78	
18	Kurudu	PRF	842.585	814.970	712.221				712.2210	536.621	0	175.600	0.000	712.221	0	712.221	712.221	360.95	
19	Marudhipa	PRF	1800.915	1375.426	1351.149				1351.1490	0	1192.149	159.000	0.000	1351.149	0	1351.149	1351.149	1192.14	
20	Nunmati	PRF	516.397	462.097	440.620				440.6200	0	398.62	42.000	0.000	440.620	0	440.620	440.620	440.53	
21	Para	PRF	986.254	1022.48	1052.774				1052.7740	0	909.774	143.000	0.000	1052.774	0	1052.774	1052.774	805.85	
22	Pathargarh	PRF	1688.004	1707.27	1633.068				1633.0680	0	1538.068	95.000	0.000	1633.068	0	1633.068	1633.068	1019.71	
23	Pitachari	PRF	521.254	61.193	60.853				60.8530	0	60.853	0.000	0.000	60.853	0	60.853	60.853	60.853	
24	Pokunda	PRF	375.562	365.450	371.416				371.4160	0	290.976	80.440	0.000	371.416	0	371.416	371.416	250.33	
25	Rodasingha	PRF	139.622	139.87	143.939				143.9390	0	116.939	27.000	0.000	143.939	0	143.939	143.939	86.3	
26	Sibarampur	PRF	307.928	283.951	290.559				290.5590	240.559	0	50.000	0.000	290.559	0	290.559	290.559	240.559	
27	Sudagolasar	PRF	75.679	86.929	98.876				98.8760	0	89.876	9.000	0.000	98.876	0	98.876	98.876	98.876	
28	Sunarijharan	PRF	457.311	450.016	450.817				450.8170	0	450.817	0.000	0.000	450.817	0	450.817	450.817	450.817	
29	Tabada	PRF	201.541	193.31	210.582				210.5820	155.582	0	55.000	0.000	210.582	0	210.582	210.582	144.24	
	Total		**21845.634**	**21061.497**	**20803.096**	**0**	**0**	**0**	**20803.0960**	**6483.954**	**11421.555**	**2013.082**	**884.505**	**20803.096**	**1986.73**	**20803.0956**	**20803.0956**	**14642.718**	
1	Chakundapal	DPF	205.992	195.363	178.821				178.8210	0	178.821	0.000	0.000	178.821	0	178.821	178.821	178.821	
2	Ganthigadia 'A'	DPF	130.03	94.080	87.976		3.237		84.7390	0	33.739	51.000	0.000	84.739	0	84.739	84.739	63.738	
3	Ganthigadia 'B'	DPF	31.850	20.590	21.259				21.2590	0	21.259	0.000	0.000	21.259	0	21.259	21.259	21.259	
4	Labangi	DPF	70.823	69.780	69.96				69.9600	0	0	0.000	69.960	69.960	69.960	69.960	69.960	69.96	
5	Talisara	DPF	49.373	49.280	49.564				49.5640	0	0	46.000	3.564	49.564	49.564	49.564	49.564	0	
	Total		**488.068**	**429.093**	**407.580**	**0.000**	**3.237**	**0.000**	**404.3430**	**0.000**	**233.819**	**97.000**	**73.524**	**404.343**	**119.524**	**404.343**	**404.343**	**333.778**	
1	Baudabeda	PF	33.722	0	33.722				33.7220	0		33.722	0.000	33.722	0	33.722	33.722	33.722	
2	Jukub	PF	4.860	0	4.860				4.8600	0	4.860	0.000	0.000	4.860	0	4.860	4.860	4.86	
3	Talagarh, Kantamegha, Ragudiapada	PF	168.232	0	168.232				168.2320	0	168.232	0.000	0.000	168.232	0	168.232	168.232	168.232	
	Total		**206.814**	**0**	**206.814**	**0**	**0**	**0**	**206.8140**	**0**	**173.092**	**33.722**	**0.000**	**206.814**	**0**	**206.814**	**206.814**	**206.814**	
1	Badagunduri	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
2	Badahar	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
3	Badahar	VF	12.52	0	12.52				12.5200	0	0	12.52	0.000	12.520	0	12.520	12.520	12.52	
4	Badahar	VF	4.83	0	4.83				4.8300	0	0	4.83	0.000	4.830	0	4.830	4.830	4.83	
5	Badatribida	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
6	Balipata	VF	0.25	0	0.25				0.2500	0	0	0.25	0.000	0.250	0	0.250	0.250	0.25	
7	Banabaspur	VF	14	0	14				14.0000	0	0	14	0.000	14.000	0	14.000	14.000	14	
8	Barapali	VF	4.55	0	4.55				4.5500	0	0	4.55	0.000	4.550	0	4.550	4.550	4.55	
9	Barapali	VF	3.84	0	3.84				3.8400	0	0	3.84	0.000	3.840	0	3.840	3.840	3.84	
10	Bedasasan	VF	1.38	0	1.38				1.3800	0	0	1.38	0.000	1.380	0	1.380	1.380	1.38	
11	Belpada	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
12	Bhagirathipur	VF	13.5	0	13.5				13.5000	0	0	13.5	0.000	13.500	0	13.500	13.500	13.5	
13	Bikisar	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
14	Bilinda	VF	30	0	30				30.0000	0	0	30	0.000	30.000	0	30.000	30.000	30	
15	Brahmanbil	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	

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16	Brahmanbil	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
17	Budakera	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
18	Chakundapal	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
19	Chhelia	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
20	Chitalpur	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
21	Danara	VF	6.78	0	6.78				6.7800	0	0	6.78	0.000	6.780	0	6.780	6.780	6.78	
22	Dumduma	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
23	Gopalprasad	VF	2.13	0	2.13				2.1300	0	0	2.13	0.000	2.130	0	2.130	2.130	2.13	
24	Gundurinali	VF	6	0	6				6.0000	0	0	6	0.000	6.000	0	6.000	6.000	6	
25	Gurjanga	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
26	Inkarbandha	VF	1.52	0	1.52				1.5200	0	0	1.52	0.000	1.520	0	1.520	1.520	1.52	
27	Inkarbandha	VF	0.71	0	0.71				0.7100	0	0	0.71	0.000	0.710	0	0.710	0.710	0.71	
28	Jadunathpur	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
29	Jadunathpur	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
30	Jamunali	VF	0.6	0	0.6				0.6000	0	0	0.6	0.000	0.600	0	0.600	0.600	0.6	
31	Jamunali	VF	17.57	0	17.57				17.5700	0	0	17.57	0.000	17.570	0	17.570	17.570	17.57	
32	Jamunali	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
33	Jarada	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
34	Jarasingha	VF	3	0	3				3.0000	0	0	3	0.000	3.000	0	3.000	3.000	3	
35	Jarasingha	VF	1.02	0	1.02				1.0200	0	0	1.02	0.000	1.020	0	1.020	1.020	1.02	
36	Jhulakhuntia	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
37	Joragadia	VF	1.18	0	1.18				1.1800	0	0	1.18	0.000	1.180	0	1.180	1.180	1.18	
38	Joragadia(kuria)	VF	6.43	0	6.43				6.4300	0	0	6.43	0.000	6.430	0	6.430	6.430	6.43	
39	Jukub	VF	4	0	4				4.0000	0	0	4	0.000	4.000	0	4.000	4.000	4	
40	Kaliakata	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
41	Kandhabereni	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
42	Katrapada	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
43	Katarapada	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
44	Katrapalli	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
45	Kuluma	VF	20	0	20				20.0000	0	0	20	0.000	20.000	0	20.000	20.000	20	
46	Kuluma	VF	30	0	30				30.0000	0	0	30	0.000	30.000	0	30.000	30.000	30	
47	Kumanda	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
48	Kuruhuni	VF	4.27	0	4.27				4.2700	0	0	4.27	0.000	4.270	0	4.270	4.270	4.27	
49	Lodhabandha	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
50	Lokeipasi	VF	0.48	0	0.48				0.4800	0	0	0.48	0.000	0.480	0	0.480	0.480	0.48	
51	Lokeipasi	VF	0.58	0	0.58				0.5800	0	0	0.58	0.000	0.580	0	0.580	0.580	0.58	
52	Mahuliapasi	VF	8.66	0	8.66				8.6600	0	0	8.66	0.000	8.660	0	8.660	8.660	8.66	
53	Malibandha	VF	5.48	0	5.48				5.4800	0	0	5.48	0.000	5.480	0	5.480	5.480	5.48	
54	Malibrahmani	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
55	Mardharipur(kumunda)	VF	8	0	8				8.0000	0	0	8	0.000	8.000	0	8.000	8.000	8	
56	Natada	VF	6	0	6				6.0000	0	0	6	0.000	6.000	0	6.000	6.000	6	
57	Nisa	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
58	Nisa	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
59	Nua-Jarasingha	VF	2.73	0	2.73				2.7300	0	0	2.73	0.000	2.730	0	2.730	2.730	2.73	
60	Olanda	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
61	Padmabatipur	VF	4.43	0	4.43				4.4300	0	0	4.43	0.000	4.430	0	4.430	4.430	4.43	
62	Padmbatipur	VF	1.21	0	1.21				1.2100	0	0	1.21	0.000	1.210	0	1.210	1.210	1.21	
63	Phulapada	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
64	Phulpada	VF	4	0	4				4.0000	0	0	4	0.000	4.000	0	4.000	4.000	4	
65	Raghunathpur	VF	20	0	20				20.0000	0	0	20	0.000	20.000	0	20.000	20.000	20	

SL No.	Name of the Forest Block		Area in Ha.			Area transfer to Satkosia Tiger Reserve			Area under revised plan in ha.	Area alloted to different Working Circle in Ha.									Remarks
			Area as per Notification	Area as per Computed	Area as per GIS		Under FC Act	Under Misc. regulation		IWC	RWC	Plantation WC	Protection WC	Total	Bamboo (O) WC	Wild life (O) WC	NTFP (O) WC	JFM (O) WC	Any other WC
66	Ranjagola	VF	12	0	12				12.0000	0	0	12	0.000	12.000	0	12.000	12.000	12	
67	Ranjagola	VF	15	0	15				15.0000	0	0	15	0.000	15.000	0	15.000	15.000	15	
68	Rankasingha	VF	4	0	4				4.0000	0	0	4	0.000	4.000	0	4.000	4.000	4	
69	Rengali	VF	8	0	8				8.0000	0	0	8	0.000	8.000	0	8.000	8.000	8	
70	Rutubhuin	VF	8	0	8				8.0000	0	0	8	0.000	8.000	0	8.000	8.000	8	
71	Rutubhuin	VF	8	0	8				8.0000	0	0	8	0.000	8.000	0	8.000	8.000	8	
72	Sahadagoda	VF	3	0	3				3.0000	0	0	3	0.000	3.000	0	3.000	3.000	3	
73	Samal	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
74	Samal	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
75	Samal	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
76	Sanhar	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
77	Santarabandha	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
78	Santribida	VF	15	0	15				15.0000	0	0	15	0.000	15.000	0	15.000	15.000	15	
79	Santribida	VF	8	0	8				8.0000	0	0	8	0.000	8.000	0	8.000	8.000	8	
80	Sarangi	VF	15	0	15				15.0000	0	0	15	0.000	15.000	0	15.000	15.000	15	
81	Sibarampur	VF	12.08	0	12.08				12.0800	0	0	12.08	0.000	12.080	0	12.080	12.080	12.08	
82	Sibarampur	VF	3	0	3				3.0000	0	0	3	0.000	3.000	0	3.000	3.000	3	
83	Sibarampur	VF	10	0	10				10.0000	0	0	10	0.000	10.000	0	10.000	10.000	10	
84	Solada	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
85	Solada	VF	5.27	0	5.27				5.2700	0	0	5.27	0.000	5.270	0	5.270	5.270	5.27	
86	Solada	VF	29	0	29				29.0000	0	0	29	0.000	29.000	0	29.000	29.000	29	
87	Sunakhani	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
88	Surendrapur	VF	1	0	1				1.0000	0	0	1	0.000	1.000	0	1.000	1.000	1	
89	Susab	VF	3	0	3				3.0000	0	0	3	0.000	3.000	0	3.000	3.000	3	
90	Tubey	VF	5	0	5				5.0000	0	0	5	0.000	5.000	0	5.000	5.000	5	
91	Tumuni	VF	3	0	3				3.0000	0	0	3	0.000	3.000	0	3.000	3.000	3	
	Total		**694.000**	**0.000**	**694.000**	**0.000**	**0.000**	**0.000**	**694.0000**	**0.000**	**0.000**	**694.000**	**0.000**	**694.000**	**0.000**	**694.000**	**694.000**	**694.000**	**0**
	Grand Total		**74591.653**	**71241.374**	**70737.288**	**4750.163**	**1191.6457**	**185.429**	**64610.0503**	**27586.6780**	**22586.2393**	**8142.106**	**6295.027**	**64610.05030**	**6513.201**	**64610.0503**	**64610.0503**	**47416.323**	**0**

List of Forest Blocks with length of boundary line & no. of pillars Appendix - V

Name of the Range	Sl.No	Name of the forest block, RF/PRF/DPF	Total Length of Boundary in Kms	Total no of R.F Pillars	Condition of the Pillars								Missing pillars	Grand total	Year of operation of mintanance
					Good				Broken						
					Stone cairn	R R Stone Masonry	Concrete	Total	Stone cairn	R R Stone Masonry	Concrete	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Angul	1	Saharagoda RF	6.6	51		5	15	20	31			31		51	2021-22
Angul	2	Bhogapal RF	6.7	85	7	26		33	42	10		52		85	2021-22
Angul	3	Mandargiri-Kalima RF	11.7	92	1	-	72	73	14			14	5	92	2021-22
Angul	4	Nandapur-Berhampur RF	2.4	20	-	-	5	5	15			15		20	2022-23
Angul	5	Badadandasahi RF	7.5	78	-	-	76	76			2	2		78	2023-24
Angul	6	Sorispal RF	6	43	-	15	-	15	22	6	-	28	0	43	2024-25
Angul	7	Paranga RF	8.7	70	-	40	-	40	-	30	-	30	0	70	2024-25
Angul	8	Nisha RF	15.5	81	-	-	65	65	-	-	16	16	0	81	2025-26
Angul	9	Kuio RF	8.8	44	-	39	-	39	-	5	-	5	0	44	2025-26
Angul	10	Malibramhani RF	6.7	44	-	-	35	35	-	-	9	9	0	44	2025-26
Angul	11	Kumanda Talataila RF	3.1	18	-	-	-	0	-	18	-	18	0	18	2026-27
Angul	12	Kaliakata RF	6.2	59	-	55	-	55	-	4	-	4	0	59	2026-27
Angul	13	Kuio Sakasinga RF	4.6	36	-	-	-	0	-	31	5	36	0	36	2027-28
Angul	14	Guranga RF	2.7	24	-	-	-	0	24	-	-	24	0	24	2028-29
Angul	15	Nanda RF	2.5	42	-	-	34	34	-	-	8	8	0	42	2028-29
Angul	16	Madhapur RF	6.5	27	10	-	-	10	17	-	-	17	0	27	2029-30
Angul	17	Derjang Golabandha RF	3.5	65	-	-	-	0	65	-	-	65	0	65	2029-30
Bantala	18	Baragounia RF	4.2	31			27	27			4	4		31	2022-23
Bantala	19	Balanga RF	33.5	251			55	55	120		68	188	8	251	2023-24
Bantala	20	Nuakheta RF	25.36	170	17	24	28	69	49	20	14	83	18	170	2024-25
Chhendipada	21	Kosala RF	8.5	55	-	45	-	45	-	10	-	10	0	55	2021-22
Chhendipada	22	Kanloi RF	28	180	-	-	-	0	-	180	-	180	0	180	2021-22
Chhendipada	23	Jaipure RF	12	88	-	55	-	55	33	-	-	33	0	88	2022-23
Chhendipada	24	Khalapal RF	5	29	-	-	9	9	-	-	3	3	17	29	2023-24
Chhendipada	25	Bahianali RF	2.87	19	-	2	-	2	-	17	-	17	0	19	2023-24
Chhendipada	26	Similisahi RF	4.12	44	-	7	-	7	-	12	-	12	25	44	2024-25
Chhendipada	27	Jaltap RF	1.02	45	-	13	-	13	-	32	-	32	0	45	2024-25
Chhendipada	28	Bramhanbil RF	3.3	24	-	5	-	5	-	19	-	19	0	24	2025-26
Chhendipada	29	Putagadia RF	5	29	-	19	-	19	-	10	-	10	0	29	2025-26
Chhendipada	30	Durgapur RF	43.4	290	-	115	-	115	-	175	-	175	0	290	2026-27
Chhendipada	31	Chhendipada RF	29	134	-	94	-	94	-	34	-	34	6	134	2027-28
Chhendipada	32	Kankurpal RF	22	200	-	-	44	44	-	54	102	156	0	200	2029-30
Jarapada	33	Antulia Tabada RF	42	445	48	30	74	152	242	2	47	291	2	445	2021-22
Jarapada	34	Katada RF	42.4	272	45	30	-	75	191	-	-	191	6	272	2022-23
Jarapada	35	Kandhakuruda RF	5.6	54	-	-	-	0	54		-	54	0	54	2023-24
Jarapada	36	Arisulia-Sulia RF	4.7	34	-	2	-	2	-	32	-	32	0	34	2024-25
Jarapada	37	Similipathar RF	40	273	80	122	-	202	44	27		71	0	273	2025-26
Jarapada	38	Durgapur ARF	6.7	48	-	21	-	21	26	1	-	27	0	48	2026-27
Kaniha	39	Arakhadahi R.F	10.8	85		1	82	83	1		1	2		85	2021-22
Kaniha	40	Badakathia R.F	20.7	300			296	296			4	4		300	2021-22
Kaniha	41	Bandhuli R.F	3	30	6			6	24			24		30	2021-22
Kaniha	42	Bhana R.F	3.8	37			34	34			3	3		37	2022-23
Kaniha	43	Biripal R.F	19.9	191	60	100	21	181	10			10		191	2022-23
Kaniha	44	Budhia R.F	4.53	42				0	42			42		42	2022-23

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Kaniha	45	Chandrapada R.F	7.4	62		57		57		5		5		62	2023-24
Kaniha	46	Dhankoili R.F	15.5	151			144	144	2		4	6	1	151	2023-24
Kaniha	47	Durgapur Danda R.F	9.6	95	1	1	85	87			7	7	1	95	2024-25
Kaniha	48	Godigotha R.F	11.2	90			59	59			8	8	23	90	2024-25
Kaniha	49	Gohiradanda R.F	2.3	22		22		22				0		22	2024-25
Kaniha	50	Gumpha R.F	3	27		2		2	13	12		25		27	2024-25
Kaniha	51	Jaghani R.F	1.9	21			11	11			10	10		21	2024-25
Kaniha	52	Kiajhar R.F	8	47			47	47				0		47	2025-26
Kaniha	53	Khajuria R.F	9.6	62	15			15	47			47		62	2025-26
Kaniha	54	Kukurkhai R.F	1.6	10			10	10				0		10	2025-26
Kaniha	55	Matharagadi R.F	5	26		24		24	2			2		26	2025-26
Kaniha	56	Nialu- Lodhajhari & Sapakata R.F	31.8	367	72	186		258	62	16		78	31	367	2026-27
Kaniha	57	Pattakhaman R.F	14.4	122			122	122				0		122	2026-27
Kaniha	58	Pedi R.F	13	81		16	43	59	22			22		81	2026-27
Kaniha	59	Pital Hill	1.8	19			11	11			8	8		19	2026-27
Kaniha	60	Poipal Danda (Dalak) R.F	15	148	11	136		147		1		1		148	2026-27
Kaniha	61	Rameswar hill	4.7	38		1	27	28	7	3		10		38	2027-28
Kaniha	62	Sadarkhol R.F	28.52	161	5	53		58	8	95		103		161	2027-28
Kaniha	63	Saleimada R.F	11.6	126	22	45		67	5	54		59		126	2028-29
Kaniha	64	Santrabandha R.F	3.7	46			45	45			1	1		46	2028-29
Kaniha	65	Saradhapur R.F	4.8	35			35	35				0		35	2028-29
Kaniha	66	Sachi R.F	4.32	67	53			53	14			14		67	2028-29
Kaniha	67	Silakhani (Phulajhari) R.F	22	192	8	3	159	170	20	1	1	22		192	2029-30
Kaniha	68	Tangiri R.F	9	60			49	49			11	11		60	2029-30
Talcher	69	Gopal Prasad RF	5.3	49			28	28		18	3	21		49	2021-22
Talcher	70	Kanheijena RF	15.6	130	18		33	51	31		48	79		130	2021-22
Talcher	71	Bulajhar RF	30.7	250	12	28	54	94	75	33	48	156		250	2022-23
Talcher	72	Seeling RF	4	47	2	12	13	27	10	6	4	20		47	2022-23
Talcher	73	Mankadachua RF	6.8	65			25	25			40	40		65	2023-24
Talcher	74	Kandhala RF	7.78	59		23		23		36		36		59	2023-24
Talcher	75	Gengutia RF	2	0				0				0		0	2024-25
Talcher	76	Baistamba Ragadi RF	3.3	36				0				0	36	36	2024-25
Talcher	77	Makundanali RF	4.96	19				0				0	19	19	2024-25
Talcher	78	Nuabhuin RF	12.32	84			17	17			67	67		84	2024-25
Talcher	79	Pathuripetachira RF	9.6	114			38	38			76	76		114	2025-26
Talcher	80	Kauchiakhole RF	15.6	115			12	12			62	62	41	115	2026-27
Talcher	81	Langalakhole RF	3.27	31			18	18			13	13		31	2026-27
Talcher	82	Hirapur RF	39.85					0				0		0	2026-27
Talcher	83	Kanteikulia RF	1.8	58	12		22	34	16		8	24		58	2027-28
Talcher	84	Rakash RF	15.2	166			8	8			70	70	88	166	2027-28
Talcher	85	Rabipur RF	17.6	97	8	21	35	64	8	12	13	33		97	2028-29
Talcher	86	Balaramprasad RF	3	13			13	13				0		13	2028-29
Talcher	87	Seepur RF	8.6	96	2		27	29	11		56	67		96	2029-30
		Total	**988.12**	**7783**	**515**	**1495**	**2162**	**4172**	**1419**	**1021**	**844**	**3284**	**327**	**7783**	
Angul	1	Krushnachakra PRF	35	176	19	-	14	33	134	-	9	143	0	176	2024-25
Angul	2	Kalapat PRF	17.6	156	-	-	129	129	-	-	27	27	0	156	2025-26
Angul	3	Sorispal -Hinsar PRF	16	161	-	-	71	71	66	-	24	90	0	161	2025-26
Angul	4	Pokunda PRF	7.5	99	-	-	90	90	-	-	9	9	0	99	2025-26
Angul	5	Burti PRF	36	427	-	230	-	230	187	10	-	197	0	427	2026-27
Angul	6	Kerjanga PRF	12.5	77	-	-	27	27	49	-	1	50	0	77	2027-28

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Angul	7	Kulasinga PRF	13	122	-	-	37	37	85	-	-	85	0	122	2027-28
Angul	8	Derjang Golabandha PRF	1.5	18	-	-	-	0	18	-	-	18	0	18	2028-29
Angul	9	Chandanpur PRF	10	56	-	-	31	31	-	-	25	25	0	56	2028-29
Angul	10	Kurudu PRF	16	102	-	15	-	15	87	-	-	87	0	102	2029-30
Bantala	11	Balanga PRF	2.6	16				0	8		8	16		16	2029-30
Bantala	12	Kangulei PRF	2.88	22	10		8	18	4			4		22	2029-30
Chhendipada	13	Devinagar PRF	30.4	110	-	-	-	0	110	-	-	110	0	110	2024-25
Chhendipada	14	Kanloi PRF	5	12	-	-	1	1	-	-	11	11	0	12	2024-25
Chhendipada	15	Dangapal PRF	14	134	-	-	14	14	-	-	120	120	0	134	2025-26
Chhendipada	16	Nunmati PRF	12	52	-	-	12	12	-	-	40	40	0	52	2026-27
Chhendipada	17	Marudhipa PRF	22	70	-	-	15	15	-	-	55	55	0	70	2027-28
Chhendipada	18	Sunarijharan PRF	7.2	27	-	7	-	7	-	20	-	20	0	27	2028-29
Jarapada	19	Rodasingha PRF	6.4	61	-	-	47	47	-	-	14	14	0	61	2024-25
Jarapada	20	Tabada PRF	7.5	46	18	-	-	18	28	-	-	28	0	46	2025-26
Jarapada	21	Dandasingha Bhagatpur PRF	4	119	7	-	52	59	60	-	-	60	0	119	2026-27
Jarapada	22	Durgapur PRF	6.35	51	1	21	-	22	24	5	-	29	0	51	2026-27
Jarapada	23	Para PRF	14.5	185	105	8	42	155	28	-	-	28	2	185	2027-28
Jarapada	24	Pathargarh PRF	26.5	257	134	9	7	150	55	25	5	85	22	257	2028-29
Jarapada	25	Sudagoleswar PRF	6.25	40	-	-	28	28	-	-	12	12	0	40	2028-29
Jarapada	26	Pitachari PRF	2.5	30	-	-	24	24	6	-	-	6	0	30	2028-29
Talcher	27	Kandhabereni PRF	7	41			17	17			24	24		41	2024-25
Talcher	28	Dera PRF	4.3	43				0				0	43	43	2026-27
Talcher	29	Shibarampur PRF	10.2	88	12		31	43	18		27	45		88	2026-27
		Total	**356.68**	**2798**	**306**	**290**	**697**	**1293**	**967**	**60**	**411**	**1438**	**67**	**2798**	
Bantala	1	Labangi DPF	3	64				0	64			64		64	2025-26
Bantala	2	Talsira DPF	6	25				0	25			25		25	2025-26
Chhendipada	3	Chakundapal DPF	9	30	-	17	-	17	-	13	-	13	0	30	2026-27
Talcher	4	Ganthigardia DPF (A)	4.2	31			12	12			19	19		31	2027-28
Talcher	5	Ganthigardia DPF (B)	2.6	16			5	5			11	11		16	2027-28
		Total	**24.8**	**166**	**0**	**17**	**17**	**34**	**89**	**13**	**30**	**132**	**0**	**166**	
		Grand Total	**1369.6**	**10747**	**821**	**1802**	**2876**	**5499**	**2475**	**1094**	**1285**	**4854**	**394**	**10747**	

Appendix - VI

Occurance of Forest Fire from 2008 to 2020

Year	Name of the Range	Forest Block	Date of fire incident	Extent of area damaged (in Acre)	GPS Location		Action taken for extinguishing the Fire
					Longitude	Latitude	
1	2	3	4	5	6	7	8
2008	Durgapur	Para P.R.F	12.04.2008	4	E-84^0 52’ 12”	N-20^0 52’ 30”	Fire protection squard, Mobile vehicle have been provided to all Ranges and field staff have been engaged for prevention and control of forest fire in the forest
	Chhendipada	Durgapur R.F	16.03.2008	1	E-84^0 56’ 34”	N-20^0 55’ 44”	
	Chhendipada	Durgapur R.F	16.03.2008	1	E-84^0 56’ 09”	N-20^0 56’ 02”	
	Purunagarh	kerajange P.R.F	28.03.2008	5	E-84^0 58’ 30”	N-20^0 52’ 55”	
	Raigoda	Balanga RF	3.05.2008	19	E-84^0 59’ 56”	N-20^0 41’ 06”	
	Chhendipada	Durgapur R.F	18.03.2008	1	E-84^0 56’ 42”	N-20^0 55’ 12”	
	Talcher	Bulajhar RF	03.05.2008	2	E-85^0 10’ 55”	N-21^0 05’ 34”	
2009	Purunagarh	Kurudu P.R.F	3.01.2009	2.5	E-84^0 56’ 31”	N-20^0 43’ 50”	Fire protection squard, Mobile vehicle have been provided to all Ranges and field staff have been engaged for prevention and control of forest fire in the forest
	Purunagarh	Burti P.R.F	3.01.2009	3	E-84^0 51’ 36”	N-20^0 44’ 20”	
	Purunagarh	Paranga R.F	3.01.2009	2.5	E-85^0 02’ 02”	N-20^0 53’ 27”	
	Durgapur	Similpathar R.F	3.01.2009	4	E-84^0 51’ 08”	N-20^0 56’ 43”	
	Durgapur	-do-	3.01.2009	5	E-84^0 50’ 34”	N-20^0 56’ 52”	
	Durgapur	Katada R.F	3.01.2009	4	E-84^0 49’ 26”	N-20^0 51’ 48”	
	Durgapur	Roajsingha PRF	3.01.2009	5	E-84^0 49’ 58”	N-20^0 56’ 45”	
	Talcher	Bulajhar RF	3.01.2009	6	E-85^0 12’ 25”	N-21^0 04’ 51”	
	Kaniha	Santarabandha R.F	3.01.2009	12	E-84^0 58’ 12”	N-21^0 01’ 48”	
	Chhendipada	Bahianali R.F	02.02.2009	10	E-84^0 57’ 36”	N-20^0 56’ 20”	
	Jarapada	Sudaguleswar P.R.F	25.02.2009	5	E-84^0 51’ 08”	N-21^0 56’ 43”	
	Jarapada	Katada R.F	26.02.2009	9.5	E-84^0 52’ 08”	N-21^0 55’ 58”	
	Jarapada	Pathargada P.R.F	6.03.2009	3.2	E-84^0 51’ 00”	N-20^0 48’ 18”	
	Jarapada	Similpathar R.F	6.03.2009	2	E-84^0 51’ 25”	N-20^0 55’ 26”	
	Jarapada	Similpathar R.F	6.03.2009	4	E-84^0 49’ 15”	N-20^0 58’ 01”	
	Chhendipada	Marudhipa P.R.F	6.03.2009	3	E-84^0 43’ 55”	N-21^0 09’ 21”	
	Chhendipada	Kanaloi RF	6.03.2009	3	E-84^0 40’ 58”	N-21^0 04’ 08”	
	Chhendipada	Kanaloi RF	6.03.2009	3	E-84^0 41’ 02”	N-21^0 04’ 04”	
	Chhendipada	Kankurpal R.F	6.03.2009	2	E-84^0 55’ 44”	N-21^0 04’ 58”	
	Purunagarh	Burti P.R.F	6.03.2009	2	E-84^0 54’ 03”	N-22^0 46’ 33”	
	purunagarh	Burti RF	6.03.2009	3	E-84^0 57’ 07”	N-20^0 49’ 04”	
	Talcher	Kanehijena R.F	12.03.2009	2	E-85^0 08’ 31”	N-21^0 02’ 52”	
	Durgapur	Pathargarh R.F	2.04.2009	2	E-84^0 54’ 25”	N-20^0 43’ 16”	
2010	Raigoda	Buragounia RF	15.02.2010	0.5	E-85^0 05’ 5.39”	N-20^0 70’ 2.33”	Fire protection squard, Mobile vehicle have been provided to all Ranges and field staff have been engaged for prevention and control of forest fire in the forest
	Raigoda	Nuakheta RF	28.02.2010	2	E-85^0 00’ 07”	N-20^0 69’ 992”	

Year	Name of the Range	Forest Block	Date of fire incident	Extent of area damaged (in Acre)	GPS Location		Action taken for extinguishing the Fire
					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Kaniha	Phuljhari RF	2.03.2010	1.5	E-85^0 3’ 17”	N-20^0 17’ 115”	
	Raigoda	Buragounia RF	5.03.2010	4	E-85^0 05’ 638”	N-20^0 70’ 115”	
	Kaniha	Phuljhari RF	7.03.2010	0.5	E-85^0 0’ 17”	N-21^0 11’ 21”	
	Kaniha	Niala-Ladhajhari RF	7.03.2010	1	E-85^0 0’ 10”	N-21^0 10’ 9”	
	Raigoda	Kanja RF	9.03.2010	1	E-85^0 12’ 690”	N-20^0 62’ 852”	
	Raigoda	Bolanga RF	9.03.2010	5	E-85^0 00’ 982”	N-20^0 65’ 761”	
	Kaniha	Niala-Ladhajhari RF	14.03.2010	0.5	E-84^0 59’ 41”	N-21^0 11’ 21”	
	Kaniha	-do-	14.03.2010	1	E-84^0 59’ 41”	N-21^0 11’ 21”	
	Kaniha	-do-	15.03.2010	1	E-84^0 59’ 41”	N-21^0 11’ 21”	
	Kaniha	Phuljhari RF	19.03.2010	2	E-84^0 2’ 45”	N-21^0 21’ 17”	
	Kaniha	Phuljhari RF	19.03.2010	0.5	E-85^0 0’ 52”	N-21^0 10’ 49”	
	Durgapur	Patharagarh RF	21.03.2010	30	E-84^0 53’ 05”	N-20^0 50’ 16”	
	Durgapur	-do-	22.03.2010	0.5	E-85^0 1’ 44”	N-21^0 11’ 21”	
	Kaniha	Godigotha RF	23.03.2010	1	E-85^0 01’ 18”	N-21^0 12’ 27”	
	Kaniha	Badakathia RF	23.03.2010	1	E-85^0 0’ 52”	N-21^0 1’ 49”	
	Raigoda	Khino KF	24.03.2010	1	E-84^0 56’ 45”	N-21^0 16’ 31”	
	Raigoda	Bolanga RF	27.03.2010	0.25	E-85^0 00’ 76”	N-20^0 70’ 972”	
	Kaniha	Phuljhari RF	27.03.2010	0.4	E-85^0 2’ 19”	N-21^0 0’ 49”	
	Kaniha	Chandrapur RF	28.03.2010	0.5	E-85^0 1’ 41”	N-21^0 7’ 35”	
	Chhendipada	Durgapur RF	01.04.2010	0.5	E-84^0 09’ 32”	N-20^0 09’ 5.3”	Fire extinguished by the Deptt. staff & fire protection squard and VSS member
	Rajgoda	Nuakheta RF	03.04.2010	5	E-85^0 05’ 147”	N-20^0 63’ 113”	Action has been taken by fire squard watchar & VSS Member
	Rajgoda	Nuakheta RF	03.04.2010	4	E-85^0 04’ 27”	N-20^0 64’ 577”	Action has been taken by fire squard watchar & VSS Member
	Rajgoda	Balanga RF	05.04.2010	5	E-85^0 02’ 807”	N-20^0 67’ 586”	Action has been taken by fire squard watchar
	Chhendipada	Durgapur RF	14.04.2010	2	E-85^0 53’ 02”	N-20^0 56’ 34”	Extinguishing the fire by the help of Range fire squad and VSS Members.
	Purunagarh	Burti RF	21.04.2010	1.2	E-84^0 54’ 32”	N-20^0 45’ 54”	Fire extinguished by the Fire protection squad & Department staff & VSS Members with the help of stick & misc bushy tree branches.
	Purunagarh	Kaliakata RF	21.04.2010	0.6	E-84^0 59’ 13”	N-20^0 54’ 46”	Fire extinguished by the Fire protection squad & Department staff & VSS Members with the help of stick & misc bushy tree branches.
	Kaniha	Dalaka RF	01.04.2010	1	E-84^0 06’ 54”	N-20^0 09’ 07”	The fire has been exlingushing with help of Balipasi Nabalidecul V.S.S. Member with staff
	Kaniha	Tabada RF	01.04.2010	1	E-84^0 51’ 25”	N-20^0 47’ 06”	With the help of fire Squad, Elephant Squad, para Staffs Beat F.G, Special Forester and section Forester Kaniha- II
2011	Chhendipada	Durgapur RF Compt. No.02	07.03.2011	3	E-85^0 95’ 84”	N-20^0 92’ 545”	Extinguish by staff & fire fighting squad
	Talcher	Bulajhar RF Compt. No.1	07.03.2011	4	E-85^0 20’ 167”	N-21^0 08’ 739”	Extinguish by staff & fire fighting squad

Year	Name of the Range	Forest Block	Date of fire incident	Extent of area damaged (in Acre)	GPS Location		Action taken for extinguishing the Fire
					Longitude	Latitude	
1	2	3	4	5	6	7	8
2012	Purunagarh	Krushnachakra RF	16.03.2012	10	E-84^0 55' 21"	N-20^0 42' 29"	Extinguish by staff & fire fighting squad
	Purunagarh	Chandrapur PRF	18.03.2012	5	E-84^0 58' 06"	N-20^0 44' 23"	Extinguish by Staff & labourers.
	Raigoda	Balanga RF	18.03.2012	10	E-84^0 43' 22"	N-21^0 03' 45"	With the help of watcher, VSS members & Beat Forest Guard
	Raigoda	Balanga RF	18.03.2012	10	E-84^0 58' 06"	N-20^0 44' 33"	Action has been taken by fire squard watchar
	Chhendipada	Kanaloi RF	18.03.2012	10	E-84^0 43' 22"	N-21^0 03' 45"	Extinguishing the fire by the help of Range fire squad and VSS Members.
	Chhendipada	Kanaloi RF	18.03.2012	6	E-84^0 43' 28"	N-21^0 03' 12"	Fire extinguished by the Fire protection squad & Department staff & VSS Members with the help of stick & misc bushy tree branches.
2013	Chhendipada	Similisahi RF	05.03.2013	2	E -84º 57' 44"	N -21º 00' 47"	Exitinguishing the fire by the help of Range Fire squad and Similisahi VSS member
	Chhendipada	Similisahi RF	05.03.2013	2	E -84º 57' 09"	N -21º 00' 42"	Exitinguishing the fire by the help of Range Fire squad and Similisahi VSS member
	Talcher	Kauchhiakhol RF	05.03.2013	8	E -85º 06' 35"	N -20º 55' 29"	Fire extinguished by the Deptt. staff & fire protection squard and VSS member
	Durgapur	Debinagar PRF	12.03.2013	6	E -84º 48' 54"	N -21º 59' 15"	Action has been taken by fire squard watchar & VSS Member
	Durgapur	Debinagar PRF	12.03.2013	12	E -84º 48' 19"	N -20º 59' 10"	Action has been taken by fire squard watchar & VSS Member
	Durgapur	Patharghr RF	13.03.2013	3	E -84º 32' 22"	N -21º 04' 11"	Action has been taken by fire squard watchar & VSS Member
	Chhendipada	Kanloi RF	17.03.2013	10	E -84º 40' 57"	N -21º 04' 31"	Extinguishing the fire by the help of Range fire squad and VSS Members.
	Talcher	Mankadachua R.F	21.03.2013	2.5	E -85º 12' 35"	N -21º 07' 23"	Fire extinguished by the Fire protection squad & Department staff & VSS Members with the help of stick & misc bushy tree branches.
	Kaniha	Sadarkhola R.F	21.03.2013	3	E -84º 57' 13"	N -21º 16' 10"	The fire has been exlingushing with help of Balipasi Nabalidecul V.S.S. Member with staff
	Kaniha	Sadarkhola R.F	21.03.2013	1	E -84º 59' 50"	N -21º 09' 57"	With the help of fire Squad, Elephant Squad, para Staffs Beat F.G, Special Forester and section Forester Kaniha- II
2014	Purunagarh	Burti PRF	08.04.2014	2.5	E -84º 55' 01"	N -20º 46' 40"	Extinguish by staff & fire fighting squad
	Purunagarh	Burti PRF	08.04.2014	2.5	E -84º 55' 28"	N -20º 46' 40"	Extinguish by staff & fire fighting squad
	Purunagarh	Burti PRF	08.04.2014	3	E -84º 54' 39"	N -20º 46' 32"	Extinguish by staff & fire fighting squad
	Purunagarh	Kurudu RF	13.04.2014	1	E -84º 55' 43"	N -20º 45' 35"	Extinguish by Staff & labourers.
	Kaniha	Badakathi RF (Marada Hariharpur VSS)	13.04.2014	0.5	E -85º 00' 13"	N -21º 00' 17"	With the help of watcher, VSS members & Beat Forest Guard
2015	Chhendipada	Chhendipada RF	22.03.2015	1	E -84º 52' 21.00"	N -21º 03' 0.0"	Exitinguished the fire by the help of Range Fire squad & Forest department staff
	Chhendipada	Chhendipada RF	22.03.2015	1	E -84º 52' 41.00"	N -21º 03' 24.0"	Exitinguished the fire by the help of Range Fire squad & Forest department staff
	Chhendipada	Jaltap	27.03.2015	10	E -84º 58' 13.00"	N -21º 02' 22.0"	Exitinguished the fire by the help of Range Fire squad & Forest department staff
	Purunagarh	Kumanda- Talataila	16.03.2015	2	E -85º 01' 22"	N -20º 54' 35"	Exitinguished the fire by the help of Range Fire squad & Forest department staff

Year	Name of the Range	Forest Block	Date of fire incident	Extent of area damaged (in Acre)	GPS Location		Action taken for extinguishing the Fire
					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Talcher	Bulajhar RF	07.03.2015	2	E -85º 08' 18.0"	N -21º 06' 18.0"	Exitinguished the fire by Forest staff, fire fighting squad & villagers
	Talcher	Bulajhar RF	11.03.2015	2	E -85º 09' 44.0"	N -21º 05' 26.0"	Exitinguished the fire by Forest staff, fire fighting squad & villagers
	Kaniha	Nialu-Lodhajhari-Sapkata RF	03.04.2015	5	E -84º 58' 39"	N -21º 11' 14"	Exitinguished the forest fire with the help of fire fighting squad & by counter firing
2016	Chhendipada	Devinagar PRF	20.03.2016	2	84º-45' -04.0"	21º-03' -55.0"	Exitinguished the fire by the help of Range Fire squad & Forest department staff
	Chhendipada	Devinagar PRF	20.03.2016	1.5	84º-45' -39.0"	21º-03' -59.0"	Exitinguished the fire by the help of Range Fire squad & Forest department staff
	Talcher	Kauchiakhol RF	22.03.2016	0.2	85º-04' -36.0"	20º-55' -58.0"	Exitinguished the fire by the help of Range Fire squad & Forest department staff
	Talcher	Bulajhar RF	22.03.2016	0.485	85º-08' -47.0"	21º-05' -57.0"	Exitinguished the fire by the help of Range Fire squad & Forest department staff
	Chhendipada	Durgapur RF	22.03.2016	3	E -84º 53' 43.0"	N -20º 56' 0.0"	Exitinguished the fire by Forest staff, fire fighting squad & villagers
	Chhendipada	Marudhipa PRF	25.03.2016	1	E -84º 41' 51.0"	N -21º 07' 14.0"	Exitinguished the fire by Forest staff, fire fighting squad & villagers
	Chhendipada	Durgapur RF	10.04.2016	2	E -84º 57' 26.0"	N -20º 55' 40.0"	Exitinguished the fire by Forest staff, fire fighting squad & villagers
	Chhendipada	Chandrapada RF	12.04.2016	1.5	E -84º 52' 34.0"	N -21º 03' 6.0"	Exitinguished the fire by Forest staff, fire fighting squad & villagers
	Talcher	Outside of Kanheijena RF near Sunakhani village	12.04.2016	0.5	E -85º 09' 3.0"	N -21º 01' 48.0"	Exitinguished the fire by Forest staff, fire fighting squad & VSS Members
	Durgapur	Antulia-Tabada PRF	12.04.2016	0.04	E -84º 51' 38.0"	N -20º 48' 32.0"	Exitinguished the fire by Forest staff, fire fighting squad & villagers
	Durgapur	Pathargarh PRF	12.04.2016	0.05	E -84º 50' 51.0"	N -20º 47' 32.0"	Exitinguished the fire by Forest staff, fire fighting squad & villagers
	Purunagarh	Burti PRF Compt. No.7	12.04.2016	2.3	E -84º 51' 10.0"	N -20º 45' 17.0"	Exitinguished the fire by Forest staff, fire fighting squad & villagers
	Purunagarh	Village Forest	14.04.2016	1.5	E -84º 53' 42.0"	N -20º 45' 9.0"	Exitinguished the fire by Forest staff, fire fighting squad & villagers
	Purunagarh	Burti PRF Comt. No.4	14.04.2016	2	E -84º 53' 7.0"	N -20º 45' 4.0"	Exitinguished the fire by Forest staff, fire fighting squad & villagers
	Durgapur	Similipathar RF Compt No. S3	19.04.2016	0.07	E -84º 49' 53.0"	N -20º 57' 16.0"	Exitinguished the fire by Forest staff, fire fighting squad & villagers
	Durgapur	Similipathar RF Compt No. S3	19.04.2016	0.09	E -84º 49' 34.0"	N -20º 57' 5.0"	Exitinguished the fire by Forest staff, fire fighting squad & villagers
	Chhendipada	Devinagar PRF	24.04.2016	2	E -84º 45' 46.0"	N -21º 02' 56.0"	Exitinguished the fire by help of Range Fire squad & Forest Department staff,
	Chhendipada	Devinagar PRF	24.04.2016	1	E -84º 46' 17.0"	N -21º 03' 11.0"	Exitinguished the fire by help of Range Fire squad & Forest Department staff,

Year	Name of the Range	Forest Block	Date of fire incident	Extent of area damaged (in Acre)	GPS Location		Action taken for extinguishing the Fire
					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Raigoda	Labangi DPF	24.04.2016	5	E -84º 98' 77.8"	N -20º 65' 0.56	The fire squad reached the spot and exitinguish the fire
	Raigoda	Balanga RF Compt. No. 1	24.04.2016	7	E -84º 95' 56.67"	N -20º 70' 19.4"	The fire squad reached the spot and exitinguish the fire
	Kaniha	Jharaberani KF	24.04.2016	3	E -85º 2' 38.0"	N -21º 8' 26.0"	Fire has been exitinguished by bitting with green branches and fire fighting tools by fire fighting squad & Department Staffs.
	Chhendipada	Outside forest RF area	27.04.2016	2	E -84º 58' 30.0"	N -21º 00' 52.0"	_
	Chhendipada	Outside forest RF area	27.04.2016	1.5	E -84º 58' 06.0"	N -21º 00' 58.0"	_
2017	Purunagarh	Nisha RF	08.02.2017	0.5	85.03222222	20.92583333	Fire protection squard , Mobile vehicle to all Ranges and field staff , Para staff have been engaged for prevation and control of forest fire in the forest
	Kaniha	Badhira Klyanpur	14.02.2017	2.5	85	21.10333333	
	Chhendipada	Sunarijhran PRF	17.02.2017	1.8	84.98638889	21.17388889	
	Kaniha	Sadarkhol RF	17.02.2017	1.0	84.9375	21.26638889	
	Chhendipada	Sunarijhran PRF	18.02.2017	1.5	84.97472222	21.17944444	
	Kaniha	Phuljhrai RF	20.02.2017	2.0	85.03611111	21.18	
	Kaniha	Sadarkhol RF	21.02.2017	2.0	84.93944444	21.27361111	
	Kaniha	Phuljhari RF Compt. No.3	21.02.2017	1.5	85.02694444	21.18166667	
	Kaniha	Gohiradanda RF	21.02.2017	3.0	85.02638889	21.09861111	
	Kaniha	Birapal RF	22.02.2017	3.0	85.10972222	21.25555556	
	Kaniha	Phuljhari RF	24.02.2017	2.0	85.01361111	21.17055556	
	Kaniha	Dhanakoili RF	24.02.2017	1.5	85.08055556	21.16916667	
	Chhendipada	Durgapur RF	25.02.2017	1.9	84.93305556	20.91888889	
	Kaniha	Dhanakoili RF	25.02.2017	3.5	85.07583333	21.17083333	
	Kaniha	Dhanakoili RF	25.02.2017	0.0	85.09583333	21.16444444	
	Kaniha	Sadarkhol RF	25.02.2017	1.0	84.95055556	21.26944444	
	Kaniha	Birapal RF	25.02.2017	2.0	85.05	21.26666667	
	Chhendipada	Durgapur RF	26.02.2017	2.1	84.9525	20.89555556	
	Chhendipada	Sunarijhran PRF	27.02.2017	1.9	84.98583333	21.16194444	
	Talcher	Kauchiakhol RF	27.02.2017	0.5	85.09944444	20.92916667	
	Talcher	Kauchiakhol RF	27.02.2017	0.7	85.09916667	20.93388889	
	Talcher	Kauchiakhol RF	27.02.2017	0.4	85.10888889	20.93472222	
	Talcher	Kauchiakhol RF	27.02.2017	0.7	85.11361111	20.93527778	
	Talcher	Kentikolia RF	27.02.2017	0.1	85.14388889	21.01722222	
	Talcher	Bulajhar RF	27.02.2017	1.0	85.22694444	21.08222222	
	Talcher	Bulajhar RF	27.02.2017	0.8	85.19166667	21.08777778	
	Talcher	Mankadachua RF	27.02.2017	1.0	85.21916667	21.11416667	
	Talcher	Bulajhar RF	28.02.2017	2.0	85.21666667	21.08194444	
	Raigoda	Balanga RF Compt. No.6	28.02.2017	6.0	0	0	
	Chhendipada	Devinagar PRF	28.02.2017	2.4	84.79111111	21.03444444	
	Chhendipada	Kanaloi RF	28.02.2017	3.1	84.68388889	21.07444444	
	Chhendipada	Kanaloi RF	28.02.2017	2.8	84.69083333	21.0825	
	Chhendipada	Dangapal PRF	28.02.2017	1.9	84.72805556	21.15694444	
	Chhendipada	Kanaloi RF	01.03.2017	1.4	84.68194444	21.06944444	
	Chhendipada	Kanaloi RF	01.03.2017	2.1	84.67888889	21.07722222	

Year	Name of the Range	Forest Block	Date of fire incident	Extent of area damaged (in Acre)	GPS Location		Action taken for extinguishing the Fire
					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Chhendipada	Kanaloi RF	01.03.2017	1.0	84.68861111	21.08277778	
	Chhendipada	Kanaloi RF	01.03.2017	1.6	84.68444444	21.08333333	
	Kaniha	Birapal RF	01.03.2017	2.5	85.0775	21.25833333	
	Kaniha	Birapal RF	01.03.2017	3.0	84.92055556	21.25277778	
	Kaniha	Pedi PF	01.03.2017	3.0	84.91555556	21.25	
	Kaniha	Pedi PF	01.03.2017	2.0	84.99638889	21.17055556	
	Durgapur	Devinagar PRF	01.03.2017	15.0	84.80386111	20.98602778	
	Chhendipada	Kanaloi RF	01.03.2017	1.2	84.67805556	21.07416667	
	Chhendipada	Kanaloi RF	01.03.2017	1.6	84.68333333	21.06805556	
	Chhendipada	Kanaloi RF	01.03.2017	2.1	84.6875	21.06861111	
	Chhendipada	Kanaloi RF	01.03.2017	1.9	84.72277778	21.06388889	
	Talcher	Bulajhar RF	02.03.2017	1.5	85.17305556	21.08666667	
	Talcher	Bulajhar RF	02.03.2017	1.4	85.16638889	21.09444444	
	Talcher	Bulajhar RF	02.03.2017	1.0	85.17527778	21.10027778	
	Talcher	Bulajhar RF	02.03.2017	1.2	85.17138889	21.10083333	
	Talcher	Bulajhar RF	02.03.2017	1.0	85.17083333	21.0975	
	Chhendipada	Devinagar PRF	02.03.2017	2.3	84.75083333	21.06416667	
	Chhendipada	Kanaloi RF	02.03.2017	1.9	84.69444444	21.06888889	
	Chhendipada	Kanaloi RF	02.03.2017	1.4	84.73527778	21.07	
	Chhendipada	Kanaloi RF	02.03.2017	2.2	84.67638889	21.08194444	
	Chhendipada	Kanaloi RF	02.03.2017	1.7	84.68083333	21.085	
	Chhendipada	Kanaloi RF	02.03.2017	1.4	84.67694444	21.08555556	
	Chhendipada	Kanaloi RF	02.03.2017	2.5	84.70166667	21.08555556	
	Chhendipada	Kanaloi RF	02.03.2017	1.8	84.69388889	21.09	
	Chhendipada	Durgapur RF	02.03.2017	2.5	84.91166667	20.93388889	
	Chhendipada	Durgapur RF	02.03.2017	3.1	84.91	20.93416667	
	Chhendipada	Kanaloi RF	02.03.2017	2.3	84.70777778	21.07916667	
	Chhendipada	Kanaloi RF	02.03.2017	3.3	84.73027778	21.07194444	
	Kaniha	Kiajhar RF	02.03.2017	1.0	85.07833333	21.13722222	
	Kaniha	Kiajhar RF	02.03.2017	1.0	85.08305556	21.13805556	
	Talcher	Bulajhar RF Compt. No.3	03.03.2017	2.0	85.16138889	21.0975	
	Talcher	Bulajhar RF Compt. No.3	03.03.2017	2.5	85.16583333	21.09694444	
	Talcher	Bulajhar RF Compt. No.3	03.03.2017	2.0	85.16527778	21.09277778	
	Talcher	Bulajhar RF Compt. No.5	03.03.2017	2.5	85.16805556	21.08361111	
	Talcher	Bulajhar RF Compt. No.5	03.03.2017	2.5	85.16416667	21.08833333	
	Raigoda	Balanga RF Compt. No.6	02.03.2017		85.01722222	20.65555556	
	Raigoda	Balanga RF Compt. No.6	01.03.2017	8.0	85.01805556	20.65916667	
	Raigoda	Balanga RF Compt. No.6	02.03.2017	5.0	85.01833333	20.6525	
	Raigoda	Balanga RF Compt. No.6	03.03.2017	4.0	85.02138889	20.65527778	
	Kaniha	Birapal RF	03.03.2017	3.0	85.10611111	21.26166667	
	Talcher	Bulajhar RF	04.03.2017	1.0	85.12416667	21.09861111	
	Talcher	Rabipur RF	06.03.2017	0.5	85.08083333	21.02166667	
	Talcher	Sibarmpur PRF	06.03.2017	0.0	85.10944444	21.03305556	
	Kaniha	Saradhapur RF	06.03.2017	2.0	85.00138889	21.06055556	

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	Kaniha	Saradhapur RF	06.03.2017		85.00055556	21.06388889	
	Kaniha	Balipashi RF	06.03.2017	1.0	84.95972222	21.24694444	
	Kaniha	Sodarkhol RF	06.03.2017	1.0	84.96805556	21.26527778	
	Kaniha	Kantol KF	06.03.2017	1.5	85.09694444	21.20694444	
	Kaniha	Kantol KF	07.03.2017	1.0	85.015	21.20611111	
	Talcher	Rabipur RF	07.03.2017	1.0	85.08222222	21.01833333	
	Talcher	Rabipur RF	07.03.2017	1.0	85.08277778	21.02166667	
	Kaniha	Phuljhari	14.03.2017	1.5	85.04911111	21.19055556	
	Kaniha	Poipal	14.03.2017	1.0	85.11555556	21.16058333	
	Kaniha	Nialu-Sapakata RF	27.02.2017	2.0	84.96666667	21.19194444	
	Kaniha	Nialu-Sapakata RF	27.02.2017	2.5	84.97138889	21.19694444	
	Kaniha	Sadarkhol RF	27.02.2017	2.5	85.00027778	21.03444444	
	Kaniha	Sadarkhol RF	27.02.2017	2.0	85.00416667	21.035	
	Kaniha	Godibandha RF	16.03.2017	2.0	85.01333333	21.20527778	
	Kaniha	Outside Forest area	16.03.2017		85.63388889	21.35305556	
	Kaniha	Phuljhari RF	16.03.2017	2.0	85.00888889	21.17777778	
	Talcher	Kanhejena RF	16.03.2017	1.0	85.10361111	21.04805556	
	Chhendipada	Marudhipa PRF	16.03.2017	1.8	84.68888889	21.13972222	
	Chhendipada	Nunamati PRF	17.03.2017	1.0	84.69861111	21.15166667	
	Chhendipada	Kankurpal RF	17.03.2017	2.0	84.92444444	21.08972222	
	Chhendipada	Kankurpal RF	17.03.2017	0.8	84.92027778	21.08777778	
	Chhendipada	Kankurpal RF	17.03.2017	1.3	84.92388889	21.09166667	
	Chhendipada	Kanaloi RF	19.03.2017	2.3	84.72638889	20.07805556	
	Purunagarh	Paranga Revenue Forest	20.03.2017	1.5	85.02908	20.89447	
	Kaniha	Patakhaman RF	21.03.2017	1.0	85.05652778	21.13019444	
	Kaniha	Sadarkhol RF	21.03.2017	1.5	84.92669444	21.27519444	
	Kaniha	Nialu-Lodhajhari RF	22.03.2017	1.0	84.99655556	21.19463889	
	Kaniha	Poipal-Danda RF	22.03.2017	1.0	85.12144444	21.14872222	
	Kaniha	Sadarkhol RF	22.03.2017	1.0	84.97469444	21.262	
	Kaniha	Ramadevi KF	22.03.2017	1.0	84.99472222	21.26555556	
	Chhendipada	Marudhipa PRF	22.03.2017	2.0	84.69555556	21.14694444	
	Chhendipada	Dangapal PRF	22.03.2017	1.5	84.73916667	21.15333333	
	Chhendipada	Dangapal PRF	22.03.2017	2.5	85.75166667	21.15916667	
	Chhendipada	Dangapal PRF	22.03.2017	1.8	85.74333333	21.16138889	
	Chhendipada	Dangapal PRF	22.03.2017	2.0	85.74722222	21.16194444	
	Chhendipada	Dangapal PRF	22.03.2017	1.3	84.74277778	21.16472222	
	Durgapur	Devinagar PRF	22.03.2017	2.0	84.79972222	20.98666667	
	Durgapur	Similipathar RF	22.03.2017	2.5	84.79972222	20.98666667	
	Durgapur	Devinagar PRF	22.03.2017	2.0	84.8	20.99805556	
	Durgapur	Pathargarh PRF	22.03.2017	3.0	84.89555556	20.8125	
	Talcher	Mankadachua RF	22.03.2017	0.5	85.2075	21.12305556	
	Durgapur	Devingar PRF	23.03.2017	2.0	84.7925	20.99916667	
	Durgapur	Devingar PRF	23.03.2017	2.0	84.77055556	21.01888889	
	Chhendipada	Kankurpal RF	23.03.2017	1.7	84.91611111	21.11222222	

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	Chhendipada	Kankurpal RF	23.03.2017	1.8	84.92055556	21.11805556	
	Chhendipada	Kankurpal RF	23.03.2017	1.2	84.92166667	21.11416667	
	Kaniha	Pattakhaman	23.03.2017	1.5	85.05305556	21.11305556	
	Kaniha	Khajuria KF	23.03.2017	1.0	85.11027778	21.21777778	
	Talcher	Kanhejena RF	23.03.2017	1.0	85.11027778	21.04166667	
	Kaniha	Khajuria KF	24.03.2017	1.0	85.01638889	21.13944444	
	Kaniha	Khajuria KF	24.03.2017	0.5	85.01111111	21.14388889	
	Kaniha	Devinagar K.F	24.03.2017	0.5	85.01277778	21.13833333	
	Kaniha	Khajuria KF	26.03.2017	1.0	85.02277778	21.14611111	
	Kaniha	Biripal RF	26.03.2017	1.0	85.09333333	21.25333333	
	Kaniha	Durgapur KF	28.03.2017	1.0	85.08277778	21.11805556	
	Kaniha	Kaliadama KF	28.03.2017	1.0	84.93638889	21.23944444	
	Chhendipada	Devinagar PRF	28.03.2017	2.1	84.80083333	21.02833333	
	Durgapur	Similipathar RF	28.03.2017	1.5	84.82722222	20.96	
	Durgapur	Similipathar RF	28.03.2017	1.0	84.82805556	20.95611111	
	Durgapur	Similipathar RF	28.03.2017	1.0	84.82888889	20.9525	
	Durgapur	Devinagar PRF	28.03.2017	1.5	84.79944444	21.02527778	
	Durgapur	Devinagar PRF	28.03.2017	1.5	84.79694444	21.02388889	
	Durgapur	Devinagar PRF	29.03.2017	2.3	84.79527778	21.01805556	
	Durgapur	Katada RF	30.03.2017	1.3	84.70333333	20.89583333	
	Chhendipada	Dangapal PRF	31.03.2017	2.1	84.81805556	21.1675	
	Chhendipada	Dangapal PRF	31.03.2017	2.0	84.81722222	21.16805556	
	Kaniha	Rangir RF	31.03.2017	1.0	84.96611111	21.22	
	Chhendipada	Kanaloi RF	01.04.2017	1.9	84.68027778	21.09388889	
	Chhendipada	Kanaloi RF	01.04.2017	2.4	84.67611111	21.09305556	
	Chhendipada	Kanaloi RF	02.04.2017	2.0	84.68222222	21.09027778	
	Chhendipada	Devinagar PRF	02.04.2017	1.8	84.76305556	21.05111111	
	Chhendipada	Devinagar PRF	02.04.2017	1.8	84.76388889	21.05	
	Chhendipada	Devinagar PRF	02.04.2017	1.8	84.7625	21.0475	
	Chhendipada	Devinagar PRF	02.04.2017	1.8	84.76305556	21.06305556	
	Kaniha	Patakhaman KF	04.04.2017	0.5	85.07722222	21.13027778	
	Kaniha	Tangiri RF	11.04.2017	1.5	84.965	21.21916667	
	Raigoda	Outside Forest area	11.04.2017		85.00305556	20.70888889	
	Durgapur	Roadsinga PRF	11.04.2017	2.0	84.81944444	20.84111111	
	Durgapur	Antulia-Tabada PRF	11.04.2017	1.0	84.82	20.83833333	
	Durgapur	Devinagar PRF	11.04.2017	2.0	84.80388889	20.99388889	
	Durgapur	Devinagar PRF	11.04.2017	2.5	84.81027778	20.00277778	
	Durgapur	Devinagar PRF	11.04.2017	3.0	84.80611111	21.00638889	
	Durgapur	Devinagar PRF	11.04.2017	3.0	84.80694444	21.00694444	
	Durgapur	Devinagar PRF	12.04.2017	4.0	84.82	21.00972222	
	Durgapur	Devinagar PRF	12.04.2017	2.5	84.80944444	20.99888889	
	Durgapur	Devinagar PRF	12.04.2017	2.5	84.81333333	20.99805556	
	Durgapur	Devinagar PRF	12.04.2017	3.0	84.80666667	20.98972222	
	Durgapur	Devinagar PRF	12.04.2017	4.0	84.80583333	21.01305556	

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1	2	3	4	5	6	7	8
	Chhendipada	Dangapal PRF	14.04.2017	0.7	84.75388889	21.16027778	
	Chhendipada	Durgapur RF	14.04.2017	1.2	84.93833333	20.94972222	
	Kaniha	Santrabandha RF	15.04.2017	2.0	84.93916667	21.09555556	
	Chhendipada	Devinagar PRF	15.04.2017	2.5	85.78027778	21.04444444	
	Chhendipada	Durgapur RF	15.04.2017	1.3	84.93805556	20.92555556	
	Chhendipada	Durgapur RF	15.04.2017	1.2	84.94388889	20.92916667	
	Purunagarh	Burti PRF	27.03.2017	3.0	84.86722222	20.73722222	
	Purunagarh	Krushnachakragarh PRF	28.03.2017	2.0	85.91861111	20.72777778	
	Purunagarh	Burti PRF	30.03.2017	2.5	85.86305556	20.73388889	
	Purunagarh	Burti PRF	30.03.2017	2.0	84.89528	20.79	
	Purunagarh	Nisha RF	30.03.2017	1.5	85.00778	20.94278	
	Purunagarh	Burti PRF	3.04.2017	2.0	84.9802778	20.9183333	
	Purunagarh	Kaliakata RF	3.04.2017	1.5	84.8958333	20.94278	
	Purunagarh	Kanja PRF	3.04.2017	1.5	84.919	20.80181	
	Chhendipada	Durgapur RF	17.04.2017	2.4	85.93	20.945	
	Chhendipada	Jaltap PF	17.04.2017	3.2	85.9625	20.05388889	
	Talcher	Mines area	18.04.2017		85.145	20.95666667	
	Talcher	Mines area	18.04.2017		85.17805556	20.95888889	
	Chhendipada	Kanaloi RF	18.04.2017	1.8	84.69194444	21.06138889	
	Chhendipada	Kanaloi RF	18.04.2017	2.4	84.69555556	21.06222222	
	Chhendipada	Kanaloi RF	18.04.2017	1.6	84.69611111	21.06194444	
	Chhendipada	Durgapur RF	20.04.2017	2.0	84.92555556	20.93388889	
	Chhendipada	Durgapur RF	20.04.2017	2.2	84.93416667	20.94111111	
	Chhendipada	Durgapur RF	20.04.2017	2.4	84.93694444	20.94138889	
	Durgapur	Antulia-Tabada RF	22.04.2017	3.0	0.853333333	20.79055556	
	Durgapur	Antulia-Tabada RF	22.04.2017	2.5	84.85277778	20.79444444	
	Durgapur	Antulia-Tabada RF	22.04.2017	2.5	84.87527778	20.80111111	
	Durgapur	Devinagar PRF	23.04.2017	2.5	84.82027778	21.01055556	
	Durgapur	Devinagar PRF	23.04.2017	2.5	84.82111111	21.01416667	
	Durgapur	Antulia-Tabada RF	23.04.2017	2.0	84.85222222	20.785	
	Kaniha	Poipal-Danda RF	23.04.2017	1.0	85.105	21.15305556	
	Chhendipada	Devinagar PRF	24.04.2017	2.1	84.7575	21.07083333	
	Chhendipada	Devinagar PRF	24.04.2017	1.2	84.75777778	21.06916667	
	Chhendipada	Devinagar PRF	24.04.2017	2.3	84.76944444	21.07194444	
	Chhendipada	Devinagar PRF	24.04.2017	2.1	84.77055556	21.03444444	
	Chhendipada	Devinagar PRF	24.04.2017	1.9	84.77305556	21.035	
	Chhendipada	Devinagar PRF	24.04.2017	1.8	84.77333333	21.03944444	
	Chhendipada	Devinagar PRF	24.04.2017	2.2	84.77416667	21.03527778	
	Chhendipada	Durgapur RF	25.04.2017	3.3	84.92916667	20.89444444	
	Kaniha	Phuljhari RF	25.04.2017	1.0	85.02188889	21.19033333	
	Durgapur	Antulia-Tabada RF	25.04.2017	4.0	84.82916667	20.80972222	
	Durgapur	Antulia-Tabada RF	25.04.2017	side Forest area	84.82916667	20.80972222	
	Durgapur	Antulia-Tabada RF	25.04.2017	side Forest area	84.82916667	20.80972222	
	Durgapur	Antulia-Tabada RF	25.04.2017	1.0	84.82972222	20.80777778	

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	Durgapur	Antulia-Tabada RF	25.04.2017	1.0	84.83388889	20.80333333	
	Chhendipada	Durgapur RF	26.04.2017	2.6	84.92916667	20.90194444	
	Chhendipada	Durgapur RF	26.04.2017	2.9	84.92166667	20.9025	
	Chhendipada	Durgapur RF	26.04.2017	3.0	84.93805556	20.90611111	
	Chhendipada	Durgapur RF	26.04.2017	2.3	84.93972222	20.90638889	
	Chhendipada	Durgapur RF	26.04.2017	1.7	84.94166667	20.90555556	
	Chhendipada	Durgapur RF	26.04.2017	2.2	84.94333333	20.90611111	
	Chhendipada	Durgapur RF	26.04.2017	2.3	84.94527778	20.90527778	
	Chhendipada	Durgapur RF	26.04.2017	2.1	84.94694444	20.90555556	
	Chhendipada	Durgapur RF	27.04.2017	0.5	85.17666667	20.95944444	
	Chhendipada	Durgapur RF	27.04.2017	2.2	84.955	20.91638889	
	Chhendipada	Durgapur RF	27.04.2017	2.7	84.91527778	20.90388889	
	Chhendipada	Durgapur RF	27.04.2017	1.6	84.91694444	20.90916667	
	Chhendipada	Durgapur RF	27.04.2017	1.4	84.9175	20.90611111	
	Raigoda	Khinda	28.04.2017	5.0	85.99722222	20.70277778	
	Raigoda	Khinda	28.04.2017	5.0	85.99388889	20.71277778	
	Talcher	Sibarampur PRF	29.04.2017	0.5	85.12444444	20.03	
	Chhendipada	Marudhipa PRF	07.05.2017	2.2	84.6775	21.11916667	
	Chhendipada	Marudhipa PRF	07.05.2017	1.7	84.68083333	21.11777778	
	Durgapur	Similipathar RF	08.05.2017	2.0	84.81305556	20.955	
	Durgapur	Similipathar RF	08.05.2017	2.0	84.82555556	20.95638889	
	Purunagarh	Kulasinga PRF	14.04.2017	0.5	84.955	20.75667	
	Purunagarh	Madhapur RF	14.04.2017	0.5	84.99444	20.74917	
	Purunagarh	Burti PRF	24.04.2017	1.0	84.89361111	20.79722222	Fire protection squard , Mobile vehicle to all Ranges and field staff , Para staff have been engaged for prevation and control of forest fire in the forest
2018	Chhendipada	Durgapur R.F	14-02-2018	1.2	84° 56' 41"E	20° 53' 57"N	
	Purunagarh	Guranga RF	16-02-2018	0.7	85° 00' 12"E	20° 45' 40"N	
	Kaniha	Santarabandha K.F	16-02-2018	1.0	84° 57' 00"E	21° 05' 45"N	
	Purunagarh	Burti PRF	18-02-2018	0.5	84° 52' 37"E	20° 46' 14"N	
	Talcher	Kanheijena R.F	20-02-2018	0.3	85° 08' 27"E	21° 02' 28"N	
	Talcher	Danar V.F (Fire was Extingushed)	20-02-2018	0.2	85° 05' 45"E	20° 56' 20"N	
	Talcher	Kanheijena R.F (Fire was Extingushed)	21-02-2018	0.4	85° 06' 47"E	21° 02' 27"N	
	Durgapur	Antulia tabada R.F (Fire was Extingushed)	23-02-2018	0.1	84° 51' 46"E	20° 46' 39"N	
	Chhendipada	kankurpal R.F	24-02-2018	1.1	84° 55' 12"E	21° 04' 55"N	
	Purunagarh	Kalapat PRF (Fire was Extinguished)	26-02-2018	0.5	84° 55' 00"E	20° 49' 19"N	
	Chhendipada	Kanloi RF(Fire was Extinguished)	27-02-2018	1.6	84° 43' 11"E	21° 04' 04"N	
	Purunagarh	Burti PRF (Fire was Extinguished)	27-02-2018	0.5	84° 53' 43"E	20° 46' 52"N	
	Chhendipada	Durgapur RF(Fire was Extinguished)	27-02-2018	1.9	84° 57' 19"E	20° 56' 18"N	
	Kaniha	Ramadevi KF (Fire Was Extingushed)	27-02-2018	2.0	85° 00' 21"E	21° 15' 43"N	
	Purunagarh	Burti PRF (Fire Was Extingushed)	28-02-2018	0.5	84° 53' 09"E	20° 44' 30"N	
	Durgapur	Antulia tabada R.F (Fire was Extingushed)	28-02-2018	0.1	84° 50' 34"E	20° 47' 03"N	
	Purunagarh	Durgapur RF (Fire Was Extingushed)	28-02-2018	0.1	84° 58' 15"E	20° 56' 06"N	
	Kaniha	Sadarkhol RF & KF (Fire Was Extingushed)	28-02-2018	2.0	84° 58' 28"E	21° 15' 44"N	
	Kaniha	Sadarkhol KF (Fire Was Extingushed)	28-02-2018	1.0	84° 58' 40"E	21° 15' 47"N	
	Kaniha	Boinda KF (Fire Was Extingushed)	01-03-2018	1.5	84° 58' 50"E	21° 05' 22"N	

Year	Name of the Range	Forest Block	Date of fire incident	Extent of area damaged (in Acre)	GPS Location		Action taken for extinguishing the Fire
					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Purunagarh	Durgapur RF (Fire was Extingushed)	01-03-2018	0.5	84° 57' 54"E	20° 55' 15"N	
	Durgapur	Pathargarh P.R.F (Fire was Extingushed)	02-03-2018	0.1	84° 53' 06"E	20° 48' 41"N	
	Purunagarh	Burti PRF (Fire was Extingushed)	03-03-2018	0.3	84° 54' 07"E	20° 46' 27"N	
	Purunagarh	Hinsar Sorispal PRF (Fire was Extingushed)	03-03-2018	0.5	84° 54' 55"E	20° 49' 22"N	
	Talcher	Banabaspur V.F Near Gopalprasad R.F (Fire was Extingushed)	03-03-2018	1.0	85° 02' 59"E	20° 58' 30"N	
	Kaniha	Sadarkhola RF	03-03-2018	2.5	84° 57' 39"E	21° 15' 57"N	
	Chhendipada	Durgapur RF Compt No.5 (Fire was Extingushed)	03-03-2018	2.2	84° 56' 27"E	20° 54' 43"N	
	Kaniha	Biripal R.F(Fire was Extingushed)	05-03-2018	1.0	85° 06' 30"E	21° 15' 33"N	
	Kaniha	Biripal R.F(Fire was Extingushed)	05-03-2018	2.0	85° 04' 49"E	21° 15' 35"N	
	Kaniha	Sadarkhol R.F (Fire Was Extingushed)	05-03-2018	2.0	84° 57' 03"E	21° 15' 52"N	
	Kaniha	Sadarkhol R.F (Fire Was Extingushed)	05-03-2018	1.0	84° 57' 05"E	21° 16' 04"N	
	Kaniha	Bhalutunguri K.F (Fire was Extingushed)	05-03-2018	3.0	85° 05' 48"E	21° 12' 55"N	
	TALCHER RANGE	Bulajhar R.F Compt No.10 (Fire was Extingushed)	05-03-2018	0.7	85° 13' 36"E	21° 04' 28"N	
	TALCHER RANGE	Bulajhar R.F Compt No.10 (Fire was Extingushed)	05-03-2018	0.8	85° 13' 51"E	21° 04' 38"N	
	Purunagarh	Angul Town (Fire was Extingushed)	05-03-2018	0.2	85° 05' 27"E	20° 55' 11"N	
	Purunagarh	Nisha (Fire was Extingushed)	05-03-2018	0.2	84° 59' 31"E	20° 52' 18"N	
	Purunagarh	Angul Town (Fire was Extingushed)	05-03-2018	0.2	85° 05' 13"E	20° 55' 40"N	
	Talcher	Kauchiakhol R.F (Fire was Extingushed)	05-03-2018	0.5	85° 05' 13"E	20° 55' 40"N	
	Talcher	Kauchiakhol R.F (Fire was Extingushed)	05-03-2018	0.7	85° 05' 59"E	20° 55' 47"N	
	Talcher	Bulajhar R.F Compt No.10 (Fire was Extingushed)	06-03-2018	1.8	85° 13' 20"E	21° 04' 33"N	
	Talcher	Kauchiakhol R.F (Fire was Extingushed)	06-03-2018	0.4	85° 06' 29"E	20° 56' 01"N	
	Purunagarh	Burti P.R.F (Fire was Extingushed)	06-03-2018	0.2	84° 51' 34"E	20° 44' 44"N	
	Chhendipada	Kanloi RF(Fire was Extinguished)	07-03-2018	2.6	84° 41' 04"E	21° 04' 13"N	
	Chhendipada	Kanloi RF(Fire was Extinguished)	07-03-2018	2.2	84° 40' 54"E	21° 04' 05"N	
	Chhendipada	Kanloi RF(Fire was Extinguished)	07-03-2018	1.9	84° 41' 20"E	21° 04' 36"N	
	Talcher	Gurujang V.F	07-03-2018	0.4	85° 11' 22"E	21° 01' 16"N	
	Durgapur	Antulia tabada R.F (Fire was Extingushed)	07-03-2018	0.5	84° 49' 39"E	20° 48' 06"N	
	Purunagarh	Hinsar Sorispal PRF (Fire was Extingushed)	07-03-2018	0.5	84° 55' 55"E	20° 49' 37"N	
	Talcher	Bulajhar R.F Compt No.10 (Fire was Extingushed)	07-03-2018	1.0	85° 13' 11"E	21° 04' 44"N	
	Purunagarh	Burti PRF (Fire was Extingushed)	08-03-2018	0.2	84° 51' 31"E	20° 44' 08"N	
	Durgapur	Antulia tabada R.F (Fire was Extingushed)	08-03-2018	0.5	84° 49' 57"E	20° 46' 03"N	
	Purunagarh	Hinsar Sorispal PRF (Fire was Extingushed)	08-03-2018	0.8	84° 56' 21"E	20° 49' 02"N	
	Purunagarh	Hinsar Sorispal PRF (Fire was Extingushed)	08-03-2018	0.5	84° 56' 09"E	20° 49' 05"N	
	Talcher	Ekdal V.F	08-03-2018	0.5	85° 07' 51"E	21° 00' 18"N	
	Chhendipada	Kanloi RF(Fire was Extinguished)	08-03-2018	2.0	84° 43' 18"E	21° 04' 15"N	
	Chhendipada	Kanloi RF(Fire was Extinguished)	08-03-2018	2.2	84° 41' 10"E	21° 05' 00"N	
	Kaniha	Biripal R.F(Fire was Extingushed)	08-03-2018	0.5	85° 03' 57"E	21° 16' 06"N	
	Kaniha	Biripal R.F(Fire was Extingushed)	08-03-2018	2.0	85° 02' 48"E	21° 16' 21"N	
	Kaniha	Sadarkhol R.F (Fire Was Extingushed)	08-03-2018	0.5	84° 55' 56"E	21° 16' 32"N	
	Kaniha	Sadarkhol R.F (Fire Was Extingushed)	08-03-2018	1.0	84° 55' 59"E	21° 16' 50"N	

Year	Name of the Range	Forest Block	Date of fire incident	Extent of area damaged (in Acre)	GPS Location		Action taken for extinguishing the Fire
					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Purunagarh	Paranga RF (Fire was Extingushed)	08-03-2018	0.5	85° 02' 52"E	20° 53' 49"N	
	Purunagarh	Paranga RF (Fire was Extingushed)	08-03-2018	0.5	85° 02' 09"E	20° 53' 45"N	
	Purunagarh	Paranga RF (Fire was Extingushed)	08-03-2018	0.2	85° 02' 31"E	20° 53' 20"N	
	Kaniha	Durgapur KF (Fire was Extingushed)	09-03-2018	1.0	84° 57' 45"E	21° 16' 18"N	
	Kaniha	Banasingh KF (Fire was Extingushed)	09-03-2018	1.0	85° 05' 15"E	21° 07' 41"N	
	Kaniha	Banasingh KF (Fire was Extingushed)	09-03-2018	1.0	85° 05' 15"E	21° 07' 41"N	
	Kaniha	Banasingh KF (Fire was Extingushed)	09-03-2018	1.0	85° 04' 10"E	21° 07' 19"N	
	Kaniha	Sadarkhol RF (Fire was Extingushed)	09-03-2018	0.5	85° 03' 57"E	21° 07' 17"N	
	Chhendipada	Kanloi RF(Fire was Extinguished)	09-03-2018	2.3	84° 41' 31"E	21° 04' 32"N	
	Purunagarh	Paranga PRF (Fire was Extingushed)	09-03-2018	0.2	85° 02' 03"E	20° 53' 34"N	
	Purunagarh	Hinsar Sorispal PRF (Fire Was Extingushed)	09-03-2018	0.5	84° 55' 56"E	20° 49' 11"N	
	Purunagarh	Hinsar Sorispal PRF (Fire Was Extingushed)	09-03-2018	0.4	84° 55' 43"E	20° 49' 09"N	
	Purunagarh	Burti PRF (Fire was Extingushed)	09-03-2018	0.5	84° 54' 26"E	20° 45' 52"N	
	Purunagarh	Karatapata (Fire was Extingushed)	09-03-2018	0.5	84° 59' 44"E	20° 44' 30"N	
	Purunagarh	Karatapata (Fire was Extingushed)	09-03-2018	0.3	84° 59' 31"E	20° 44' 28"N	
	KANIHA	Durgapur KF (Fire was Extingushed)	09-03-2018	1.0	84° 57' 45"E	21° 16' 18"N	
	Purunagarh	Hinsar Sorispal PRF (Fire Was Extingushed)	09-03-2018	0.2	84° 55' 43"E	20° 49' 09"N	
	Kaniha	Biripal RF (Fire was Extingushed)	10-03-2018	1.5	85° 03' 39"E	21° 16' 27"N	
	Kaniha	Biripal RF (Fire was Extingushed)	10-03-2018	1.5	85° 03' 26"E	21° 16' 28"N	
	Chhendipada	Kanloi RF(Fire was Extingushed)	10-03-2018	2.0	84° 41' 56"E	21° 03' 58"N	
	Chhendipada	Kanloi RF(Fire was Extingushed)	10-03-2018	2.5	84° 41' 58"E	21° 04' 10"N	
	Chhendipada	Kanloi RF(Fire was Extingushed)	10-03-2018	3.2	84° 42' 02"E	21° 04' 43"N	
	Chhendipada	Kanloi RF(Fire was Extingushed)	10-03-2018	2.8	84° 42' 04"E	21° 04' 55"N	
	Chhendipada	Kanloi RF(Fire was Extingushed)	10-03-2018	2.3	84° 41' 53"E	21° 05' 09"N	
	Chhendipada	Kanloi RF(Fire was Extingushed)	10-03-2018	2.6	84° 41' 41"E	21° 05' 23"N	
	Chhendipada	Kanloi RF(Fire was Extingushed)	10-03-2018	3.2	84° 41' 27"E	21° 05' 25"N	
	Chhendipada	Devinagar PRF (Fire was Extingushed)	10-03-2018	2.6	84° 46' 11"E	21° 02' 06"N	
	Purunagarh	Krushnachakra PRF (Fire was Extingushed)	10-03-2018	0.2	84° 54' 46"E	20° 43' 18"N	
	Durgapur	Devinagar PRF (Fire was Extingushed)	10-03-2018	2.5	84° 47' 05"E	21° 00' 44"N	
	Durgapur	Devinagar PRF (Fire was Extingushed)	10-03-2018	0.5	84° 47' 07"E	21° 00' 56"N	
	Purunagarh	Krushnachakra PRF (Fire was Extingushed)	10-03-2018	0.9	84° 55' 15"E	20° 42' 37"N	
	Purunagarh	Karatapata (Fire was Extingushed)	10-03-2018	0.1	84° 55' 15"E	20° 42' 41"N	
	Purunagarh	Krushnachakra PRF (Fire was Extingushed)	10-03-2018	0.4	84° 54' 39"E	20° 43' 05"N	
	Purunagarh	Burti P.R.F (Fire was Extingushed)	10-03-2018	0.5	84° 53' 54"E	20° 46' 18"N	
	DURGAPUR RANG	Devinagar PRF (Fire was Extingushed)	10-03-2018	0.5	84° 47' 14"E	21° 00' 30"N	
	Durgapur	Devinagar PRF (Fire was Extingushed)	10-03-2018	0.5	84° 47' 25"E	21° 00' 43"N	
	Chhendipada	Kanloi RF(Fire was Extingushed)	10-03-2018	3.2	84° 42' 16"E	21° 04' 45"N	
	Chhendipada	Kanloi RF(Fire was Extingushed)	10-03-2018	2.6	84° 42' 14"E	21° 05' 00"N	
	Chhendipada	Kanloi RF(Fire was Extingushed)	10-03-2018	2.4	84° 41' 57"E	21° 05' 12"N	
	Kaniha	Boinda KF (Fire was Extingushed)	10-03-2018	1.0	84° 58' 30"E	21° 05' 13"N	
	Kaniha	Poipal Danda RF (Fire was Extingushed)	10-03-2018	1.5	85° 08' 36"E	21° 08' 53"N	
	Kaniha	Poipal Danda RF (Fire was Extingushed)	10-03-2018	1.5	85° 08' 36"E	21° 08' 53"N	
	Kaniha	Khalpal KF (Fire was Extingushed)	10-03-2018	0.5	85° 01' 20"E	21° 12' 47"N	
	Kaniha	Khalpal KF (Fire was Extingushed)	10-03-2018	0.5	85° 01' 20"E	21° 12' 47"N	
	Kaniha	Sadarkhol KF (Fire was Extingushed)	10-03-2018	1.0	85° 00' 22"E	21° 15' 08"N	

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					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Kaniha	Sadarkhol KF (Fire was Extingushed)	10-03-2018	1.0	85° 00' 22"E	21° 15' 08"N	
	Kaniha	Sadarkhol KF (Fire was Extingushed)	10-03-2018	0.5	84° 58' 03"E	21° 16' 55"N	
	Chhendipada	Kanloi RF(Fire was Extinguished)	11-03-2018	3.0	84° 42' 31"E	21° 05' 00"N	
	Chhendipada	Kanloi RF(Fire was Extinguished)	11-03-2018	3.5	84° 42' 40"E	21° 04' 44"N	
	Chhendipada	Kanloi RF(Fire was Extinguished)	11-03-2018	2.3	84° 42' 25"E	21° 04' 31"N	
	Chhendipada	Devinagar PRF (Fire was Extingushed)	11-03-2018	2.1	84° 45' 24"E	21° 03' 54"N	
	Chhendipada	Devinagar PRF (Fire was Extingushed)	11-03-2018	1.9	84° 45' 36"E	21° 03' 38"N	
	Durgapur	roadsingha (Fire was Extingushed)	11-03-2018	2.5	84° 48' 18"E	20° 49' 42"N	
	Purunagarh	Kalapat PRF (Fire was Extinguished)	11-03-2018	0.2	84° 55' 16"E	20° 48' 51"N	
	Purunagarh	Kalapat PRF (Fire was Extinguished)	11-03-2018	0.5	84° 55' 01"E	20° 48' 49"N	
	Purunagarh	Krushnachakra PRF (Fire was Extingushed)	11-03-2018	0.3	84° 54' 36"E	20° 44' 13"N	
	Purunagarh	Karatapata (Fire was Extingushed)	11-03-2018	0.1	84° 55' 22"E	20° 43' 09"N	
	Purunagarh	Krushnachakra PRF (Fire was Extingushed)	11-03-2018	0.2	84° 55' 33"E	20° 43' 02"N	
	Chhendipada	Kanloi RF(Fire was Extinguished)	11-03-2018	1.2	84° 42' 28"E	21° 04' 45"N	
	Purunagarh	Kalapat PRF (Fire was Extinguished)	11-03-2018	0.5	84° 55' 01"E	20° 48' 53"N	
	Purunagarh	Kalapat PRF (Fire was Extinguished)	11-03-2018	0.4	84° 55' 16"E	20° 48' 47"N	
	Durgapur	Pathargarh P.R.F (Fire was Extingushed)	11-03-2018	0.2	84° 52' 29"E	20° 48' 25"N	
	Purunagarh	Nisha (Fire was Extingushed)	11-03-2018	0.2	84° 58' 01"E	20° 55' 19"N	
	Chhendipada	Durgapur R.F (Fire was Extingushed)	11-03-2018	1.3	84° 57' 04"E	20° 53' 44"N	
	Chhendipada	Durgapur R.F (Fire was Extingushed)	11-03-2018	2.2	84° 54' 38"E	20° 55' 39"N	
	Purunagarh	Kerjang PRF (Fire was Extingushed)	12-03-2018	0.2	84° 58' 59"E	20° 53' 00"N	
	Chhendipada	Durgapur R.F (Fire was Extingushed)	12-03-2018	0.2	84° 58' 34"E	20° 55' 02"N	
	Purunagarh	Durgapur R.F (Fire was Extingushed)	12-03-2018	0.5	84° 58' 34"E	20° 55' 02"N	
	CHHENDIPADA	Devinagar PRF (Fire was Extingushed)	12-03-2018	1.2	84° 47' 47"E	21° 01' 45"N	
	Purunagarh	Krushnachakra PRF (Fire was Extingushed)	12-03-2018	0.2	84° 54' 15"E	20° 44' 05"N	
	Purunagarh	Burti P.R.F (Fire was Extingushed)	12-03-2018	0.5	84° 53' 27"E	20° 47' 49"N	
	Purunagarh	Burti P.R.F (Fire was Extingushed)	12-03-2018	0.3	84° 53' 24"E	20° 47' 52"N	
	Purunagarh	Burti P.R.F (Fire was Extingushed)	12-03-2018	0.5	84° 58' 52"E	20° 52' 58"N	
	Kaniha	Nialu-Lodhajhari Sapakata RF (Fire was Extingushed)	12-03-2018	1.5	84° 58' 09"E	21° 11' 12"N	
	Kaniha	Nialu-Lodhajhari Sapakata RF (Fire was Extingushed)	12-03-2018	1.5	84° 58' 09"E	21° 11' 12"N	
	Kaniha	Nialu-Lodhajhari Sapakata RF (Fire was Extingushed)	12-03-2018	1.5	84° 58' 06"E	21° 11' 09"N	
	Chhendipada	Sunarijharan PRF (Fire Was Extingushed)	12-03-2018	1.8	84° 58' 06"E	21° 11' 09"N	
	Purunagarh	Kalapat PRF (Fire was Extinguished)	12-03-2018	0.5	84° 55' 54"E	20° 48' 16"N	
	Purunagarh	Krushnachakra PRF (Fire was Extingushed)	13-03-2018	0.5	84° 53' 44"E	20° 44' 00"N	
	Purunagarh	Krushnachakra PRF (Fire was Extingushed)	13-03-2018	0.2	84° 53' 40"E	20° 44' 07"N	
	Purunagarh	Kalapat PRF (Fire was Extinguished)	13-03-2018	0.5	84° 56' 49"E	20° 48' 17"N	
	Purunagarh	Kalapat PRF (Fire was Extinguished)	13-03-2018	0.2	84° 56' 13"E	20° 48' 21"N	
	Kaniha	Kiajhara R.F (Fire was Extingushed)	13-03-2018	0.5	85° 04' 51"E	21° 08' 38"N	
	Kaniha	Kiajhara R.F (Fire was Extingushed)	13-03-2018	0.5	85° 04' 15"E	21° 08' 41"N	
	CHHENDIPADA	Marudhipa PRF (Fire was Extingushed)	13-03-2018	1.1	84° 41' 45"E	21° 08' 52"N	
	Chhendipada	Dangapal PRF (Fire was Extingushed)	13-03-2018	1.3	84° 44' 16"E	21° 09' 36"N	
	Chhendipada	Dangapal PRF (Fire was Extingushed)	13-03-2018	1.5	84° 43' 40"E	21° 09' 39"N	

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					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Chhendipada	Dangapal PRF (Fire was Extingushed)	13-03-2018	1.8	84° 43' 58"E	21° 09' 14"N	
	Chhendipada	Dangapal PRF (Fire was Extingushed)	13-03-2018	1.2	84° 43' 37"E	21° 09' 25"N	
	Kaniha	Nialu-Lodhajhari Sapakata RF (Fire was Extingushed)	14-03-2018	0.5	84° 57' 33"E	21° 11' 33"N	
	Kaniha	Phulajhari RF (Fire was Extingushed)	14-03-2018	1.0	85° 02' 46"E	21° 11' 04"N	
	Durgapur	Similipathar R.F (Fire was Extingushed)	14-03-2018	1.3	84° 49' 27"E	20° 57' 43"N	
	Purunagarh	Kalapat PRF (Fire was Extinguished)	14-03-2018	0.3	84° 56' 38"E	20° 48' 29"N	
	Purunagarh	Kalapat PRF (Fire was Extinguished)	14-03-2018	0.2	84° 56' 53"E	20° 48' 27"N	
	Purunagarh	Kalapat PRF (Fire was Extinguished)	14-03-2018	0.5	84° 57' 04"E	20° 48' 09"N	
	Purunagarh	Kalapat PRF (Fire was Extinguished)	14-03-2018	0.2	84° 57' 01"E	20° 47' 54"N	
	Purunagarh	Kalapat PRF (Fire was Extinguished)	14-03-2018	0.5	84° 57' 00"E	20° 47' 39"N	
	Purunagarh	Burti P.R.F (Fire was Extingushed)	14-03-2018	0.3	84° 53' 39"E	20° 47' 16"N	
	Purunagarh	Burti P.R.F (Fire was Extingushed)	14-03-2018	0.5	84° 53' 54"E	20° 47' 13"N	
	Purunagarh	Burti P.R.F (Fire was Extingushed)	14-03-2018	0.4	84° 53' 40"E	20° 47' 12"N	
	Purunagarh	Burti P.R.F (Fire was Extingushed)	14-03-2018	0.5	84° 51' 41"E	20° 46' 17"N	
	Purunagarh	Krushnachakra PRF (Fire was Extingushed)	14-03-2018	0.5	84° 53' 27"E	20° 44' 08"N	
	Purunagarh	Krushnachakra PRF (Fire was Extingushed)	14-03-2018	0.2	84° 53' 24"E	20° 43' 54"N	
	Kaniha	Phulajhari RF (Fire was Extingushed)	14-03-2018	1.0	85° 02' 09"E	21° 10' 44"N	
	Kaniha	Attabira KF (Fire was Extingushed)	14-03-2018	1.0	85° 01' 55"E	21° 10' 22"N	
	Kaniha	Laxmanpur KF (Fire was Extingushed)	14-03-2018	1.0	84° 58' 59"E	21° 16' 06"N	
	Kaniha	Sadarkhol RF (Fire was Extingushed)	14-03-2018	0.5	84° 57' 08"E	21° 16' 14"N	
	Kaniha	Sadarkhol RF (Fire was Extingushed)	14-03-2018	0.5	84° 57' 04"E	21° 16' 38"N	
	Kaniha	Phulajhari RF (Fire was Extingushed)	14-03-2018	0.5	85° 02' 36"E	21° 10' 57"N	
	Kaniha	Phulajhari RF (Fire was Extingushed)	14-03-2018	1.0	85° 02' 23"E	21° 10' 55"N	
	Kaniha	Phulajhari RF (Fire was Extingushed)	14-03-2018	0.5	85° 02' 10"E	21° 10' 53"N	
	Kaniha	Phulajhari RF (Fire was Extingushed)	14-03-2018	0.5	85° 02' 10"E	21° 10' 53"N	
	Kaniha	Baudabeda KF (Fire was Extingushed)	14-03-2018	0.5	85° 02' 39"E	21° 10' 45"N	
	Kaniha	Baudabeda KF (Fire was Extingushed)	14-03-2018	1.0	85° 02' 25"E	21° 10' 44"N	
	Kaniha	Baudabeda KF (Fire was Extingushed)	14-03-2018	1.0	85° 02' 25"E	21° 10' 44"N	
	Kaniha	Phulajhari RF (Fire was Extingushed)	14-03-2018	0.5	85° 02' 12"E	21° 10' 41"N	
	Kaniha	Dhanakoili RF (Fire was Extingushed)	14-03-2018	0.5	85° 03' 50"E	21° 10' 31"N	
	Kaniha	Dalak KF (Fire was Extingushed)	14-03-2018	0.5	85° 06' 21"E	21° 10' 29"N	
	Kaniha	Poipal Danda RF (Fire was Extingushed)	14-03-2018	0.5	85° 06' 23"E	21° 10' 17"N	
	Kaniha	Poipal Danda RF (Fire was Extingushed)	14-03-2018	0.5	85° 06' 23"E	21° 10' 17"N	
	Kaniha	Boudabeda KF (Fire was Extingushed)	14-03-2018	0.5	85° 03' 14"E	21° 10' 01"N	
	Chhendipada	Kanloi RF (Fire was Extingushed)	14-03-2018	0.5	84° 41' 31"E	21° 03' 35"N	
	Durgapur	Similipathar R.F (Fire was Extingushed)	14-03-2018	0.7	84° 49' 25"E	20° 57' 15"N	
	Durgapur	Similipathar R.F (Fire was Extingushed)	14-03-2018	0.5	84° 48' 45"E	20° 57' 09"N	
	Durgapur	Similipathar R.F (Fire was Extingushed)	14-03-2018	0.5	84° 49' 27"E	20° 57' 03"N	
	Durgapur	Similipathar R.F (Fire was Extingushed)	14-03-2018	1.0	84° 49' 14"E	20° 57' 01"N	
	Durgapur	Similipathar R.F (Fire was Extingushed)	14-03-2018	1.0	84° 49' 01"E	20° 56' 59"N	
	KANIHA	Chhatripita KF (Fire was Extingushed)	14-03-2018	0.5	84° 56' 03"E	21° 17' 18"N	
	Purunagarh	Hinsar Sorispal PRF (Fire was Extingushed)	14-03-2018	0.5	84° 56' 45"E	20° 49' 01"N	
	Purunagarh	Kalapat PRF (Fire was Extinguished)	14-03-2018	0.3	84° 57' 22"E	20° 48' 06"N	
	Durgapur	Antulia tabada R.F (Fire was Extingushed)	14-03-2018	1.0	84° 48' 05"E	20° 47' 56"N	

Year	Name of the Range	Forest Block	Date of fire incident	Extent of area damaged (in Acre)	GPS Location		Action taken for extinguishing the Fire
					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Durgapur	Antulia tabada R.F (Fire was Extingushed)	14-03-2018	0.8	84° 47' 52"E	20° 47' 54"N	
	Durgapur	Antulia tabada R.F (Fire was Extingushed)	14-03-2018	1.0	84° 47' 52"E	20° 47' 54"N	
	Durgapur	Antulia tabada R.F (Fire was Extingushed)	14-03-2018	1.5	84° 47' 41"E	20° 47' 40"N	
	Purunagarh	Pokunda PRF (Fire was Extingushed)	14-03-2018	0.5	84° 56' 13"E	20° 45' 29"N	
	Purunagarh	Krushnachakra PRF (Fire was Extingushed)	14-03-2018	0.2	84° 53' 38"E	20° 43' 16"N	
	Chhendipada	Durgapur RF (Fire was Extingushed)	15-03-2018	1.2	84° 57' 21"E	20° 55' 22"N	
	Purunagarh	Durgapur RF (Fire was Extingushed)	15-03-2018	0.2	84° 57' 21"E	20° 55' 22"N	
	Chhendipada	Devinagar PRF (Fire was Extingushed)	15-03-2018	1.8	84° 45' 25"E	21° 02' 58"N	
	Purunagarh	Burti PRF (Fire was Extingushed)	15-03-2018	0.5	84° 52' 55"E	20° 47' 48"N	
	Purunagarh	Sorispal RF (Fire was Extingushed)	15-03-2018	0.4	84° 59' 22"E	20° 48' 42"N	
	Durgapur	Para PRF (Fire was Extingushed)	15-03-2018	0.5	84° 52' 41"E	20° 52' 24"N	
	Purunagarh	Durgapur RF (Fire was Extingushed)	15-03-2018	0.3	84° 57' 17"E	20° 55' 05"N	
	Chhendipada	Durgapur RF (Fire was Extingushed)	15-03-2018	1.1	84° 57' 15"E	20° 55' 18"N	
	Purunagarh	Durgapur RF (Fire was Extingushed)	15-03-2018	0.2	84° 57' 44"E	20° 55' 51"N	
	Durgapur	Para PRF (Fire was Extingushed)	15-03-2018	0.7	84° 51' 26"E	20° 56' 22"N	
	Purunagarh	Similipathar RF	15-03-2018	0.2	85° 00' 31"E	20° 45' 53"N	
	Talcher	Bulajhar RF Compt No.10 (Fire was Extingushed)	18-03-2018	0.5	85° 13' 39"E	21° 05' 14"N	
	Kaniha	Budhia RF (Fire was Extingushed)	18-03-2018	0.5	85° 05' 03"E	21° 13' 09"N	
	Chhendipada	Devinagar PRF (Fire was Extingushed)	19-03-2018	1.0	84° 45' 23"E	21° 03' 28"N	
	Durgapur	Katada RF (Fire was Extingushed)	19-03-2018	0.7	84° 51' 21"E	20° 56' 16"N	
	Kaniha	Durgapur VF (Fire was Extingushed)	19-03-2018	0.5	85° 06' 14"E	21° 06' 46"N	
	Kaniha	Nialu-Lodhajhari Sapakata RF (Fire was Extingushed)	19-03-2018	0.5	84° 56' 34"E	21° 11' 56"N	
	Kaniha	Khindo KF (Fire was Extingushed)	19-03-2018	0.5	84° 56' 45"E	21° 17' 13"N	
	Kaniha	Nialu-Lodhajhari Sapakata RF (Fire was Extingushed)	19-03-2018	1.0	84° 56' 36"E	21° 11' 48"N	
	Talcher	Seepur R.F (Fire was Extingushed)	19-03-2018	0.8	85° 11' 31"E	21° 11' 58"N	
	Kaniha	Nialu-Lodhajhari Sapakata RF (Fire was Extingushed)	19-03-2018	0.5	84° 56' 35"E	21° 12' 00"N	
	Kaniha	Durgapur VF (Fire was Extingushed)	19-03-2018	1.0	85° 06' 17"E	21° 06' 52"N	
	Kaniha	Durgapur VF (Fire was Extingushed)	19-03-2018	0.5	85° 06' 02"E	21° 06' 51"N	
	Talcher	Sibarampur PRF (Fire was Extingushed)	19-03-2018	0.6	85° 07' 34"E	21° 01' 45"N	
	Durgapur	Devinagar PRF (Fire was Extingushed)	19-03-2018	0.5	84° 48' 43"E	20° 59' 35"N	
	Durgapur	Devinagar PRF (Fire was Extingushed)	19-03-2018	0.5	84° 48' 29"E	20° 59' 32"N	
	Durgapur	Devinagar PRF (Fire was Extingushed)	19-03-2018	0.5	84° 48' 45"E	20° 59' 22"N	
	Durgapur	Devinagar PRF (Fire was Extingushed)	19-03-2018	1.0	84° 48' 31"E	20° 59' 20"N	
	Durgapur	Similipathar RF (Fire was Extingushed)	19-03-2018	1.5	84° 51' 20"E	20° 56' 38"N	
	Durgapur	Similipathar RF (Fire was Extingushed)	19-03-2018	1.0	84° 51' 22"E	20° 56' 26"N	
	Durgapur	Katada RF (Fire was Extingushed)	19-03-2018	1.0	84° 47' 48"E	20° 54' 27"N	
	Chhendipada	Durgapur RF (Fire was Extingushed)	19-03-2018	2.1	84° 55' 53"E	20° 54' 07"N	
	Purunagarh	Kulasingha PRF (Fire was Extingushed)	19-03-2018	0.3	84° 56' 56"E	20° 45' 44"N	
	Kaniha	Durgapur RF (Fire was Extingushed)	20-03-2018	0.5	85° 05' 15"E	21° 06' 44"N	
	Chhendipada	Durgapur RF (Fire was Extingushed)	20-03-2018	2.3	84° 55' 53"E	20° 54' 14"N	
	Purunagarh	Pokunda PRF (Fire was Extingushed)	20-03-2018	0.5	84° 57' 07"E	20° 45' 10"N	
	Kaniha	Durgapur Danda RF (Fire was Extingushed)	20-03-2018	0.5	85° 05' 41"E	21° 06' 46"N	

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					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Kaniha	Durgapur Danda RF (Fire was Extingushed)	20-03-2018	0.5	85° 05' 24"E	21° 06' 55"N	
	Kaniha	Tangiri RF (Fire was Extingushed)	20-03-2018	0.5	84° 55' 58"E	21° 15' 30"N	
	Kaniha	Rengali KF (Fire was Extingushed)	20-03-2018	1.0	85° 00' 32"E	21° 15' 24"N	
	Kaniha	Sansamara KF (Fire was Extingushed)	20-03-2018	0.5	84° 54' 44"E	21° 15' 17"N	
	Kaniha	Rengali KF (Fire was Extingushed)	20-03-2018	2.0	85° 01' 14"E	21° 14' 26"N	
	Kaniha	Tangiri RF (Fire was Extingushed)	20-03-2018	0.5	84° 58' 24"E	21° 13' 19"N	
	Kaniha	Arkil KF (Fire was Extingushed)	20-03-2018	1.0	85° 06' 53"E	21° 12' 24"N	
	Chhendipada	Kanloi RF (Fire was Extingushed)	20-03-2018	1.1	84° 42' 28"E	21° 03' 55"N	
	KANIHA	Mohinipal KF (Fire was Extingushed)	20-03-2018	1.5	84° 59' 57"E	21° 09' 01"N	
	KANIHA	Mohinipal KF (Fire was Extingushed)	20-03-2018	1.0	84° 59' 42"E	21° 08' 58"N	
	Chhendipada	Marudhipa PRF (Fire was Extingushed)	20-03-2018	1.8	84° 40' 56"E	21° 07' 59"N	
	Chhendipada	Marudhipa PRF (Fire was Extingushed)	20-03-2018	1.6	84° 40' 58"E	21° 07' 47"N	
	Talcher	Bulajhar RF(Fire Was Extingushed)	20-03-2018	0.8	85° 09' 03"E	21° 06' 15"N	
	Talcher	Bulajhar RF(Fire Was Extingushed)	20-03-2018	0.7	85° 08' 48"E	21° 06' 13"N	
	Purunagarh	Hinsar Sorispal PRF (Fire was Extingushed)	20-03-2018	0.5	84° 58' 03"E	20° 48' 56"N	
	Purunagarh	Hinsar Sorispal PRF (Fire was Extingushed)	20-03-2018	0.3	84° 58' 05"E	20° 48' 43"N	
	Purunagarh	Hinsar Sorispal PRF (Fire was Extingushed)	20-03-2018	0.2	84° 58' 05"E	20° 48' 43"N	
	Purunagarh	Hinsar Sorispal PRF (Fire was Extingushed)	20-03-2018	0.3	84° 57' 51"E	20° 48' 41"N	
	Purunagarh	Hinsar Sorispal PRF (Fire was Extingushed)	20-03-2018	0.5	84° 57' 51"E	20° 48' 41"N	
	Purunagarh	Angul Town (Fire was Extingushed)	20-03-2018	0.5	85° 04' 45"E	20° 48' 20"N	
	Purunagarh	Mandiragiri Kalima RF (Fire was Extingushed)	20-03-2018	0.3	85° 02' 11"E	20° 47' 15"N	
	Purunagarh	Kulasingha PRF (Fire was Extingushed)	20-03-2018	0.4	84° 57' 25"E	20° 45' 36"N	
	Purunagarh	Kulasingha PRF (Fire was Extingushed)	20-03-2018	0.2	84° 57' 15"E	20° 45' 08"N	
	Kaniha	Tangiri RF (Fire was Extingushed)	21-03-2018	0.5	84° 58' 03"E	21° 13' 23"N	
	Kaniha	Kuluma KF (Fire was Extingushed)	21-03-2018	0.5	84° 59' 17"E	21° 15' 17"N	
	Kaniha	Kuluma KF (Fire was Extingushed)	21-03-2018	0.5	84° 59' 17"E	21° 15' 17"N	
	Kaniha	Kuluma KF (Fire was Extingushed)	21-03-2018	0.5	84° 59' 03"E	21° 15' 19"N	
	Talcher	Bulajhar RF(Fire Was Extingushed)	21-03-2018	0.8	85° 08' 58"E	21° 05' 44"N	
	Talcher	Bulajhar RF(Fire Was Extingushed)	21-03-2018	0.6	85° 08' 44"E	21° 05' 46"N	
	Talcher	Bulajhar RF(Fire Was Extingushed)	21-03-2018	0.9	85° 09' 13"E	21° 05' 42"N	
	Chhendipada	Kanloi RF (Fire was Extingushed)	21-03-2018	1.3	84° 42' 52"E	21° 03' 42"N	
	Talcher	Rabipur RF (Fire was Extingushed)	21-03-2018	0.8	85° 05' 48"E	21° 01' 11"N	
	Talcher	Rabipur RF (Fire was Extingushed)	21-03-2018	0.5	85° 05' 34"E	21° 01' 13"N	
	Talcher	Rabipur RF (Fire was Extingushed)	21-03-2018	0.7	85° 06' 02"E	21° 01' 09"N	
	Talcher	Rabipur RF (Fire was Extingushed)	21-03-2018	0.9	85° 06' 44"E	21° 01' 02"N	
	Talcher	Rabipur RF (Fire was Extingushed)	21-03-2018	0.9	85° 06' 44"E	21° 01' 02"N	
	Purunagarh	Kurudu PRF (Fire was Extingushed)	21-03-2018	0.3	84° 57' 41"E	20° 44' 34"N	
	Purunagarh	Chandanpur PRF (Fire was Extingushed)	21-03-2018	0.4	84° 57' 46"E	20° 44' 59"N	
	Purunagarh	Kurudu PRF (Fire was Extingushed)	21-03-2018	0.2	84° 57' 03"E	20° 45' 05"N	
	Purunagarh	Chandanpur PRF (Fire was Extingushed)	21-03-2018	0.5	84° 57' 33"E	20° 45' 14"N	
	Purunagarh	Kulasingha PRF (Fire was Extingushed)	21-03-2018	0.2	84° 57' 19"E	20° 45' 15"N	
	Purunagarh	Chandanpur PRF (Fire was Extingushed)	21-03-2018	0.5	84° 57' 50"E	20° 45' 24"N	
	Purunagarh	Chandanpur PRF (Fire was Extingushed)	21-03-2018	0.4	84° 57' 35"E	20° 45' 26"N	
	Purunagarh	Chandanpur PRF (Fire was Extingushed)	21-03-2018	0.4	84° 57' 38"E	20° 45' 38"N	
	Durgapur	Similipathar RF (Fire was Extingushed)	21-03-2018	1.5	84° 48' 37"E	20° 58' 26"N	

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					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Durgapur	Similipathar RF (Fire was Extingushed)	21-03-2018	1.5	84° 48' 35"E	20° 58' 13"N	
	Purunagarh	Hinsar Sorispal PRF (Fire was Extingushed)	21-03-2018	0.3	84° 57' 35"E	20° 48' 47"N	
	Purunagarh	Kulasingha PRF (Fire was Extingushed)	21-03-2018	0.4	84° 57' 11"E	20° 45' 54"N	
	Purunagarh	Kulasingha PRF (Fire was Extingushed)	21-03-2018	0.5	84° 57' 11"E	20° 45' 54"N	
	Durgapur	Antulia Tabada RF (Fire was Extingushed)	21-03-2018	1.0	84° 51' 23"E	20° 47' 23"N	
	Durgapur	Antulia Tabada RF (Fire was Extingushed)	21-03-2018	1.0	84° 51' 23"E	20° 47' 23"N	
	Durgapur	Similipathar RF (Fire was Extingushed)	21-03-2018	0.5	84° 48' 07"E	20° 58' 48"N	
	Purunagarh	Chandanpur PRF (Fire was Extingushed)	22-03-2018	0.3	84° 58' 00"E	20° 45' 17"N	
	Durgapur	Similipathar RF (Fire was Extingushed)	22-03-2018	1.0	84° 48' 29"E	20° 58' 58"N	
	Durgapur	Devinagar PRF (Fire was Extingushed)	22-03-2018	0.5	84° 47' 45"E	20° 59' 36"N	
	Talcher	Bulajhar RF(Fire Was Extingushed)	22-03-2018	0.7	85° 08' 14"E	21° 05' 57"N	
	Purunagarh	Burti (Fire was Extingushed)	23-03-2018	0.3	84° 54' 30"E	20° 46' 38"N	
	Purunagarh	Pokunda (Fire was Extingushed)	23-03-2018	0.1	84° 54' 55"E	20° 46' 23"N	
	Chhendipada	Sunarijharan PRF (Fire was Extingushed)	23-03-2018	1.3	84° 58' 55"E	21° 10' 40"N	
	Chhendipada	Sunarijharan PRF (Fire was Extingushed)	23-03-2018	1.3	84° 58' 55"E	21° 10' 40"N	
	Kaniha	Durgapur VF (Fire was Extingushed)	25-03-2018	0.5	85° 06' 09"E	21° 07' 03"N	
	Durgapur	Similipathar RF (Fire was Extingushed)	25-03-2018	1.0	84° 50' 39"E	20° 57' 05"N	
	Durgapur	Similipathar RF (Fire was Extingushed)	25-03-2018	0.5	84° 50' 41"E	20° 56' 53"N	
	Kaniha	Paddy Field (Fire was Extingushed)	26-03-2018	1.0	84° 59' 31"E	21° 12' 17"N	
	Talcher	Langalkhol RF (Fire was Extingushed)	26-03-2018	0.5	85° 14' 23"E	21° 06' 07"N	
	Talcher	Langalkhol RF (Fire was Extingushed)	26-03-2018	0.5	85° 14' 23"E	21° 06' 07"N	
	Kaniha	Nialu Lodhajhari Sapakata RF (Fire was Extingushed)	27-03-2018	0.5	84° 59' 08"E	21° 10' 37"N	
	Kaniha	Nialu Lodhajhari Sapakata RF (Fire was Extingushed)	27-03-2018	1.0	84° 59' 11"E	21° 10' 51"N	
	Kaniha	Chadrapada RF (Fire was Extingushed)	27-03-2018	0.5	85° 00' 28"E	21° 08' 09"N	
	Kaniha	Chadrapada RF (Fire was Extingushed)	27-03-2018	0.5	85° 00' 37"E	21° 08' 14"N	
	Chhendipada	Extinguishing	27-03-2018	1.1	84° 55' 03"E	20° 54' 01"N	
	Chhendipada	Extinguishing	27-03-2018	1.9	84° 55' 33"E	20° 54' 27"N	
	Kaniha	Nialu Lodhajhari Sapakata RF (Fire was Extingushed)	27-03-2018	0.5	84° 59' 15"E	21° 10' 35"N	
	Durgapur	Similipathar RF (Fire was Extingushed)	27-03-2018	1.5	84° 50' 17"E	20° 56' 40"N	
	Raigoda	Nuakheta R.F (Fire was Extingushed)	28-03-2018	1.2	85° 02' 12"E	20° 40' 07"N	
	Purunagarh	Krushnachakra PRF (Fire was Extingushed)	28-03-2018	0.5	84° 53' 27"E	20° 45' 02"N	
	Durgapur	Pathargarh P.R.F (Fire was Extingushed)	28-03-2018	0.5	84° 53' 15"E	20° 49' 05"N	
	Kaniha	Nialu Lodhajhari Sapakata RF (Fire was Extingushed)	28-03-2018	0.5	84° 59' 43"E	21° 10' 46"N	
	Kaniha	Nialu Lodhajhari Sapakata RF (Fire was Extingushed)	28-03-2018	0.5	84° 58' 40"E	21° 11' 12"N	
	Chhendipada	Extinguishing	28-03-2018	1.3	84° 53' 49"E	21° 03' 57"N	
	Chhendipada	Extinguishing	28-03-2018	1.6	84° 53' 24"E	21° 04' 08"N	
	Chhendipada	Extinguishing	28-03-2018	1.6	84° 54' 03"E	21° 04' 15"N	
	Purunagarh	Angul Town (Fire was Extingushed)	28-03-2018	0.4	85° 04' 20"E	20° 55' 32"N	
	Durgapur	Similipathar RF (Fire was Extingushed)	28-03-2018	2.7	84° 49' 45"E	20° 57' 08"N	
	KANIHA	Paddy Field (Fire was Extingushed)	28-03-2018	0.5	84° 59' 40"E	21° 10' 44"N	

Year	Name of the Range	Forest Block	Date of fire incident	Extent of area damaged (in Acre)	GPS Location		Action taken for extinguishing the Fire
					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Talcher	Saradhapur VF (Fire was Extingushed)	28-03-2018	1.7	85° 11' 31"E	21° 10' 35"N	
	Kaniha	Chandrapada RF	28-03-2018	0.5	85° 00' 48"E	21° 07' 53"N	
	Chhendipada	Extinguishing	28-03-2018	1.0	84° 55' 56"E	21° 05' 04"N	
	Chhendipada	Extinguishing	28-03-2018	1.3	84° 55' 50"E	21° 05' 04"N	
	Talcher	Barapali VF (Fire was Extingushed)	28-03-2018	6.9	85° 07' 15"E	20° 59' 52"N	
	Chhendipada	Kanloi RF (Fire was Extingushed)	30-03-2018	3.0	84° 44' 08"E	21° 04' 45"N	
	Chhendipada	Kanloi RF (Fire was Extingushed)	30-03-2018	2.9	84° 43' 54"E	21° 04' 43"N	
	Purunagarh	Pokunda (Fire was Extingushed)	30-03-2018	0.1	84° 51' 27"E	20° 46' 58"N	
	Talcher	Dholagandia VF (Fire was Extingushed)	31-03-2018	0.8	85° 13' 05"E	21° 05' 44"N	
	Talcher	Baulapur VF (Fire was Extingushed)	31-03-2018	0.4	85° 06' 14"E	20° 55' 27"N	
	Talcher	Baulapur VF (Fire was Extingushed)	31-03-2018	0.4	85° 06' 14"E	20° 55' 27"N	
2019	Kaniha	SARADHAPUR RF	11-03-2019	1.0	85° 00' 24"E	21° 03' 47"N	Fire protection squard , Mobile vehicle to all Ranges and field staff , Para staff have been engaged for prevation and control of forest fire in the forest
	Kaniha	SANTARABANDHA RF	11-03-2019	3.0	84° 56' 41"E	21° 05' 34"N	
	Kaniha	SANTARABANDHA RF	11-03-2019	2.0	84° 56' 28"E	21° 05' 38"N	
	Chhendipada	BADAKATHIA RF	13-03-2019	0.5	85° 00' 22"E	20° 59' 26"N	
	Chhendipada	BADAKATHIA RF	13-03-2019		85° 00' 17"E	20° 59' 34"N	
	Chhendipada	DEVINAGAR PRF	23-03-2019	1.6	84° 45' 37"E	21° 03' 18"N	
	Talcher	KULADERA RF	23-03-2019	0.0	85° 15' 27"E	21° 08' 27"N	
	Talcher		23-03-2019		85° 15' 27"E	21° 08' 27"N	
	Talcher	SEEPUR RF	23-03-2019	0.1	85° 10' 38"E	21° 10' 19"N	
	Talcher		23-03-2019		85° 10' 38"E	21° 10' 19"N	
	Kaniha		23-03-2019	1.0	85° 00' 44"E	21° 11' 02"N	
	Kaniha	PHULAJHARI RF	23-03-2019		85° 00' 44"E	21° 11' 02"N	
	Talcher	RABIPUR RF	24-03-2019	0.6	85° 06' 35"E	21° 01' 09"N	
	Talcher	KANDHABERINI PRF PRF	24-03-2019	0.4	85° 06' 35"E	21° 00' 57"N	
	Talcher		26-03-2019	0.8	85° 06' 04"E	21° 02' 35"N	
	Talcher	SIBARAMPUR PRF	29-03-2019	0.5	85° 06' 27"E	21° 01' 47"N	
	Talcher	SIBARAMPUR PRF	29-03-2019	0.5	85° 06' 41"E	21° 01' 50"N	
	Talcher	KANEHIJENA RF	29-03-2019	0.3	85° 06' 30"E	21° 03' 45"N	
	Durgapur	DEVINAGAR PRF	29-03-2019	0.0	84° 47' 36"E	20° 59' 52"N	
	Durgapur	DEVINAGAR PRF	29-03-2019	0.0	84° 47' 26"E	21° 00' 16"N	
	Chhendipada	DURGAPUR RF	31-03-2019	2.6	84° 54' 41"E	20° 56' 05"N	
	Chhendipada	DURGAPUR RF	31-03-2019	0.6	84° 54' 41"E	20° 56' 05"N	
	Purunagarh	DURGAPUR RF	02-04-2019	0.2	84° 57' 57"E	20° 55' 01"N	
	Purunagarh	DURGAPUR RF	02-04-2019	0.2	84° 58' 11"E	20° 55' 03"N	
	Purunagarh	DURGAPUR RF	02-04-2019	0.1	84° 57' 55"E	20° 55' 13"N	
	Purunagarh	DURGAPUR RF	02-04-2019	0.1	84° 57' 54"E	20° 55' 25"N	
	Chhendipada		02-04-2019	0.1	84° 57' 57"E	20° 55' 01"N	
	Chhendipada		02-04-2019	0.1	84° 58' 11"E	20° 55' 03"N	
	Chhendipada		05-04-2019	1.5	84° 42' 39"E	21° 08' 56"N	
	Chhendipada	NUNAMATI PRF	05-04-2019		84° 42' 39"E	21° 08' 56"N	
	Chhendipada	BADAKATHIA RF	05-04-2019	0.1	85° 01' 28"E	21° 02' 09"N	
	Talcher	MANKADACHUA RF	06-04-2019	0.5	85° 13' 26"E	21° 06' 54"N	
	Talcher		06-04-2019		85° 13' 26"E	21° 06' 54"N	
	Kaniha	NLSAPAKATA RF	06-04-2019	0.1	84° 56' 37"E	21° 12' 14"N	

Year	Name of the Range	Forest Block	Date of fire incident	Extent of area damaged (in Acre)	GPS Location		Action taken for extinguishing the Fire
					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Kaniha	GODIGOTHA RF	06-04-2019	0.0	85° 00' 58"E	21° 12' 43"N	
	Kaniha	SADARKHOL RF	06-04-2019	0.2	84° 57' 02"E	21° 16' 47"N	
	Purunagarh		07-04-2019	1.0	85° 03' 17"E	20° 54' 37"N	
	Purunagarh		07-04-2019	1.5	85° 03' 15"E	20° 54' 49"N	
	Talcher	MANKADACHUA RF	10-04-2019	0.4	85° 13' 23"E	21° 06' 52"N	
	Talcher		10-04-2019		85° 13' 23"E	21° 06' 52"N	
	Talcher	MANKADACHUA RF	10-04-2019	0.2	85° 13' 26"E	21° 07' 01"N	
	Talcher		10-04-2019		85° 13' 26"E	21° 07' 01"N	
	Talcher	SUNAKHANI VF	12-04-2019	0.5	85° 09' 20"E	21° 01' 55"N	
	Talcher		12-04-2019		85° 09' 20"E	21° 01' 55"N	
	Talcher		12-04-2019	0.2	85° 09' 18"E	21° 02' 08"N	
	Talcher	SUNAKHANI VF	12-04-2019	0.5	85° 09' 14"E	21° 01' 55"N	
	Talcher		12-04-2019		85° 09' 14"E	21° 01' 55"N	
	Purunagarh	DURGAPUR RF	13-04-2019	0.3	84° 58' 14"E	20° 55' 36"N	
	Durgapur	DEVINAGAR PRF	13-04-2019	2.0	84° 48' 16"E	21° 00' 44"N	
	Talcher		13-04-2019	0.2	85° 07' 11"E	21° 00' 54"N	
	Talcher	KANDHABERINIPRF PRF	13-04-2019		85° 07' 11"E	21° 00' 54"N	
	Talcher	RABIPUR RF	13-04-2019		85° 07' 11"E	21° 00' 54"N	
	Chhendipada	KANLOI RF	13-04-2019	1.3	84° 43' 20"E	21° 03' 40"N	
	Durgapur	DEVINAGAR PRF	14-04-2019	1.0	84° 48' 01"E	20° 59' 15"N	
	Durgapur	DEVINAGAR PRF	14-04-2019	1.0	84° 47' 48"E	20° 59' 17"N	
	Chhendipada		15-04-2019	0.2	84° 40' 41"E	21° 06' 52"N	
	Chhendipada	MARUDHIP PRF	15-04-2019		84° 40' 41"E	21° 06' 52"N	
	Chhendipada		15-04-2019	2.0	84° 40' 39"E	21° 07' 03"N	
	Chhendipada	MARUDHIP PRF	15-04-2019		84° 40' 39"E	21° 07' 03"N	
	Chhendipada	MARUDHIP PRF	15-04-2019	1.0	84° 40' 36"E	21° 07' 12"N	
	Durgapur	SIMILIPATHAR RF	15-04-2019	1.0	84° 48' 03"E	20° 59' 23"N	
	Durgapur	DEVINAGAR PRF	15-04-2019	1.0	84° 48' 03"E	20° 59' 23"N	
	Durgapur	DEVINAGAR PRF	16-04-2019	2.0	84° 47' 53"E	20° 59' 38"N	
	Talcher	KANEHIJENA RF	17-04-2019	0.4	85° 06' 35"E	21° 02' 38"N	
	Raigoda	BHOGAPAL RF	17-04-2019	2.0	84° 58' 54"E	20° 42' 33"N	
	Talcher	KANEHIJENA RF	17-04-2019	0.5	85° 06' 40"E	21° 02' 47"N	
	Talcher	KANEHIJENA RF	17-04-2019	0.4	85° 06' 25"E	21° 03' 00"N	
	Talcher	KANEHIJENA RF	17-04-2019	0.3	85° 06' 38"E	21° 03' 02"N	
	Talcher	KANEHIJENA RF	17-04-2019		85° 06' 38"E	21° 03' 02"N	
	Kaniha	DALAK-POIPAL DANDA RF	17-04-2019	0.4	85° 06' 47"E	21° 08' 58"N	
	Talcher	KANEHIJENA RF	18-04-2019	0.2	85° 06' 57"E	21° 02' 53"N	
	Talcher	KANEHIJENA RF	18-04-2019		85° 06' 57"E	21° 02' 53"N	
	Chhendipada	KANLOI RF	18-04-2019	1.5	84° 43' 16"E	21° 04' 00"N	
	Purunagarh	KALAPAT PRF	18-04-2019	1.0	84° 57' 13"E	20° 47' 52"N	
	Talcher	KANEHIJENA RF	18-04-2019	0.2	85° 06' 02"E	21° 03' 22"N	
	Talcher	KANEHIJENA RF	18-04-2019		85° 06' 02"E	21° 03' 22"N	
	Talcher		18-04-2019		85° 06' 02"E	21° 03' 22"N	
	Talcher	KANEHIJENA RF	18-04-2019	0.2	85° 06' 15"E	21° 03' 24"N	
	Talcher	KANEHIJENA RF	18-04-2019		85° 06' 15"E	21° 03' 24"N	

Year	Name of the Range	Forest Block	Date of fire incident	Extent of area damaged (in Acre)	GPS Location		Action taken for extinguishing the Fire
					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Chhendipada	KANLOI RF	18-04-2019	1.9	84° 40' 51"E	21° 03' 52"N	
	Chhendipada	KANLOI RF	18-04-2019	0.8	84° 43' 06"E	21° 04' 00"N	
	Chhendipada	KANLOI RF	18-04-2019	1.3	84° 43' 04"E	21° 04' 12"N	
	Chhendipada	DONGAPAL PRF	18-04-2019	2.0	84° 44' 00"E	21° 09' 25"N	
	Talcher		18-04-2019	0.7	85° 11' 20"E	21° 11' 14"N	
	Purunagarh	BURTI PRF	23-04-2019	2.0	84° 53' 54"E	20° 46' 15"N	
	Kaniha	SADARKHOL RF	23-04-2019	0.0	84° 56' 57"E	21° 15' 56"N	
	Kaniha	SADARKHOL RF	23-04-2019		84° 56' 57"E	21° 15' 56"N	
	Durgapur		24-04-2019	1.5	84° 52' 19"E	20° 48' 34"N	
	Durgapur	PATHARGARH PRF	24-04-2019		84° 52' 19"E	20° 48' 34"N	
	Talcher	KANEHIJENA RF	25-04-2019	0.8	85° 06' 35"E	21° 03' 17"N	
	Talcher	KANEHIJENA RF	25-04-2019		85° 06' 35"E	21° 03' 17"N	
	Chhendipada	DEVINAGAR PRF	26-04-2019	1.3	84° 45' 19"E	21° 03' 35"N	
	Talcher	KANEHIJENA RF	29-04-2019	0.2	85° 07' 41"E	21° 02' 33"N	
	Kaniha		30-04-2019	0.1	84° 59' 07"E	21° 01' 54"N	
	Kaniha		30-04-2019	0.1	84° 59' 04"E	21° 02' 09"N	
	Chhendipada		30-04-2019	1.5	84° 55' 48"E	21° 04' 51"N	
	Chhendipada	KANKURPAL RF	30-04-2019		84° 55' 48"E	21° 04' 51"N	
	Chhendipada	JALATAP RF	30-04-2019	0.3	84° 58' 55"E	21° 02' 02"N	
	Chhendipada		30-04-2019		84° 58' 55"E	21° 02' 02"N	
	Kaniha		30-04-2019	0.2	84° 58' 55"E	21° 02' 02"N	
	Chhendipada	KANLOI RF	09-05-2019	1.6	84° 43' 52"E	21° 04' 07"N	
	Chhendipada	DONGAPAL PRF	19-05-2019	2.0	84° 43' 31"E	21° 09' 20"N	
	Talcher		20-05-2019	0.5	85° 10' 43"E	21° 06' 27"N	
2020	Kaniha	DHANAKOILI RF	30-03-2020	0.5	85° 05' 34"E	21° 10' 22"N	Fire protection squard , Mobile vehicle to all Ranges and field staff , Para staff have been engaged for prevation and control of forest fire in the forest
	Kaniha		30-03-2020		85° 05' 34"E	21° 10' 22"N	
	Kaniha	BANDULI RF	03-04-2020	0.2	85° 06' 19"E	21° 14' 34"N	
	Kaniha		03-04-2020		85° 06' 19"E	21° 14' 34"N	
	Kaniha	DHANAKOILI RF	04-04-2020	0.1	85° 04' 24"E	21° 10' 34"N	
	Kaniha	BIRIPAL RF	06-04-2020	0.0	85° 05' 37"E	21° 15' 54"N	
	Kaniha		06-04-2020		85° 05' 37"E	21° 15' 54"N	
	Kaniha	BIRIPAL RF	06-04-2020	0.0	85° 05' 29"E	21° 15' 57"N	
	Kaniha	DALAK-POIPAL DANDA RF	09-04-2020	0.6	85° 07' 37"E	21° 09' 07"N	
	Kaniha		09-04-2020		85° 07' 37"E	21° 09' 07"N	
	Talcher	MANKADACHUA RF	10-04-2020	1.2	85° 12' 29"E	21° 07' 17"N	
	Talcher	MANKADACHUA RF	10-04-2020		85° 12' 29"E	21° 07' 17"N	
	Purunagarh	Nisha KF	11-04-2020	0.5	85° 02' 57"E	20° 54' 50"N	
	DURGAPUR RANG	DEVINAGAR PRF	12-04-2020	0.5	84° 47' 47"E	21° 00' 16"N	
	Purunagarh	KRISHNACHAKRA PRF	13-04-2020	0.5	84° 54' 03"E	20° 44' 45"N	
	Purunagarh		13-04-2020		84° 54' 03"E	20° 44' 45"N	
	Purunagarh	KRISHNACHAKRA PRF	13-04-2020	0.5	84° 54' 16"E	20° 44' 49"N	
	Purunagarh		13-04-2020		84° 54' 16"E	20° 44' 49"N	
	Talcher		13-04-2020	0.5	85° 14' 03"E	21° 08' 38"N	
	Kaniha	SADARKHOL RF	13-04-2020	0.0	84° 56' 20"E	21° 16' 19"N	
	Kaniha	SADARKHOL RF	13-04-2020		84° 56' 20"E	21° 16' 19"N	

Year	Name of the Range	Forest Block	Date of fire incident	Extent of area damaged (in Acre)	GPS Location		Action taken for extinguishing the Fire
					Longitude	Latitude	
1	2	3	4	5	6	7	8
	Purunagarh	Pukunda PRF	14-04-2020	0.8	84° 55' 04"E	20° 43' 57"N	
	Purunagarh	KURUDU PRF	14-04-2020	1.0	84° 56' 22"E	20° 44' 48"N	
	Talcher	Arakhapal VF	14-04-2020	1.0	85° 08' 50"E	21° 00' 01"N	
	Talcher	Arakhapal VF	15-04-2020		85° 08' 50"E	21° 00' 01"N	
	Talcher	Arakhapal VF	14-04-2020	2.0	85° 09' 08"E	21° 00' 03"N	
	Chhendipada	SUNARIJHARANA PRF	14-04-2020	0.5	84° 58' 47"E	21° 10' 28"N	
	Chhendipada	SUNARIJHARANA PRF	14-04-2020	0.5	84° 58' 45"E	21° 10' 41"N	
	Chhendipada	SUNARIJHARANA PRF	15-04-2020		84° 58' 45"E	21° 10' 41"N	
	Purunagarh	KRISHNACHAKRA PRF	16-04-2020	0.5	84° 53' 31"E	20° 44' 29"N	
	Purunagarh	KRISHNACHAKRA PRF	17-04-2020		84° 53' 31"E	20° 44' 29"N	
	Durgapur	SIMILIPATHAR RF	16-04-2020	1.5	84° 48' 45"E	20° 58' 42"N	
	Durgapur		16-04-2020		84° 48' 45"E	20° 58' 42"N	
	Durgapur	SIMILIPATHAR RF	16-04-2020	1.0	84° 48' 28"E	20° 58' 54"N	
	Durgapur	SIMILIPATHAR RF	16-04-2020	0.5	84° 48' 42"E	20° 58' 57"N	
	Durgapur		16-04-2020		84° 48' 42"E	20° 58' 57"N	
	Kaniha		16-04-2020	0.1	85° 02' 44"E	21° 08' 33"N	
	Kaniha	ARAKHADAHI RF	16-04-2020		85° 02' 44"E	21° 08' 33"N	
	Kaniha		16-04-2020	0.2	85° 02' 59"E	21° 09' 35"N	
	Kaniha	ARAKHADAHI RF	16-04-2020		85° 02' 59"E	21° 09' 35"N	
	Durgapur	SIMILIPATHAR RF	16-04-2020	1.0	84° 48' 39"E	20° 58' 37"N	
	Durgapur	SODAGOLESWAR PRF	16-04-2020		84° 48' 39"E	20° 58' 37"N	
	Durgapur		16-04-2020		84° 48' 39"E	20° 58' 37"N	
	Kaniha	DURGAPUR DANDA RF	16-04-2020	0.0	85° 05' 56"E	21° 07' 08"N	
	Kaniha		16-04-2020		85° 05' 56"E	21° 07' 08"N	
	Durgapur	SIMILIPATHAR RF	17-04-2020	0.5	84° 48' 53"E	20° 57' 14"N	
	Durgapur		17-04-2020		84° 48' 53"E	20° 57' 14"N	
	Durgapur	SIMILIPATHAR RF	17-04-2020	0.3	84° 49' 07"E	20° 57' 22"N	
	Chhendipada	BADAKATHIA RF	01-05-2020	0.3	85° 00' 10"E	20° 59' 36"N	
	Chhendipada	BADAKATHIA RF	01-05-2020	0.3	85° 00' 08"E	20° 59' 48"N	

Appendix - VII

Government of Orissa.
Forest and Environment Department
RESOLUTION.
No.5503/F&E
Dated 31st March 2000. Bhubaneswar

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 Annexure A 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 Annexure-B, 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 Samrakshyana 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 authorised agents/nominees and the names of their collection and storage centres 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.

By Order of the Governor
HS Chahar
Commissioner-cum-Secretary to Government.

Annexure 'A'

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.

ANNEXURE – 'B'

1. Mahula Seed
2. Kusum Seed
3. Karanja Seed
4. Neem Seed
5. Char Seed
6. Chakunda Seed
7. Babul Seed
8. Any other item(s) as may be notified by Government.

Items covered under Para – 4 (b)

1. Sal leaves
2. Sal resin (Jhuna)
3. Gum (Dharua Gum, Babul gum, Genduli gum,Bahada gum, Palas gum, Salai gum etc.
4. Khaira and Catechu.
5. Barks of trees/climbers(Sunari,Lodha, Medha,Phenohena, Arjuna barks etc.)
6. Roots of Patalo garuda (RS roots)
7. Sandal wood
8. Tassar cocoon
9. Canes.

GOVERNMENT OF ORISSA
FOREST & 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 Annexure-B appended to the said Resolution for inclusion of the same as Minor Forest Produce items under Annexure – A 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.

By Order of the Governor
HS Chahar,
Commissioner-cum-Secretary to
Government.

ANNEXURE - VIII					
PROCUREMENT PRICE OF N.T.F.P FOR THE YEAR 2004-05					
Sl. No	**Name of items**	**Procurement price (quintal)**	**Sl. No**	**Name of items**	**Procurement price (quintal)**
1	Tamarind	770	42	Phen/aphena frouits	330
2	De-seeded tamarind	1540	43	Broom grass	250
3	Tamarind seed	275	44	Antia fibre	330
4	Hill broom	990	45	Siali fibre	990
5	Nuxvomica	440	46	Dhatiki flower	990
6	Harida	742	47	Sahada Gum	990
7	Bahada	632	48	Cane	2.5 Per Piece of > 1" dia
8	Anla	770	49	Soapnut	935
9	Marking nut (Bhalia)	330	50	Eksiranut	275
10	Honey	8800	51	Swam climber	1320
11	Moshrum	6600	52	Thatch grass	220
12	Khajuri Patra (Patia)	3.5 Per Bani	53	Siali seeds	660
13	Forest Bela	330	54	Mat seed	1.7 Per Panel
14	Sal Leaf Plate	9 Per 100 Pc	55	Falash seed	605
15	Chireita	440	56	Gillo seed	605
16	Semal cotton	3300	57	Basil seed	330
17	Kusum seed	770	58	Bana Tulasi	770
18	Neem seed	880	59	Sikakai	1650
19	Karanja seed	880	60	Jungle jada	495
20	Mohua seed	7.50 per Kg	61	Indra Jaba	990
21	Mohua flower (fresh)	8.00 Per Kg	62	Bena root	660
22	Mohua flower (dry)	12.50 Per Kg	63	Bana Haladi	715
23	Babul seed	550	64	Bana Kolathi	715
24	Chakunda seed	770	65	Chakunda seed	770
25	Mango Kernel	385	66	Makhan seed	990
26	Mankara Kendu	330	67	Talmakhan seed	605
27	Bee wax	5500	68	Nageswar seed	605
28	Char seed	5500	69	Baidanka seed	330
29	Sidha Fruit	330	70	Baghanakhi seed	495
30	Atundi	330	71	Ananta mula	440
31	Siali leaves	660	72	Polanga seed	550
32	R.S Roots	4400	73	Kamalagundi fruit	605
33	Char gum	275	74	Landabaguli	550
34	Dhaura gum	990	75	Rohini fruit	220
35	Genduligum Gr.I	9900	76	Curry leaves	550

36	Cleaning Nuts	605	77	Bhanda tesselete	330
37	Kusumi Lac	2750	78	Paturani	550
38	Thorn grooms	3300	79	Asparangua (fresh)	2200
39	Kathalei	2.75 Per Pana	80	Palasa Atha	990
40	Sabal grass	660	81	Babul Atha	990
41	Atundi fruits	660	82	Siali Atha	990
Source: DFO, Angul					

Appendix - IX

PROTECTION OF RESERVE FOREST AREA BY THE COMMUNITY

Forest, Fisheries & A. H. Department, Government of Orissa
Resolution No. 10F (Pron) - 47 / 88 / 17240 / FFAH, Dated Bhubaneshwar, 1.08.1988

Sub :- Protection of Reserve Forest areas by community.

(i) The question of involving village communities for effective protection and conservation of Reserve Forests was, for sometime past, under the active consideration of Government. After careful appraisal, Government are of the view that the task of protecting forests is so urgent and so enormous that the rural community should be fully and actively involved in it. Accordingly it has been decided that the following scheme of involving the rural community will be implemented in the state. Under this scheme, villagers will be assigned a specific role in the protection of Reserve Forest adjoining their village and will in return, be granted, under section 24 of the Orissa Forest Act, 1972 certain concessions in the matter of meeting their bonafide requirement of firewood and small timber.

(1) The concerned Divisional Forest Officer shall assign the peripheral Reserve Forest areas to be adjoining villages according to the compartment line. The area in one compartment may cover one or more villages. Wherever the compartment line does not exist, natural boundary like nala, bridges etc will form the demarcation point. Reserve Forest area notified under Section 18 (1) of the Wildlife (Protection) Act, 1972 will however be excluded from the purview of the assignment.

(2) The concerned DFO shall constitute a Forest Protection Committee for each of the assigned village. The communities shall comprise the Sarpanch of the concerned Gram Panchayat, the Ward Members belonging to the village, the local Forester, Revenue Inspector, VLW and such other persons of the said village not exceeding three as may be nominated by the concerned Gram Panchayat. The total number of the members of the Committee shall be at least eight which shall, as far as possible include persons belonging to the Scheduled Castes or Tribes women and landless categories. The Sarpanch of the Gram Panchayat and the local Forester shall be the Chairman and Convener of the Committee respectively.

(3) The villages, shall through the Forest Protection Committee, furnish an undertaking to the concerned DFO for proper upkeep and maintenance of the assigned Reserve Forest areas. The assigned villages shall be responsible for fire protection and prevention of fellings, thefts of forest produce and encroachments in the assigned Reserve Forest areas. The Forest Protection Committee shall be responsible for ensuing performance of the above functions by villagers of the assigned village.

(4) For performance of the duties enumerated in para 3 the villagers shall be entitled to obtain their bonafide requirement of small timber and firewood for household consumption only and not for sale or barter. The Forest Protection Committee shall be responsible for proper distribution of small timber and firewood among the household, keeping in view the following guidelines.

(a) The minimum requirement of the household for building and agriculture purpose should be worked out by the Committee and distribution made accordingly on the basis of available produce, before meeting their demand for other purposes.

(b) As regards supply of firewood, the same shall be apportioned among the households keeping in view their real requirement as far as possible.

(5) Small timber and firewood shall be removed from the assigned Reserve Forest areas only in accordance with a permit issued by the two members of the committee authorized for the purpose. The permit issued as above shall be valid only within the limits of the village boundary to which the household belongs.

(6) The above scheme of assignment will come into force with effect from 2.10.1998. In the intervening period, the DFO will assign specific constitute the Forest Protection Committee.

ORDER

Ordered that the Resolution be published in the extraordinary issue of the Orissa Gazette.

By Order of the Governor
P. K. Mohanty
Secretary to Government

Appendix – X

Government of Orissa
Forest, Fisheries & A.H. Department

Resolution No.10F (Pon)-47/88/23638/FFAH. Dated, Bhubaneswar the 13th October, 1988

Sub: Protection of reserve forest areas by the community

A scheme for involving the rural community in the task of protecting reserve forests throughout the State has been enunciated by the Government in the Resolution No.172400 – FFAH., Dated., 1.8.88. Para-2 of the aforesaid resolution envisages constitution of a village-level Forest Protection Committee comprising the Sarpanch of the concerned Gram Panchayat, the Ward Members belonging to the village and at the most 3 other persons of the village, to be nominated by the concerned Gram Panchayat, as the non-official members. In addition, the local Forester, Revenue Inspector and the V.L.W. are to be included as official members.

(2) After careful re-appraisal, it is now felt by the Government that the Committee should be constituted in consultation with the local villagers.

(3) Therefore, in partial modification of para-2 of the aforesaid Resolution, it has been decided that the non-official members of the village level Forest Protection Committee may be selected by convening a meeting of the concerned villagers. However, the Sarpanch of the concerned Gram Panchayat and the Forester shall be the Chairman and Convenor of the Committee respectively.

Order

Ordered that the Resolution be published in the Extraordinary issue of the Orissa Gazette.

By Order of the
Governor

P.K.Mohanty
Secretary to
Government

Government of Orissa
Forest, Fisheries & A.H. Department

No.0F (Pron)-47/88/27328/FFAH. Dated, 14.12. 1988

From

Shri J.K.Mohapatra, I.A.S.,
Joint Secretary to Government.

To
The Principal Chief Conservator of Forests,
Orissa, Cuttack.

Sub: Protection of reserve forest areas by the community

Sir,

I am directed to refer to your letter No.23370/9F-legal-65/88., dated 1st December, 1988 and to say that the adjoining villagers assigned the functions of protection, up-keep and maintenance of the peripherial reserve forest areas would be entitled to obtain their bonafide requirement of small timber and firewood for house-hold consumption free of cost. They need not pay royalty as prescribed in the 'Rules on Schedule of Rates for Forest Produces in Orissa, 1977. This clarification may be brought to the notice of all concerned.

Yours faithfully,

Sd/- J.K.Mohaptra,
Joint Secretary to
Government.

Appendix – XI

PROTECTION OF RESERVE FOREST AND PROTECTED FOREST AREA BY THE COMMUNITY

Forest, Fisheries & A. H. Department, Government of Orissa

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Resolution No. 10 F (Pron) 4 / 90 / 29825 / FFAH, Bhubaneshwar, Dated 11.12.1990

Sub :- Protection of Reserve Forest and Protected Forest areas by the community and enjoyment of certain usufructs by the community.

The question of involving village community for effective protection and conservation of Reserved Forest and Protected Forest was for some time past, under active consideration of Government. After careful consideration, Government are of the view that the task of the protecting forest is so urgent and enormous that the community should be fully and actively involved in it. Accordingly, it has been decided that the following scheme of involving the rural community will be implemented in the state Under this scheme villagers will be assigned a specific role in the protection of Reserved Forest and Protected Forests adjoining their villages and will in return, be granted under section 24 of the Orissa Forest Act, 1972 certain concessions in Reserved Forest and taking into account prevalent practice and rights if any, in respect of Protected Forest in the matter of meeting their bonafide requirement of firewood and small timbers.

(1) The concerned Divisional Forest Officer shall assign the peripheral Reserved Forest and Protected Forest area to the adjoining villages according to the compartment line. The area in one compartment may cover one or more villages. Wherever the compartment line does not exit, natural boundary like nalla, bridges, etc will form the demarcation point. Reserve Forest areas notified under section 18 (1) of the Wild Life (Protection) Act, 1972 will however be excluded from the purview of the assignment.

(2) The concerned Divisional Forest Officer shall constitute a Forest Protection Committee for each of the concerned villages in consultation with the local villagers. The committee shall comprise the Sarpanch of the concerned Gram Panchayat, the Ward Members belonging to the village, the local Forester, Revenue Inspector, VLW and such other non official members of the village to be selected by convening a meeting of the concerned villagers. The total number of the members of the Committee shall be at least 8 which shall, as far as possible include, women and persons belonging to SC or ST and the landless, categories. The Sarpanch of the Gram Panchayat and the local Forester shall be the Chairman and convener of the Committee respectively.

(3) The villagers shall through the Forest Protection Committee, furnish an undertaking to the concerned Divisional Forest Officer for proper upkeep and maintenance of the assigned Reserved Forest and Protected Forest areas. The assigned villages shall be responsible for fire fighting and prevention of illicit fellings, theft of forest produce and encroachment in the assigned Reserved Forest and Protected areas. The Forest Protection Committee shall be responsible for ensuing performance of the above function by villagers of the assigned villages.

(4) For performance of the duties enumerated in para 3 the villagers shall be entitled to obtain their bonafide requirement of small timber and firewood for household consumption only and not for sale or barter. The Forest Protection Committee shall be responsible for proper distribution of small timber and firewood among the households, keeping in view, the following guidelines

(a) The minimum requirement of the household for building and agriculture purpose should be worked out by the Committee and the distribution made accordingly on the basis of available produce, before meeting their demand for other purposes.

(b) As regards supply of firewood the same shall be apportioned among the household keeping in view their real requirement as far as possible.

(5) Small timber and firewood shall be removed from assigned Reserved Forest areas and Protected Forest areas only in accordance with a permit issued by the two members of the Committee authorized for the purpose. The permit issued as above shall be valid only within the limits of the village boundary to which the household belongs.

(6) This supersedes this Departments resolution No. 17240 / FFAH, Dated 01.08.88 and 236 / FFAH, Dated 13.10.1988.

ORDER

Ordered that the Resolution be published in the next ordinary issue of the Orissa Gazette.

By Order of the Governor
P. K. Mohanty
Secretary to Government

Appendix - XII

List of VFPCs of Angul Division				
Range	Sl No	Name of the V.F.P.C.	Name of the Forest	Area in ha.
1	2	3	4	5
Raigoda	1	Garataras	Nuakheta RF	485.64
Durgapur	2	Kosalakumbharasahi	Kosala RF	244.84
	3	Chakundapal	Chakundapal RF	205.99
	4	Mandapalasahi	Kankurapal RF	80.94
	5	Khuntanali	Chhendipada RF	89.03
	6	Nuapada	Similipathar RF	368.03
	7	Palasabania – A	Similipathar – 1	40.47
	8	Palasabania – B	Devinagar RF	40.47
	9	Palasabania – C	Sudogolaswar RF	65.67
	10	Kusakila	Similipathar RF Comp	179.28
	11	Tentalakhol	Similipathar RF	24.28
	12	Sapoisahi	Chhendipada RF	54.63
	13	Raipal, Khairaberni	Dangapal DPF	202.35
	14	Deunria	Devinagar RF	40.47
	15	Basantapur	Devinagar RF	60.7
	16	SamalaMaliha Village	Dangapal DPF	101.17
	17	Gopalsahi of Bahalasahi	Sunarijharan	40.47
	18	Bahalasadaksahi	Sunarijharan	40.47
	19	Betal	Kandhakurudu PRF	100
Talcher	20	Gopalprasad	Gopalprasad RF	161.524
	21	Karnapur	Kauchiakhol RF	545.13
	22	Kharianali	Rabipur RF	24.28
	23	Badajora	Kauchiakhol RF	545.13
	24	Bansingh	Gumpharagudisahi	33.12
	25	Hiloi	Kandhaberini PRF	40.47
	26	Ekdal	Badataila PRF	67.98
	27	Barapasi – A	Kandhaberni PRF	24.28
	28	Barapasi – B	Potamundia PRF	40.47
		Total		3947.284

Appendix – XIII

THE ORISSA GAZETTE
No. 875 CUTTACK, Monday, July, 5th, 1993 / ASADHA 14, 1915.

FOREST AND ENVIRONMENT DEPARTMENT,
GOVERNMENT OF ORISSA

Resolution No. 16700 - 10 F (PRON) - 20 / 93 - F & E dated 3rd July, 1993

Subject : Protection of Reserved Forest and Protected Forest areas by the community and enjoyment of certain usufruct by the community.

1. Large chunks of forest land in our state have been rendered degraded and unproductive over the years. According to recent estimates the extent of such degraded forest land in the state is about twelve lakh hectares. Degradation sets in on account of over use of the forest and ever increasing pressure of human and animal population on the forests. Forests are basically a local resource. The society has to address itself with urgency to the task of regeneration and rehabilitation of the degraded forests. The problems can be tackled effectively at the local level with the active involvement and participation of the adjoining village communities. Germane to the question of protection and regeneration of the forest is the system of management. Forest management has to be reoriented to forge an effective partnership between the Government Department and the concerned village communities.

2. In Orissa, the tradition of community initiative to protect degraded forests goes back to the early 1950s. In August 1988 the State Government had passed a resolution to formally introduce a scheme of protection of peripheral Reserve Forest areas with participation of the adjoining villages. The scope of this resolution was enlarged in December, 1990 to include the Protected Forest, and it was also laid down that Village Level Forest Protection Committees should be constituted by convening meeting of the concerned villages in return for helping the Forest Department in protection of the earmarked forest areas the villagers would be entitled to get small timber and firewood as may be available from these forest for meeting their bonafide requirement free of royalty. For a variety of reasons however this scheme has not made the desired impact in generating people's participation in protection of forests. After careful consideration Government has decided to implement the following scheme of Joint Forest Management in the State in which the Forest Department and the villagers of the adjacent village(s) will be equal partners in the task of regeneration and restoration of the degraded forests.

Selection of the Area

3. The scheme will operate in degraded forest land (Reserved and Protected Forest) with potential for regeneration. Only such forest area will be selected where the villagers of the adjacent village or cluster of villages are willing or can be motivated to offer active cooperation in regeneration and protection of forest tract, and only such villages shall be involved which are situated adjacent to the forest area.

Sanctuaries and National Parks and forest land allotted for the purpose of commercial or industrial plantation or any other Departmental afforestation scheme shall ordinarily be excluded from the ambit of this scheme. A single village committee may be allowed to develop up to about 200 ha of forest land. All the village woodlots, and Social Forestry Block plantation raised under SIDA assisted Social Forestry Project between 1984 - 1994 after being notified as Village Forest will also come under the purview of this scheme. The village in which such plantation has been raised may also be selected for the taking of regeneration and protection of abuttant degraded forest tract along with management of the said plantation.

Vana Samrakshana Samiti

4. The Gram Panchayat will convene on the suggestion of the DFO / Range Officer / Forester a general meeting of all adults living in the selected village, where the DFO / Range Officer / Forester will explain the scheme of Joint Forest Management as outlined in the following paragraphs. After evaluating the response and motivation of the villagers, and after taking due account of relevant factors, he may recommend constitution of Vana Samrakshana Samiti (VSS) of the village by the Gram Panchayat. There should be one Samiti for a group of helmets or villages if these are all located adjacent to the Forest area to be regenerated.

5. Vana Samrakshana Samiti should include as its members two adults from every household living in the village / cluster of the village, including all those who have been exercising any rights, concession or privileges over the forest area. One member of each house should be a woman.

6. The concerned Forester shall be the ex officio Secretary of the Samiti. He will convene meeting of the Samiti once in three months and keep minutes of the meetings.

7. **Constitution of the Executive Committee**

(i) Each VSS will form its own executive committee for a term of two years at a time.
(ii) The Committee will comprise ten to fifteen members and its composition will be as follows.

a)	Naib Sarpanch	Chairperson
b)	Ward Member(s) representing the villages	Members
c)	Six to Eight representatives elected /selected by the Samiti of whom atleast three shall be women members.	Members
d)	Concerned Forester	Member
e)	Concerned Forest Guard	Member
f)	Nominee of a concerned NGO in the area to be selected by the DFO.	Member

The Range Officer concerned will act as Returning Officer for filling in the quota of elected members at the commencement of each term of the committee.

(iii) The Executive Committee shall select its own treasurer whose tenure shall be coterminus with that of the committee. The Forester and Forest Guard will not have any voting right.

(iv) Half the number of members of the Committee shall constitute the quorum in any meeting.
(v) In some cases where single villages are not coming forward to take up the responsibility, the concerned Gram Panchayat may resolve to regenerate tract of degraded forest over the villages comprising the Gram Panchayat have been traditionally exercising the rights of usage. The Divisional Forest Officer / Range Officer / Forester may explain the scheme of JFM to the members of the Gram Panchayat in a meeting, and after considering all aspects, he may recommended to the Conservator of Forests for allowing the particular Gram Panchayat as a body to participate in the scheme of JFM. On getting approval of the Conservator of Forests, the concerned Gram Panchayat will be required to constitute an Executive Committee in the above manner for the purpose of implementation of the JFM programme.

8. Duties and Responsibilities of the Samiti

(i) The members of the Samiti individually and collectively will ensure protection of the forest against grazing, fire, illicit felling, theft of forest produce and encroachment on forest land. The Samiti will adopt its own patrolling system and will contribute in cash, kind or in labour to control and regulate access to the forest by people and by domestic cattle.
(ii) It shall be the duty of all members to prevent forest offence and pass on relevant information and intelligence in this regard to the forest officials.
(iii) The member shall actively help the forest officials in apprehending any person committing offence in the forest area, and in giving proper evidence against any such person in the courts of law.
(iv) The members shall assist the forest officials in carrying out silvicultural and other forest improvement work in accordance with the joint forest management plan.
(v) There shall be a meeting of the Samiti at least once in three months and more often if required, to review the work of the Executive Committee and to decide on the future programmes and plans to be followed. For each such meeting the Samiti members will nominate their own Chairperson (if the Naib Sarpanch is absent) who will continue as such till the holding of the next meting. The quorum in any meeting of the Samiti shall be 40 % of the members.
(vi) The Samiti will have the power to remove any non official member from the Executive Committee by a majority vote in its meeting if the concerned executive committee member does not discharge his / her duties correctly and satisfactorily.

9. **Duties and responsibilities of the Executive Committee**

(i) The Executive Committee shall meet at least once every month and take stock of the condition of the forest, the offence committed and other hurdles encountered in protection of the forest. There will be detailed deliberation on all aspects of protection and regeneration of the forest and execution of the management plan.
(ii) The local Forester who is the Member-Secretary will prepare the agenda notes in advance for each meeting and he will keep the minutes of the meeting. The meeting of the Executive Committee can be convened either by the concerned Forester or by the Naib Sarpanch. In the absence of the Naib Sarpanch the committee members should nominate any one of them to preside over a meeting. The Naib Sarpanch may depute her representative to the meeting of the committee on her behalf will be two third of the total number of members.
(iii) The committee will actively associate itself with the concerned forest officials in carrying out all operations as per the approved management plan, in arranging labourers, in apprehending offenders and in starting legal action against them.

(iv) The committee will be the first forum for resolution of conflicts that may arise within the village and with other villages. Information / reports on the persons committing forest offence will be discussed in the monthly meeting of the committee and suitable action as deemed proper will be initiated by the committee. Where the committee cannot amicably resolve any conflict or check any offence or restrain any offender, it shall bring the same to the concerned Forest Range Officer, with its recommendation of action to be taken.
(v) The Committee shall assist the forest officials in carrying out various silvicultural operations, intermediate and final fellings in accordance with the management plan and in distribution of the forest produce among the villagers.
(vi) Divisional Forest Officer / Assistant Conservator of Forests / Forest Range Officers will frequently familiarize themselves with the work of each committee, and may give guidance from time to time for proper functioning of the committee which will be binding on the committee members.

10. Role of the Forest Department

(i) The Range Officer will have the freedom to attend the meeting of the Executive Committee and those of the Samiti, to participate in their discussions and tender advice. He would have no voting right. The Forester concerned shall maintain the records of all meetings.
(ii) The DFO shall have the over all responsibility for implementation of the scheme, including formation of the Samiti and constitution of the Executive Committee.
(iii) The DFO will be responsible for preparation of the Joint Management Plan for the forest areas providing for the local people's requirements and wishes in the plan. It will be his responsibility to see that the approved programmes as per the JFM plan are properly executed associating the executive committee at each stage.
(iv) The Forest Officials will take suitable and immediate action against cases of forest offence brought to their notice by the Samiti or Executive Committee members.
(v) If the work of the Executive Committee found to be detrimental to protection / regeneration or proper management of the forest, the DFO shall record his findings, and he may dissolve the Executive Committee. On dissolution of the Executive Committee a meeting of the Samiti shall be convened to constitute a new Committee. The DFO may also remove any particular member from the Executive Committee if he is satisfied about the validity of the charges against the said member. Any such action of the DFO is appealable to the concerned Conservator of Forest whose decision shall be final.

11. Role of the Gram Panchayat

(i) The Gram Panchayat in whose jurisdiction the scheme will be in operation would be advised to have a committee on Joint Forest Management. The subcommittee will review once in a quarter, the functioning of the Vana Samrakshana Samiti in general and particularly whether the responsibilities cast on the parties in the MOUs were being discharged satisfactorily. The Gram Panchayat would keep the concerned DFO apprised of the working of the Scheme from time to time.

12. Joint Forest Management Plan

(i) The ACF / Range Officer concerned will prepare a Joint Forest Management Plan by carrying out micro planning exercise. The objective of the plan will be to identify the measures necessary to increase productivity of the forest so as to cater to the demand for traditional forest products in that area particularly fuel, fodder, bamboo and timber

requirement of the local people. Due emphasis will be laid on maintaining the standing biomass, its diversity and on increasing the availability of non timber forest products. If necessary, the DFO may convene a meeting of the Vana Samrakshana Samiti where he will explain the contents of the proposed management plan to the members clearly and obtain their comments and suggestions. The DFO shall also take the opinion and suggestions of the Executive Committee before submitting any plan for approval. Each plan will be scrutinized, corrected, modified if necessary, and approved by a technical committee headed by the territorial Conservator of Forests, and comprising the DFO, WPO and the Deputy Director, Social Forest Project. The Joint Forest Management plan will be prepared for a period of ten years.

ii) Soil and water conservation measures shall form an integral part of the micro plan.

iii) The plan will prescribe community based protection measures and work out the involvement of labour inputs including free labour to be contributed by the Samiti members. The executive committee shall assign specific duties and responsibilities to different members of the Samiti for smooth implement of the Management Plan. In respect of any wage employment to be created in accordance with the Management Plan, the members of the Samiti will have the first preference.

iv) The implementation of the plan programme will be the responsibility of the Range Officer with active assistance and participation of the executive committee.

v) The Management Plan will give the following details

a) Area to be naturally regenerated, and species expected to regenerate and establish in the area.

b) Action Programme for restocking the area and covering the gaps.

c) Nature and model of plantation and choice of species. Socially useful trees like Neem, Mohua, Myrobolans, fruit bearing trees like Mango, Jackfruit, Kendu, Tamarind and Bamboo plants must be planted in reasonable number in consultation with the Samiti.

d) Details of soil and moisture conservation measures.

e) Demarcation of boundaries, watch and ward and maintenance of plantations.

13. **Financial Arrangement**

Government will bear the expenditure to be incurred for implementing the Joint Management Plan through the Forest Department. Financial assistance may be availed in shape of grant in aid from the NAEDB of the Ministry of Environment and Forest of Government of India, and assistance from Social Welfare Institutions, Industrial and commercial houses, and foreign donor agencies.

14. **Usufructuary benefits**

(i) The Vana Samrakshana Samiti will enjoy usufructoary benefits provided it discharges its duties and responsibilities as laid down in the scheme. Further duties and responsibilities in the task of regeneration and protection of the forests may also be cast on the Samiti / Committee from time to time. The Executive Committee will be responsible for distribution of the usufructs equally among the members, each household being treated as one member. If a particular household has not discharged the duties and responsibilities assigned to him, the executive committee may lessen or do away with its share.

(ii) Usufruct like leaves, fodder, grasses, thatch grasses, broom grasses, thorny fencing materials, brush wood and fallen lops and tops and twigs used as fuel wood shall be available to the members free of cost. Other usufructs like leased out minor forest produce, kendu

leaves etc can be collected by the members, but these will have to be delivered to the departmental agency or lessee against payment of prescribed wages for the collection and delivery.

(iii) All intermediate yield in shape of small wood, poles, firewood etc as may be obtained in silvicultural operations will be equitably distributed among the members by the executive committee.

(iv) Timber and poles as may be obtained from a major harvest or final felling shall be shared between the forest department and the Vana Samrakshana Samiti in equal shares. The executive committee on behalf of the Samiti will have the option either to distribute the said 50% of the total produce among the members of the Samiti in equal shares or to request the Forest Department to dispose of the same and make the net sale proceeds available for distribution in cash among the members.

(v) In respect of the village wood lots and other Social Forestry Plantation raised under the SIDA Forestry Project on land which has been notified as village forest and brought under Joint Forest Management, village community shall be entitled to 100% usufructs including final harvest of the plantation. When the area is subsequently planted or regenerated in a second rotation, usufructuary benefits will however be as prescribed in the proceeding para 14 (i) to (iv).

15. **Memorandum of understanding**

Vana Samrakshana Samiti through its executive committee shall executive an MOU with the concerned Divisional Forest Officer for active participation in the task of protection, regeneration and management of the forest area and for implementation of the programmes as per the Joint Management Plan. The members of the Samiti will be allowed to remove fallen and dry branches, leaves, grass, various usufructs of the trees, free of charge after execution of the MOU. The villagers will be eligible for getting further benefits under the scheme in shape of the share in the final harvest after successful implementation of the scheme continuously for five years. The MOU shall be in the following form.

We, the members of the executive committee of the Vana Samrakshana Samiti of village do hereby undertake individually and collectively to perform the duties and shoulders the responsibilities as detailed in the resolution No. 16700 / F&E dated 03 / 07 / 1993 of the Forest and Environment Department, Government of Orissa, for proper protection and regeneration of the degraded forest area as per the schedule given here under Schedule.

1. Name of the Vana Samrakshana Samiti
2. District or Forest Division
3. Subdivision or Forest Range
4. Police Station
5. Village
6. Name of the Forest Block
7. Legal status of the Forest land
8. Area (Hectare) of the Forest Land
9. Boundaries of the area

North	East
South	West

We understand that the usufructuary benefits as detailed in the aforesaid resolution shall be allowed only upon satisfactory observance of the duties, responsibilities and functions by this executive committee and by the members of the Vana Samrakshana Samiti as per the aforesaid resolution.

A copy of the aforesaid resolution is annexed herewith duly signed by us one every page in proof / evidence of our having read / understood the same in letter and sprit. It is hereby agreed that this MOU will come in to effect from……

Signature of the members of the Executive Committee		Signature of the Witnesses	
Name and address	Signature with date	Name and address	Signature with date
1.		1.	
2.		2.	
3.		3.	
4.		4.	
5.		5.	
6.		6.	

Signature of the Local Forest Officers

Sl.	Designation	Name	Signature with date
1.	DFO		
2.	ACF		
3.	Forest Range Officer		
4.	Forester		
5.	Forest Guard		

16. **Steering Committee**

There shall be a Steering Committee at the State level which will meet once in a quarter to guide and direct the operation of the scheme. It will hold extensive deliberations on specific problems and hurdles faced in implementation of the scheme. It will take up review to identify good points and shortcomings and to amend rules and regulations to steer the course of events in a positive direction. The Steering Committee shall be headed by the Minister, Forest as the Chairman, and will have the following ten members.

1.	Secretary to Government of Orissa Forest & Environment Department	Member
2.	Principal Chief Conservator of Forests	Member
3.	Director, Social Forestry Project	Member
4.	Two Officers of the rank of CCF/ Addl. CCF / Conservator of Forests to be nominated by the Forest Department	Members
5.	Conservator of Forests, Development Circle	Member Secretary
6.	Any two activists in the field of JFM selected by Government	Members
7.	Two non official Experts nominated by Government	Members

Once nominated to the Steering Committee the incumbent will have tenure of two years.

17. This supersedes FF & AH Department Resolution No. 29525 - 10 F (Pron) 4 / 90 FF &AH dated 11th December, 1990.

ORDER

Ordered that the Resolution be published in the extraordinary issue of the Orissa Gazette

By order of the Governor
Himansu Sekhar Sarkar
Commissioner-Cum-Secretary To Government

N.B. Amendments made vide No. 10 F (Pron) - 1 / 94. 14292 / F &E Bhubaneshwar, dated 4. 8. 94 and No. F (TR) - 1 / 94 .227 / 6 / F & E (Policy & Law) dated Bhubaneshwar 7.12.94 notifications is included.

Appendix - XIV

Criteria and Indicators under Bhopal India process for Sustainable Forest Management

Sustainable Forest Management (SFM) is defined as process of managing permanent forest land to achieve one of more clearly specified objectives of forest management with regard to the production of a continuous flow of desirable forest products and services without undue reduction of its inherent value and future productivity and without undue undesirable effects on the physical and social environment.
Working plans are a means to operationalise SFM and to ensure the maintenance of Ecosystem Integrity and Social Wellbeing. **Principle** is a fundamental truth or law as the basis of reasoning or action. **Criterion** is an aspect that is considered important by which sustainable forest management may be assessed. A criterion is accompanied by a set of related indicators. **Indicator** is a quantitative, qualitative or descriptive attribute that when periodically measured or monitored, indicates the direction of change.

The Criteria and Indicators (C&I) are applicable at the National, State/Division or Forest Management Unit (FMU) level. The following is the refined set of C&I of the Bhopal India Process (2000) developed through the Indian Institute of Forest Management, Bhopal.

Criteria		Indicators	Data Availability	FMU	National
Criterion 1: Increase in the extent of forest and tree cover	1.1	Area and type of forest cover under (a) Natural forest	A	X	X
		(b) man-made forest (tree plantations)	A	X	X
	1.2	Forest area officially diverted for non-forestry purposes	A	X	X
	1.3	Forest area under encroachment	A	X	X
	1.4	Area of dense, open and scrub forests	A	X	X
	1.5	Tree cover outside forest area	C	X	X
Criterion 2: Maintenance, conservation and enhancement of biodiversity	2.1	Area of protected eco-systems (PAs)	A	X	X
	2.2	Number of (a) Animal and	B	X	X
		(b) Plant species	B	X	X
	2.3	Number and status of threatened species Animal	C	X	X
		(b) Plant species	C	X	X

	2.4	Status of locally significant species (a) Animal and	C	X	-
		(b) Plant species	C	X	-
	2.5	Status of species prone to over exploitation	C	X	X
	2.6	Status of non-destructive harvest of wood and Non-Wood Forest Produce	B	X	X
Criterion 3: Maintenance and enhancement of ecosystem function and vitality	3.1	Status natural regeneration	A	X	X
	3.2	Incidence of forest fires	A	X	X
	3.3	Extent of livestock grazing (a) Forest area open for grazing	A	X	X
		(b) Number of livestock grazing in Forest	B	X	X
	3.4	Occurrence of weeds in forest (a) Area	B	X	X
		(b) Weed type	B	X	X
	3.5	Incidences of pest and diseases	B	X	---
Criterion 4: Conservation and maintenance of soil and water resources	4.1	Area under watershed treatment	A	X	X
	4.2	Area prone to soil erosion	B	X	X
	4.3	Area under ravine, saline, alkaline soils and deserts (hot and cold)	B	X	X
	4.4	Soil fertility/Site Quality	C	X	X
	4.5	(a) Duration of water flow in the selected streams	B	X	---
		(b) Ground water in the vicinity of the forest areas	B	X	---
Criteria 5: Maintenance and Enhancement of Forest Resource Productivity	5.1	Growing stock of wood	A	X	X
	5.2	Increment in volume of identified species of wood	C	X	X
	5.3	Efforts towards enhancement of forest productivity: (a) Technological inputs	A	X	X
		(b)Area under Hi-tech plantations	A	X	X
		(c) Area under Seed Production areas, Clonal Seed Orchards etc.	A	X	X
Criteria 6: Optimization of forest resource utilization	6.1	Recorded removal of wood	A	X	X
	6.2	Recorded collection of Non-Wood Forest Produce	A	X	X

	6.3	Efforts towards reduction of wastages of forest products	C	X	X
	6.4	Aggregate and per capita consumption of Wood and Non-Wood Forest Produce	B	X	X
	6.5	Direct employment in forestry and forest based industries	B	X	X
	6.6	Contribution of forests to the income of forest dependent people	B	X	X
	6.7	Demand and Supply of Wood and Non-Wood Forest Produce	C	X	X
	6.8	Import and Export of wood and Non-Wood Forest Produce	A	---	X
Criteria 7: Maintenance and enhancement of social, cultural and spiritual benefits	7.1	(a) Number of JFM committees and areas(s) protected by them	A	X	X
		(b) Degree of people's participation in management and benefit-sharing	A	X	X
		(c) Level of participation of women	A	X	X
	7.2	Use of indigenous technical knowledge: Identification, Documentation and application	A	X	---
	7.3	Quality and extent to which concessions and privileges are provided	A	X	X
	7.4	Extent of cultural/ sacred protected landscapes: forests, trees, ponds, streams, etc. (a) Type and area of landscape	A	X	X
		(b) Number of visitors	A	X	X
Criteria 8: Adequacy of Policy, Legal and Institutional framework	8.1	Existence of policy and legal framework	A	X	X
	8.2	Number of forest related offences	A	X	X
	8.3	Level of investment in Research and Development	A	X	X
	8.4	Human resource capacity building efforts	A	X	X
		801			

	8.5	Forest Resource Accounting (a) Contribution of forestry sector to the GDP	B	X	X
		(b) Budgetary allocations to the forestry sector	B	X	X
	8.6	Monitoring and Evaluation mechanisms	B	X	X
	8.7	Status of information dissemination and utilization	B	X	X

Note:

A Indicator whose data are readily available in the official records

B Indicators whose data can be generated with some efforts and within the available resources.

C Indicators whose data require detailed research inputs.

X Applicability of Indicators

--- Non applicability of Indicator

(Source: Bhopal- India Process, Indian Institute of Forest Management)

Appendix – XV

RESOLUTION

Order No. 22180 / FE Bhubaneswar dated 30.09.1996

Subject :- Incentives to villagers for protection of forests and conferment of right to usufruct in respect of forests protected by villagers.

In our State it has been the policy of the Government to involve the villagers as partners in the task of protection of forests and rehabilitation of degraded forests in their locality. However, on account of uncertain tenure of the villagers on forests in general and forest produce in particular, satisfactory progress has not been achieved in this direction. In order to obtain active cooperation of the villagers in halting degradation of forests, it is necessary to confer specific rights in favour of the Village Communities in respect of various forest products. After careful consideration, Government has decided that right on the forest produce shall be conferred on the villagers in respect of the forest areas within the limits of the respective villages or situated adjacent to the villages. For this purpose, the concerned villagers have to form Vana Samrakshana Samiti through which they will exercise their right to control and management over the forest in question, which will also be notified as Village Forest for that village. To work out such a process of conferring collective right on the villagers, the management of the peripheral forests has to be village based, and the village has to be treated as the basic unit of management of such forests. All kinds of forests including degraded forests will be protected with the cooperation of the concerned villagers and in lieu of extending such cooperation, the villagers will be entitled to take from the forests various forest products to meet their bonafide requirements. The villagers of any particular village can exercise their collective right over the forest situated within the boundaries of the village or area notified as village forest for the village. The local forest officer will not allow villagers of other distant villages to collect firewood and other forest produce from such forests.

The scope of the collective right to be conferred on the village communities will be as follows:

a) The village community which has taken active part in the plantation and rehabilitation of village forests and in their protection and maintenance under the Social forestry project, or have been guarding and protecting forests situated within the boundaries of the village or adjacent to the village for a number of years will be conferred the responsibilities for control, management and protection of the forests in question. Which part of the forest in question located outside the boundaries of the village will come under the control of the village community will be decided taking into account the situation and other aspects of the surrounding villages. For this purpose, the boundaries of the forest area will be demarcated on the ground through durable marks and the said forest will be declared as the “village forest” for that village. Such work of demarcation of boundaries of village forests will be carried out in a formal manner by the Divisional Forest Officer, Sub-Collector and the Tahasildar concerned on the basis of a joint verification.

b) The local village community will have the primary right of usage and management of the forest notified as village forest. A management scheme will be prepared by the village community for the purpose, and the same will be approved by the DFO concerned.

As the village community takes responsibility for protection and management of the forests; it will get authority for regulating the usage of the said forest in accordance with the management scheme.

c) Each resident family who is a member of the village community will be eligible to gather wood and bamboo etc as may be available from the said forest area, free of any charges. The village community may allow any such collection by its members in its own authority. The village community may grant such permission keeping in view the state of forest and rules and regulations of management adopted for the same.

d) The members of the village community will have the full right to collection of non timber forest produce from the said forest area, the possession and storage of the same and for processing the products for preparation of their commodities. However, any such produce can be disposed of only to the lessees, agents or authorized officials of the Government at prices fixed for the same.

(Unofficial translation provided by Shri S. C. Mohanty, IFS, Special Secretary to Government, Forest & Environment Department, Orissa.)

Source: Joint Forest Management Update, 1998, Society for Promotion of Wastelands Development, New Delhi.

Appendix - XVI

List of Forest Dwellers to whom Patta has been issued under Forest Right Act, 2006 of Angul Forest Division.

PROFORMA

Name of the CD Block	Name & address of the person considered under FRA		Category of Tribal of Forest Dweller			Area settled (in Acres)					Remarks
						RF	PF	VF	PRF	Revenue Forest	
			SC	ST	Others						
ANGUL	1	Somanath Behera, Suresh Behera, Mohan Behera,Sukanti Behera, S/o- Late Balaram Behera,Bhanumati Behera, W/o- Balaram Behera, Dharani Behera, Krushana Behera.			Chasha	24.68	0	0	0	0	
ANGUL	2	Lochan Behera, H/o- Kanchan Behera, S/o- Nrupati Behera.		Kandha (Janjati)		0.60	0	0	0	0	
ANGUL	3	Hara Behera, W/o- Late Sarba Behera		-do-		1.55	0	0	0	0	
ANGUL	4	Kanhu Pradhan, Sanatan Pradhan,Anirudha Pradhan,S/o- Krupa Pradhan.		Kandh (ST)		3.7	0	0	0	0	
ANGUL	5	Meghini Pradhan, W/o- LatePabitra Pradhan, Kunu Pradhan, Mandakini Pradhan, Kadakambini Pradhan S/o- Pabitra Pradhan.			Chasha	1.25	0	0	0	0	
ANGUL	6	Sati Behera, W/o- Late Janak Behera,		Kandha		0.54	0	0	0	0	
ANGUL	7	Niranjan Pradhan, S/o- Late Satrughana Pradhan		-do-		1.44	0	0	0	0	
ANGUL	8	Ranjani Pradhan, W/o- Banamber Pradhan.		-do-		1.68	0	0	0	0	
CHHENDIPADA	9	Lachan Behera, Oger Kalia Behera, Santi Behera, Bulu Behera, S/o- Dhadrar Behera.		Kandha (ST)		6.52	0	0	0	0	
CHHENDIPADA	10	Kasi Bhoi, H/o- Benga Bhoi.		Khaira (ST)		0.68	0	0	0	0	
CHHENDIPADA	11	Kalu Singh, S/o- Nilamani Singh.		Ganda (ST)		0.45	0	0	0	0	
CHHENDIPADA	12	Subas Nayak, H/o- Subasini Nayak, S/o- Ganeswar Nayak.		Sabar (ST)		0.12	0	0	0	0	

CHHENDIPADA	13	Ratnakar Singh, H/o- Santilata Singh, S/o- Nilamani Singh.		Ganda (ST)		0.14	0	0	0	0	
CHHENDIPADA	14	Dina Pradhan, H/o- Kanchan Pradhan, S/o- Late sanu Pradhan.		Koda		0.13	0	0	0	0	
CHHENDIPADA	15	Arata Singh, H/o- Bilas Singh, S/o- Sudarsan Singh.		Ganda		0.26	0	0	0	0	
CHHENDIPADA	16	Basanta Behera, H/o- Kabita Behera, S/o- Sankar Behera.		Kandha		0.11	0	0	0	0	
CHHENDIPADA	17	Maharani Bhoi, W/o- Anata Bhoi, S/o- Bisa Bhoi.		Khaira		0.25	0	0	0	0	
CHHENDIPADA	18	Braji Nayak, H/o- Basanti Nayak, S/o- Podei Nayak.		Kandha		0.05	0	0	0	0	
CHHENDIPADA	19	Bilas Bhoi, W/o- Kastu Bhoi.		Kandha		3.63	0	0	0	0	
CHHENDIPADA	20	Indramani Dehury, H/o- Kuni Dehury, S/o- Late Raghu Dehury.		Koda		0.08	0	0	0	0	
CHHENDIPADA	21	Hara Pradhan, W/o- Kartika Pradhan.		Kandha (ST)		0.10	0	0	0	0	
CHHENDIPADA	22	Kedar Behera, H/o- Nilabati Behera, S/o- Sankar Behera.		Kandha (ST)		0.42	0	0	0	0	
CHHENDIPADA	23	Lambodar Behera, H/o- Damayanti Behera, S/o- Golekh Behera.		sabar (ST)		4.51	0	0	0	0	
CHHENDIPADA	24	Kaibaly Pradhan, H/o- Hira Pradhan, S/o- Khetra Pradhan.		Kandha		1.62	0	0	0	0	
CHHENDIPADA	25	Nabina Dehury, H/o- Kanchan Dehury, S/o- Raghu Dehury.		Koda		0.35	0	0	0	0	
CHHENDIPADA	26	Nilamani Sing, H/o- Sulochana Singh, S/o- Maharga Singh.		Ganda		4.33	0	0	0	0	
CHHENDIPADA	27	Kasturi Behera, W/o- Sankara Behera.		Kandha (ST)		0.08	0	0	0	0	
CHHENDIPADA	28	Fakirachandra Singh, H/o- Tuani Singh,S/o- Sanatan singh		Ganda (ST)		0.19	0	0	0	0	
CHHENDIPADA	29	Pati Singh,H/o- Jira Singh, S/o- Dusi Singh		Ganda (ST)		0.25	0	0	0	0	
CHHENDIPADA	30	Laxmi Dehury, /o- Late Krushan Dehury.		Koda (ST)		0.13	0	0	0	0	
CHHENDIPADA	31	Nirakar Dehury, H/o- Malati Dehury, S/o- Chaudhury Dehury.		Koda ST)		0.16	0	0	0	0	
CHHENDIPADA	32	Bisa Garnayak, H/o- Tuni Garnayak, S/o- Hrudananda Garnayak.		Ganda		0.29	0	0	0	0	

CHHENDIPADA	33	Kamar Singh, W/o- Champa Singh, Sudarsan Singh.		Ganda		0.18	0	0	0	0	
CHHENDIPADA	34	Sukumari Behera, W/o- Late Kandrapa Behera,		Kandha		0.1	0	0	0	0	
CHHENDIPADA	35	Sadananda Nayak, H/o- Labanga Nayak, S/o- Kartika Nayak.		Kandha		0.18	0	0	0	0	
CHHENDIPADA	36	Janak Dehury, H/o- Para Dehury, S/o- Chandra Dehury.		Koda		0.05	0	0	0	0	
CHHENDIPADA	37	Chaudhury Dehury, H/o- Tulasi Dehury, S/o- Daitary.		Koda (ST)		3.79	0	0	0	0	
CHHENDIPADA	38	Thengu Singh, H/o- Jhira Singh, S/o- Chandramai Singh.		Ganda (ST)		0.16	0	0	0	0	
CHHENDIPADA	39	Ketaki (Oraoh), BimalaNayak, W/o- Prakash Nayak		Sabar		0.13	0	0	0	0	
CHHENDIPADA	40	Gila Singh, W/o- Late Sanatan Singh,		Ganda (ST)		0.15	0	0	0	0	
CHHENDIPADA	41	Sarkas Nayak, H/o- Sara Nayak, S/o- Ganeswar Nayak.		Sabar		3.97	0	0	0	0	
CHHENDIPADA	42	Bari Behera, W/o- Late Siba Behera, S/o- Banmali Behera.		Kandha		1.02	0	0	0	0	
CHHENDIPADA	43	Sulachana Behera, W/o- Suresh behera S/o- Dukhishyam Behera.		Kandha		4.68	0	0	0	0	
CHHENDIPADA	44	Kulamani Singh, H/o- Lalita Singh, S/o- Late Bhulu Singh.		Ganda		4.16	0	0	0	0	
CHHENDIPADA	45	Padei Naik, Nila Nayak, S/o- Kartika Nayak.		Kandha		5.32	0	0	0	0	
CHHENDIPADA	46	Peju Behera, H/o- Sebati Behera, s/o- Golekha behera.		Sabar		0.08	0	0	0	0	
CHHENDIPADA	47	Sripati nayak, H/o- Jhari Nayak, S/o- Panu Nayak.		Sabar		0.09	0	0	0	0	
CHHENDIPADA	48	Sadei Nayak, H/o- Galhi Nayak, S/o- Karitik Nayak.		Kandha		0.43	0	0	0	0	
CHHENDIPADA	49	Sudhakar Singh, H/o- Pata Singh, S/o- Saratan Singh.		Ganda		6.75	0	0	0	0	
CHHENDIPADA	50	Kanhu Ch. Behera, H/o- Bijuli Behera, S/o- Sankar Behera.		Kandha (ST)		0.1	0	0	0	0	
TALCHER	51	Bichitra Nayak, Sulekha Nayak, S/o- Kalia Nayak		Khaira		0	0	0	0	0.25	
TALCHER	52	Promada Nayak, Tuni Nayak S/o- Kalia Nayak		-do-		0	0	0	0	0.25	
TALCHER	53	Damodar Behera, Golap Behera, S/o- Laxman Behera		Koda		0	0	0	0	0.20	

TALCHER	54	Ghasi Behera, Radha Behera, S/o- Laxman Behera		-do-		0	0	0	0	0.19	
TALCHER	55	Parma Pradhan, Bhabini Pradhan, S/o- Mochia Pradhan.		-do-		0	0	0	0	0.05	
TALCHER	56	Meghu Pradhan, Jauth Pradhan, S/o- Sukur Pradhan.		-do-		0	0	0	0	0.76	
TALCHER	57	Rama Pradhan, Late Jamuna Pradhan S/o- Rabi Ptradhan.		-do-		0	0	0	0	0.13	
TALCHER	58	Chera Pradhan,Sarojini Pradhan, S/o- Late Dukha Pradhan		-do-		0	0	0	0	0.26	
TALCHER	59	Bhima Pradhan, Late Padmabati Pradhan S/o- Gundicha Pradhan		-do-		0	0	0	0	0.38	
TALCHER	60	Hatua Pradhan, Asili Pradhan,S/o- Late Kathi Pradhan		-do-		0	0	0	0	0.80	
TALCHER	61	Ruhna Pradhan, Sabitri Pradhan, S/o- banamali Pradhan		-do-		0	0	0	0	0.34	
TALCHER	62	Dhulia Pradhan, Ragabati Pradhan, S/o- Chemta Pradhan		Koda		0	0	0	0	0.83	
TALCHER	63	Anda Pradhan, Biri Pradhan, S/o- Budhu Pradhan		-do-		0	0	0	0	0.28	
TALCHER	64	Binoda Ku. Behera,Nayani Pradhan, S/o- Budhu Pradhan		-do-		0	0	0	0	0.28	
TALCHER	65	Bagha Pradhan, S/o- Banmali Pradhan.		-do-		0	0	0	0	0.25	
TALCHER	66	Nakhia Pradhan, Draupadi Pradhan,S/o- Banmali Pradhan.		-do-		0	0	0	0	0.25	
TALCHER	67	Behera Pradhan, Bijuli Pradhan, S/o- Jagabandhu Pradhan.		-do-		0	0	0	0	0.38	
TALCHER	68	Keshab Pradhan,Meghni Pradhan, S/o- Banmali Pradhan		-do-		0	0	0	0	0.25	
TALCHER	69	Kuni Behera W/o- Late Dambaru Behera.		-do-		0	0	0	0	0.12	
TALCHER	70	Sara Pradhan,W/o- Late Jagannth Pradhan		-do-		0	0	0	0	0.26	
TALCHER	71	Udaya Ch. Pradhan, Santi Lata Pradhan, Dukha Pradhan		-do-		0	0	0	0	0.26	
TALCHER	72	Suresh behera, S/o- Hadibandhu behera		-do-		0	0	0	0	0.19	
TALCHER	73	Ramesh Pradhan, Dule pradhan S/o- Budhu Pradhan		-do-		0	0	0	0	0.19	
TALCHER	74	Mangul Behera, Malati behera, S/o- Bharat Behera		-do-		0	0	0	0	0.19	

TALCHER	75	Duryadhan Pradhan, kabita Pradhan, S/o- Budhu Pradhan		-do-		0	0	0	0	0.27	
TALCHER	76	Nanda Kishore Pradhan, bijuli Pradhan, S/o- Late Budhu Pradhan		-do-		0	0	0	0	0.27	
TALCHER	77	Pitei Pradhan, Kanak Kihan S/o- Gomani Pradhan.		-do-		0	0	0	0	0.05	
TALCHER	78	Purander Pradhan,Sulei Pradhan, S/o- Mochia pradhan		-do-		0	0	0	0	0.06	
TALCHER	79	Jayanti Pradhan Late Ashok Prakan, S/o- bana Pradhan.		-do-		0	0	0	0	0.13	
KANIHA	80	Budhan Sing Hensha, Champa Hensha S/o- Renka hensaha		Munda		0	0	0	0	2.00	
KANIHA	81	Champimunda, W/o- Madarai munda		-do-		0	0	0	0	1.90	
KANIHA	82	Champa Munda W/o- Sadhu Munda		-do-		0	0	0	0	2.00	
KANIHA	83	Chira dig munda H/o- Jatri dig Mundas S/o- Mochiram dig Munda.		-do-		0	0	0	0	2.14	
KANIHA	84	Naba munda H/o- srimati Munda, S/o- Basumunda.		-do-		0	0	0	0	0.40	
KANIHA	85	Balaram Munda, H/o- Jemamunda S/o- Raghu Munda.		-do-		0	0	0	0	4.06	
KANIHA	86	Dulu Handi S/o- Tunuka Handi.		-do-		0	0	0	0	2.30	
KANIHA	87	Muchiram dig Munda H/o- Mani Munda, S/o- Rama Munda.		-do-		0	0	0	0	1.88	
KANIHA	88	Saluka Soren, H/o- Turi Soren, S/o- Paikira Soren		Santal		0	0	0	0	1.50	
KANIHA	89	Bagun Hanhaga, H/o- Smt. Honhaga, S/o- Tunku Honhaga.		Munda		0	0	0	0	0.70	
KANIHA	90	Pradha Munda, H/o- Sunei Munda.				0	0	0	0	2.50	
KANIHA	91	satrughan Behera, Baidyanath Behera, Kuntala Behera H/o- Satrughan Behera, H/o- Badyanath Behera S/o- Anata behera.		Khaira		0	0	0	0	0.76	
KANIHA	92	Dasrath Birua, H/o- Jaga Birua, S/o- Ram Birua		Munda		0	0	0	0	3.12	
KANIHA	93	Mayadhar Bhoi, Aleich Bhoi, S/o- Kishori Bhoi		Khaira		0	0	0	0	1.50	
KANIHA	94	Kishore Bhoi H/o- Rabati Bhoi, S/o- Rabati Bhoi S/o- Kastu Bhoi.		-do-		0	0	0	0	1.50	
KANIHA	95	Mangal Soren, H/o- Durgi Soren, S/o- Sundra Soren.		Santala		0	0	0	0	1.50	

KANIHA	96	Thakur Mrumum H/o- Manakuo Mrumum S/o- Kamdas Mrumum		-do-		0	0	0	0	1.62	
KANIHA	97	Butan Soren Hira Soren,S/o- Sundra Soren		-do-		0	0	0	0	1.50	
KANIHA	98	Jayapal Kerai, H/o- Smt. Kerai, S/o- Lemenda Kerai.		Munda		0	0	0	0	0.42	
KANIHA	99	Gangaram Birua, H/o- Sombari Birua, S/o- Jurei Birua.		Kolha		0	0	0	0	0.62	
KANIHA	100	Gurubari Kerai, W/o- Late Budhu Kerai.		-do-		0	0	0	0	0.53	
KANIHA	101	Dusi Majhi, W/o- Indra Majhi, S/o- Dayal Majhi		Santal		0	0	0	0	1.25	
KANIHA	102	Bini Majhi, DulaiMajhi, D/o- Sundra Majhi.		-do-		0	0	0	0	1.88	
KANIHA	103	Mishra Majhi, H/o- Buduni Majhi, S/o- Datu Majhi		-do-		0	0	0	0	1.45	
KANIHA	104	Ripan Majhi, Laxmi Majhi, D/o- Mishra Majhi.		-do-		0	0	0	0	1.36	
KANIHA	105	Phula Majhi, W/o- Dhan Majhi,S/o- Bhund Majhi.		-do-		0	0	0	0	1.70	
KANIHA	106	Chandra Majhi, H/o- Sambari Majhi, S/o- Binoda Majhi.		-do-		0	0	0	0	2.05	
KANIHA	107	Dasara Majhi, Sara majhi, S/o- Hundu Majhi.		-do-		0	0	0	0	0.90	
KANIHA	108	Dinu Majhi, Mada majhi, S/o- Ramrai Majhi.		-do-		0	0	0	0	0.72	
KANIHA	109	Chotaraya Majhi, Pana Majhi, S/o- Koili Majhi		-do-		0	0	0	0	1.20	
KANIHA	110	Sunaram Majhi,Jamuna Majhi S/o- Karan Majhi		-do-		0	0	0	0	1.10	
KANIHA	111	Rout Majhi, H/o- Delha Majhi, S/o- Raiya Majhi.		-do-		0	0	0	0	0.70	
KANIHA	112	Lochhaman Majhi, Sumi Majhi, S/o- Khetra Majhi.		-do-		0	0	0	0	1.00	
KANIHA	113	Kama Tudu, H/o- Basi Tudu, S/o- Anta Tudu.		-do-		0	0	0	0	1.60	
KANIHA	114	Dukhabandhu Majhi, S/o- Balaram Majhi.		-do-		0	0	0	0	1.50	
KANIHA	115	Suta Majhi, W/o- Rath Majhi.		Santal		0	0	0	0	1.75	
KANIHA	116	Dellha majhi, W/o- Ramchandra Majhi, S/o- Debilal Majhi.		-do-		0	0	0	0	1.10	
KANIHA	117	Ratnakar Majhi, H/o- Para Majhi, S/o- Jura Majhi.		-do-		0	0	0	0	1.59	

KANIHA	118	Okil Majhi, H/o- Sukanti Majhi, S/o- Kandey Majhi.		-do-		0	0	0	0	1.25	
KANIHA	119	Debilal Majhi, H/o- Bajayanti Majhi, S/o- Bidhan Majhi.		-do-		0	0	0	0	1.30	
KANIHA	120	Kirtan Majhi, H/o- Manhi Majhi, S/o- Tempo Majhi.		-do-		0	0	0	0	0.94	
KANIHA	121	Laxman Hasida, H/o- Basani Hasida, S/o- Nimbai Hasida.		-do-		0	0	0	0	1.20	
CHHENDIPADA	122	Lochan Behera, S/o- Nrupati Behera, of Village Karabira		Kandha janjati		1.60	0	0	0	0	Community hall
	123	Santi Behera, W/o- Late Janka Behera of Village Karabira									
ANGUL	124	Gramabasi of vill- Dahimal.		Kandha janjati		11.82	0	0	0	0	Community hall
G.TOTAL	**124**					**105.05 Acre**	**0**	**0**	**0**	**70.11 Acre**	
G.TOTAL	**124**					**42.51 Ha.**				**28.37 Ha**	**70.88 Ha.**

Eviction of Post-1980 (On or after 25.10.1980) ineligible encroachments from forest land for the ANGUL FOREST DIVISION OF ANGUL DISTRICT

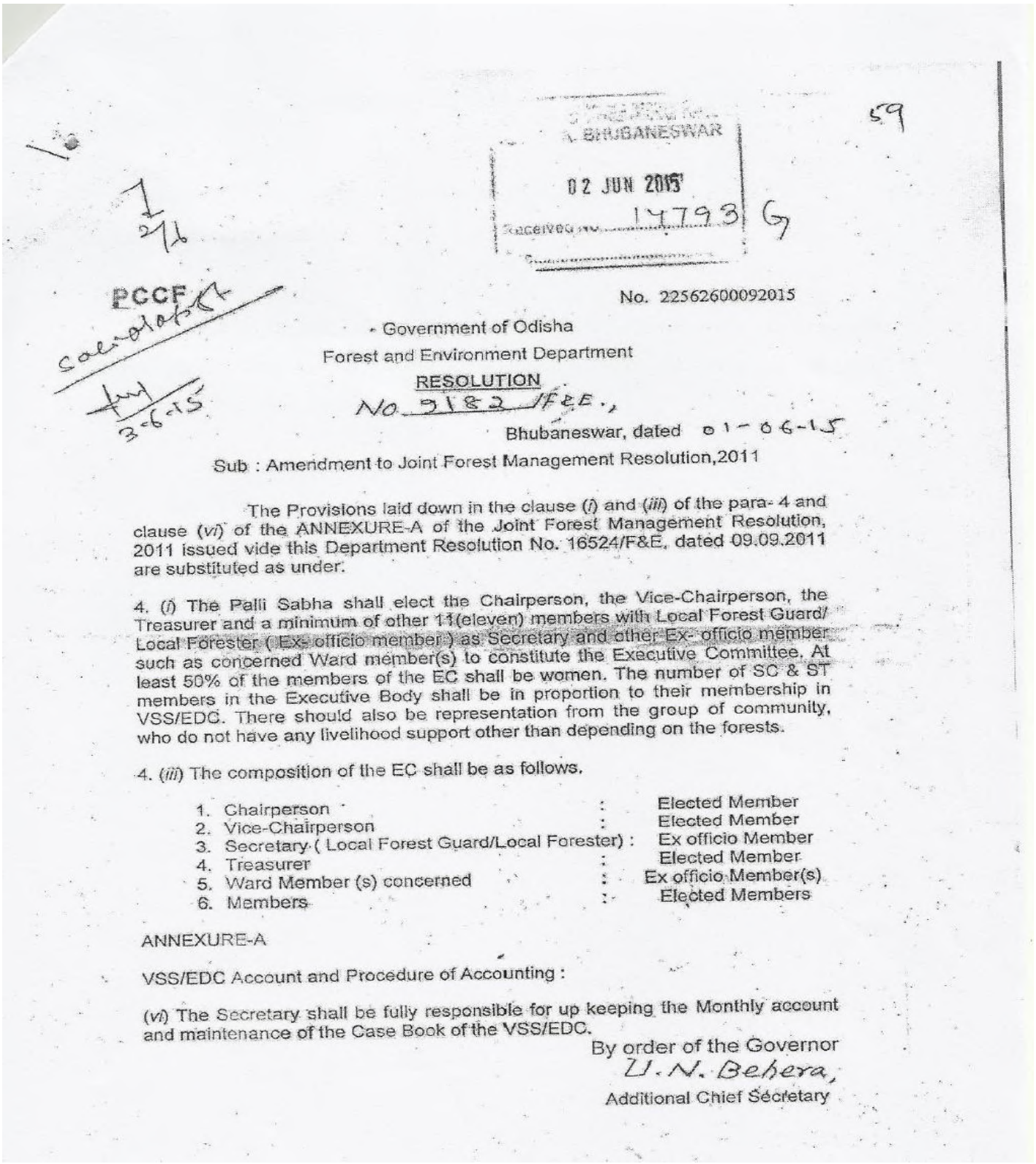
Sl. No.	Name of the Range	Name of the Forest Block	Total no. of Encroachers	Area encroached (in Ha.)	Case No Booked
Reserve Forest					
1	Talcher	Pedi RF	2	2.63	285(T) of 1981-82
2	Talcher	Pedi R.F	1	1.4	300(T) of 1981-82
3	Talcher	Badakathia R.F	2	0.02	47(T) of 1990-91
4	Talcher	Badakathia R.F	3	0.16	48(T) of 1990-91
5	Talcher	Badakathia R.F	4	0.2	49(T) of 1990-91
6	Talcher	Badakathia R.F	2	0.06	50(T) of 1990-91
7	Talcher	Badakathia R.F	1	0.32	38(T) of 1990-91
8	Talcher	Badakathia R.F	1	0.032	39(T) of 1990-91
9	Talcher	Badakathia R.F	2	0.032	46(T) of 1990-91
10	Talcher	Badakathia R.F	2	0.064	52(T)of 1990-91
11	Talcher	Badakathia R.F	2	0.08	53(T)of 1990-91
12	Talcher	Badakathia R.F	2	0.08	55 (T) of 1990-91
13	Talcher	Nialu, Lodhajhari, Sapakata R.F	5	1.62	269(T) of 1991-92
14	Talcher	Nialu, Lodhajhari, Sapakata R.F	4	4.45	270(T) of 1991-92
15	Talcher	Nialu, Lodhajhari, Sapakata R.F	6	4.85	271(T) of 1991-92
16	Talcher	Nialu, Lodhajhari, Sapakata R.F	5	5.26	272(T) of 1991-92
17	Talcher	Nialu, Lodhajhari, Sapakata R.F	5	3.64	273(T) of 1991-92
18	Talcher	Rakas RF	3	0.902	355(T) of 1998-99
19	Talcher	Baishnaba Rugudi R.F	1	0.40	257(T) of 2000-01
20	Talcher	Rakas RF	1	0.05	4(T) of 2001-02
21	Talcher	Rakas RF	1	1.00	5(T) of 2001-02
22	Talcher	Rakas RF	8	1.00	10(T) of 2001-02
23	Talcher	Rakas RF	2	0.08	66(T) of 2001-02
24	Talcher	Rakas RF	1	0.75	43(T) of 2001-02
25	Talcher	Gopalprasad R.F	3	0.01	65(T) of 2001-02
26	Talcher	Rakas RF	1	1.00	69(T) of 2001-02
27	Talcher	Rakas RF	1	1.00	169(T) of 2002-03
28	Talcher	Rakas RF	3	1.00	170(T) of 2002-03
29	Talcher	Rakas RF	1	0.048	341(T) of 2002-03
30	Jarapada	Chhendipada RF	2	0.20	152^{D} of 1983-84
31	Jarapada	Chhendipada RF	5	0.75	59^{D}of 1989-90
32	Jarapada	Sudgulaswar RF	1	1.00	83^{D} of 1992-93
33	Jarapada	Antulia-Tabada RF	1	0.60	584D of 1993-94
34	Jarapada	Chhendipada RF	1	0.40	119D of 1998-99
35	Jarapada	Katada RF	2	0.81	25D of 2000-01
36	Jarapada	Katada RF	8	1.62	23D of 2000-01
37	Jarapada	Katada RF	6	0.40	24D of 2000-01

38	Jarapada	Katada RF	6	1.62	22D of 2000-01
39	Jarapada	Katada RF	3	0.81	26D of 2000-01
40	Jarapada	Katada RF	5	1.21	27D of 2000-01
PRF					
1	Jarapada	Bhagatpur PRF	6	2.83	124D of 96-97
2	Jarapada	Bhagatpur PRF	1	2.02	125D of 96-97
KHESRA FOREST					
1	Talcher	Seepur KF	1	0.08	259(T) of 1998-99
2	Talcher	Seepur K.F	1	0.097	258(T) of 1998-99
3	Talcher	Sankarpur K.F	2	1.41	144(T) of 2000-01
4	Purunakote	Jaganathpur KF	2	1.5	3PK of 1995-96
DPF					
1	Jarapada	Para DPF	1	0.05	591 D of 1993-94
Grand Total			**129**	**49.57**	

Eviction of Pre-1980 (Before 25.10.1980) ineligible encroachments from forest land for the ANGUL FOREST DIVISION OF ANGUL DISTRICT

Sl.No.	Name of the Range	Name of the Forest Block	Total no. of Encroachers	Area encroached (in Ha.)	Case No Booked
Reserve Forest					
1	Talcher	Gopalprasad R.F	1	0.40	230(T) of 1969-70
2	Jarapada	Antulia-Tabada RF	1	0.10	723[D] of 1976-77
DPF					
1	Angul	Badkerjang DPF	1	1.00	361pg of 1974-75
2	Angul	Badkerjang DPF	1	1.50	362pg of 1974-75
3	Angul	Kerjanga DPF	1	1.50	363pg of 1974-75
4	Angul	Kerjanga DPF	1	1.50	364pg of 1974-75
5	Angul	Kerjanga DPF	1	2.00	365pg of 1974-75
6	Angul	Kerjanga DPF	1	2.00	366pg of 1974-75
7	Angul	Kerjanga DPF	1	2.00	456pg of 1974-75
8	Angul	Kerjanga DPF	1	1.50	457pg of 1974-75
9	Angul	Kerjanga DPF	1	2.00	458pg of 1974-75
10	Angul	Kerjanga DPF	1	2.00	459pg of 1974-75
11	Angul	Kerjanga DPF	1	1.00	647pg of 1974-75
12	Angul	Kerjanga DPF	1	1.5	648pg of 1974-75
13	Angul	Kerjanga DPF	1	2.00	649pg of 1974-75
14	Angul	Kerjanga DPF	1	1.50	650pg of 1974-75
15	Angul	Kerjanga DPF	1	1.50	651pg of 1974-75
16	Angul	Kerjanga DPF	1	2.50	652pg of 1974-75
17	Angul	Kerjanga DPF	1	1.50	653pg of 1974-75
18	Angul	Kerjanga DPF	1	1.50	654pg of 1974-75
19	Angul	Kerjanga DPF	1	1.50	658pg of 1974-75
20	Angul	Kerjanga DPF	1	2.00	659pg of 1974-75
21	Angul	Kerjanga DPF	1	1.50	660pg of 1974-75
22	Angul	Kerjanga DPF	1	0.40	301pg of 1975-76
23	Angul	Kerjanga DPF	1	0.36	302pg of 1975-76
24	Angul	Kerjanga DPF	1	0.40	303pg of 1975-76
25	Angul	Kerjanga DPF	1	0.40	304pg of 1975-76
26	Angul	Kerjanga DPF	1	0.40	305pg of 1975-76
27	Angul	Kerjanga DPF	1	0.32	306pg of 1975-76
28	Angul	Kerjanga DPF	11	5.00	332pg of 1975-76
29	Jarapada	Marudhip DPF	24	2.40	437D of 1972-73
30	Jarapada	Pathargarh DPF	9	4.80	277[D] of 1976-77
31	Jarapada	Para DPF	1	0.61	310[D] of 1977-78
			74	**50.59**	

Appendix - XVII



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BHUBANESWAR
02 JUN 2015
Received No. 14793 G

PCCF

No. 22562600092015

Government of Odisha
Forest and Environment Department

RESOLUTION

No. 9182 /F&E.,

Bhubaneswar, dated 01-06-15

Sub : Amendment to Joint Forest Management Resolution,2011

The Provisions laid down in the clause (*i*) and (*iii*) of the para- 4 and clause (*vi*) of the ANNEXURE-A of the Joint Forest Management Resolution, 2011 issued vide this Department Resolution No. 16524/F&E, dated 09.09.2011 are substituted as under.

4. (*i*) The Palli Sabha shall elect the Chairperson, the Vice-Chairperson, the Treasurer and a minimum of other 11(eleven) members with Local Forest Guard/ Local Forester (Ex- officio member) as Secretary and other Ex- officio member such as concerned Ward member(s) 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.

4. (*iii*) The composition of the EC shall be as follows.

1.	Chairperson	: Elected Member
2.	Vice-Chairperson	: Elected Member
3.	Secretary (Local Forest Guard/Local Forester)	: Ex officio Member
4.	Treasurer	: Elected Member
5.	Ward Member (s) concerned	: Ex officio Member(s)
6.	Members	: Elected Members

ANNEXURE-A

VSS/EDC Account and Procedure of Accounting :

(*vi*) The Secretary shall be fully responsible for up keeping the Monthly account and maintenance of the Case Book of the VSS/EDC.

By order of the Governor
U. N. Behera,
Additional Chief Secretary

Detail information on Joint Forest Management (V.S.S) of Angul Division

Sl No	Name of the V.S.S.	Section	Range	G.P.	Legal status		Area assigned to VSS in ha.	Whether registered with D.F.O.	Registration No.	Registered under Society Act	Total house hold of VSS	Fund released during the year	Purpose	Whether MOU signed & Date with No.	Whether micro plan prepared
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CHHENDIPADA RANGE															
1	Bahalasahi	Chendipada-I	Chhendipada	Chhendipada	Kankurpal	R.F.	128.000	yes	C1D1R1S1V01	No	92		Plantation&E.P.A.	1923 dt.15.04.05	Yes
2	Chhendipada Banadurga	Chendipada-I	Chhendipada	Chhendipada	Chhendipada	R.F.	200.000	Yes	C1D1R1S1V02	No	206		OFSDP-I Phase	6906 dt.08.12.03	Yes
3	Chhendipada MaaHingula	Chendipada-I	Chhendipada	Chhendipada	Chhendipada	R.F.	200.000	Yes	C1D1R1S1V03	No	201		OFSDP-I Phase	6610 dt. 25.11.03	Yes
4	Chhendipada MaaVimla	Chendipada-I	Chhendipada	Chhendipada	Chhendipada	R.F.	200.000	Yes	C1D1R1S1V04	No	209		OFSDP-I Phase	6900 dt8.12.03	Yes
5	Chhendipada Ramchandi	Chendipada-I	Chhendipada	Chhendipada	Chhendipada	R.F.	200.000	Yes	C1D1R1S1V05	No	210		OFSDP-I Phase	6902 dt8.12.03	Yes
6	Chhendipada Swapneswar	Chendipada-I	Chhendipada	Chhendipada	Chhendipada	R.F.	200.000	Yes	C1D1R1S1V06	No	200		OFSDP-I Phase	6904 dt8.12.03	Yes
7	Dahibar	Chendipada-I	Chhendipada	Chhendipada	Chhendipada	R.F.	95.000	Yes	C1D1R1S1V07	No	93		FDA-II Phase	6898 dt8.12.03	Yes
8	Kankurpal	Chendipada-I	Chhendipada	Changudia	Kankurpal	R.F.	70.000	Yes	C1D1R1S1V08	No	65		FDA-II Phase	Nil dt13.12.95	Yes
9	Karadabahali	Chendipada-I	Chhendipada	Brahmanbil	Chhendipada	R.F.	119.000	Yes	C1D1R1S1V09	No	158		FDA-II Phase	2934 dt24.06.05	Yes
10	Majhigohirapasi	Chendipada-I	Chhendipada	Chhendipada	Chhendipada	R.F.	90.000	Yes	C1D1R1S1V10	No	101		FDA-I Phase	4207 dt2.06.04	Yes
11	Chhotgolagadia	Chhenidpada-I	Chhendipada	Bahalasahi	Kankurapal	R.F.	113.000	Yes	C1D1R1S1V11	No	64		OFSDP-II Phase	2359 dt.11.05.06	Yes
12	Khamar	Chhenidpada-I	Chhendipada	Khamar	Dangapal	P.R.F	130.000	yes	C1D1R1S1V12	No	240		OFSDP-II Phase	111 dt 06.01.07	Yes
13	Raipal	Chhenidpada-I	Chhendipada	Patrapada	Dangapal	P.R.F	176.000	yes	C1D1R1S1V13	No	291		OFSDP-I Phase	682 dt. 02.02.07	Yes
14	Dangapal	Chhendipada-I	Chhendipada	Nuagaon	Dangapal	P.R.F	200.000	yes	C1D1R1S1V14	No	571		OFSDP-I Phase	3218 dt. 03.07.07	Yes
15	Vegidiha	Chhendipada-I	Chhendipada	Patrapada	Dangapal	P.R.F	100.000	yes	C1D1R1S1V15	No	72		OFSDP-I Phase	3216 dt.03.07.07	Yes
16	Kanloi-I	Chhendipada-I	Chhendipada	Patrapada	Kanloi	R.F	200.000	yes	C1D1R1S1V16	No	250		--	3713 dt.19.07.07	-
17	Kanloi-II	Chendipada-I	Chhendipada	Patrapada	Kanloi	R.F	165.000	yes	C1D1R1S1V17	No	190		--	3715 dt. 19.07.07	--
18	Tentoli-Kodasahi	Chendipada-I	Chhendipada	Tentoli	Chhendipada	R.F	142.000	yes	C1D1R1S1V18	No	409		OFSDP-I Phase	4679 dt. 13.09.07	Yes
19	Khuntanali	Chendipada-I	Chhendipada	Chhendipada	Chhendipada	R.F	34.000	yes	C1D1R1S1V19	No	44		--	4823 dt. 19.09.07	-
20	Karnapal	Chendipada-I	Chhendipada	Kanloi	Kankurpal	RF/KF	165.000	yes	C1D1R1S1V20	No	107		OFSDP-II Phase	5147 dt. 08.10.07	Yes
21	Bhaliasar	Chendipada-I	Chhendipada	Kanloi	Dangapal	PRF	100.000	yes	C1D1R1S1V21	No	65		OFSDP-I Phase	5797dt. 13.11.07	Yes
22	Bhatapal	Chendipada-I	Chhendipada	Kanloi	Kanloi	PRF	75.000	yes	C1D1R1S1V22	No	50		OFSDP-I Phase	5946dt. 17.11.07	Yes
23	Patrapada (Kalmal Sahi)	Chendipada-I	Chhendipada	Patrapada	Devinagar	PRF	150.000	yes	C1D1R1S1V23	No	339		OFSDP-III Phase	4681 dt. 10.08.09	Yes
24	Patrapada (Talamandali)	Chendipada-I	Chhendipada	Patrapada	Devinagar	RF	200.000	yes	C1D1R1S1V24	No	436		OFSDP-II Phase	4683 dt. 10.08.09	Yes
25	Patrapada (Gadavitar Sahi)	Chendipada-I	Chhendipada	Patrapada	Devinagar	PRF	150.000	yes	C1D1R1S1V25	No	250		OFSDP-II Phase	4679 dt. 10.08.09	Yes
26	Maa Kundie (Badaberna)	Chhendipada-I	Chhendipada	Chhendipada	Badaberna	KF	84.000	yes	C1D1R1S1V26	No	115		OFSDP-III Phase		
27	Pipalbahal	Chendipada-II	Chhendipada	Patrapada	Kanloi	R.F.	190.000	Yes	C1D1R1S2V01	No	246		OFSDP-I Phase	3084 dt24.06.03	Yes
28	Mundamalsahi	Chhenidpada-II	Chhendipada	Bahalasahi	Kankurpal	R.F	80.000	yes	C1D1R1S2V02	No	61		-	4957 dt. 07.10.06	-
29	KanloiRugudisahi	Chhendipada-II	Chhendipada	Kanloi	Kanloi	R.R	200.000	yes	C1D1R1S2V03	No	120		-	5070 dt. 11.10.06	-
30	Sarapal	Chhendipada-II	Chhendipada	Khamar	Dangapal	P.R.F	140.000	yes	C1D1R1S2V04	No	208		OFSDP-II Phase	233 dt.11.01.07	Yes
31	Jaripal	Chhendipada-II	Chhendipada	Nuagaon	Nunmati	PRF	95.000	yes	C1D1R1S2V05	No	79		OFSDP-I Phase	2396 dt. 17.04.09	Yes
32	Nunmati	Chhendipada-II	Chhendipada	Nuagaon	Nunmati	PRF	90.000	yes	C1D1R1S2V06	No	22		OFSDP-II Phase	2398 dt. 17.04.09	Yes
33	Nuagaon (Telisahi)	Chhendipada-II	Chhendipada	Nuagaon	Nunmati	PRF	95.000	yes	C1D1R1S2V07	No	134		OFSDP-II Phase	2400 dt. 17.04.09	Yes
34	Nuagaon	Chhendipada-II	Chhendipada	Nuagaon	Marudhip	RF	80.000	yes	C1D1R1S2V08	No	124		OFSDP-II Phase	2402 dt.17.04.09	Yes
35	Jaltap	Kosala	Chhendipada	Kosala	Jaltap	R.F.	200.000	Yes	C1D1R1S3V01	No	45		OFSDP-III Phase	8281 dt27.11.01	Yes
36	Kankarei	Kosala	Chhendipada	Kankarei	Jeypur	R.F.	200.000	Yes	C1D1R1S3V02	No	242		FDA-I Phase	8716 dt13.12.01	Yes
37	Kosala Chandannagar	Kosala	Chhendipada	Kosala	Kosala & Chakundapal	RF/ PRF	200.000	Yes	C1D1R1S3V03	No	296		-	7731 dt9.11.01	-
38	Kosala Chuanali	Kosala	Chhendipada	Kosala	Bahianali	R.F.	42.000	Yes	C1D1R1S3V04	No	79		-	8281 dt27.11.01	-
39	Kosala Jharsuguda	Kosala	Chhendipada	Kosala	Similisahi & Jaltap	R.F.	200.000	Yes	C1D1R1S3V05	No	336		OFSDP-III Phase	8616 dt12.12.01	Yes
40	Kosala Kansanali	Kosala	Chhendipada	Kosala	Kosala & Chakundapal	R.F. & P.R.F.	200.000	Yes	C1D1R1S3V06	No	321		OFSDP-III Phase	7731 dt9.11.01	Yes
41	Kosala Pidhasahi	Kosala	Chhendipada	Kosala	Khalpal & Jaypore	R.F.	200.000	Yes	C1D1R1S3V07	No	214		OFSDP-III Phase	8281 dt27.11.01	Yes
42	Kosala Similisahi	Kosala	Chhendipada	Kosala	Jayapur	R.F.	120.000	Yes	C1D1R1S3V08	No	122		-	8281 dt27.11.01	-

43	Santarabandha Bandhamunda	Kosala	Chhendipada	Brahmanbil	Kankurpal	R.F.	200.000	Yes	C1D1R1S3V09	No	205		OFSDP-II Phase	3060 dt29.06.05	Yes
44	Santarabandha Mahisamardani	Kosala	Chhendipada	Brahmanbil	Kankurpal	R.F.	200.000	Yes	C1D1R1S3V10	No	199		OFSDP-II Phase	3058 dt29.06.05	Yes
45	Takua	Kosala	Chhendipada	Brahmanbil	Jaltap	R.F.	120.000	Yes	C1D1R1S3V11	No	218		OFSDP-III Phase	2481 dt14.05.03	Yes
46	Durgapur Tangirisahi	Raijharan	Chhendipada	Durgapur	Durgapur	R.F.	200.000	Yes	C1D1R1S4V01	No	42		OFSDP-III Phase	7084 dt16.10.01	Yes
47	Kaunsi Dhipa	Raijharan	Chhendipada	Raijharan	Durgapur	R.F.	200.000	Yes	C1D1R1S4V02	No	100		-	7734 dt9.11.01	-
48	Korada	Raijharan	Chhendipada	Kuruda	Durgapur	R.F.	200.000	Yes	C1D1R1S4V03	No	355		supprot to VSS	2402 dt3.04.02	Yes
49	Nandichhoda	Raijharan	Chhendipada	Kuruda	Durgapur	R.F.	160.000	Yes	C1D1R1S4V04	No	160		supprot to VSS	2708 dt16.04.02	Yes
50	Putagadia	Raijharan	Chhendipada	Kuruda	Putagadia & Similipathar	R.F.	132.926	Yes	C1D1R1S4V05	No	136		FDA-II Phase	4742 dt20.07.01	Yes
51	Raijharan Pitabali	Raijharan	Chhendipada	Raijharan	Durgapur	R.F.	200.000	Yes	C1D1R1S4V06	No	111		-	8281 dt27.11.01	-
52	Raijharan RKCommittee	Raijharan	Chhendipada	Raijharan	Durgapur	R.F.	200.000	Yes	C1D1R1S4V07	No	54		FDA-I Phase	8716 dt13.12.01	Yes
53	Raijharan Tangirisahi	Raijharan	Chhendipada	Raijharan	Durgapur	R.F.	200.000	Yes	C1D1R1S4V08	No	170		-	8281 dt27.11.01	-
54	Sudarsanpur	Raijharan	Chhendipada	Badakerjang	Durgapur	R.F.	80.000	Yes	C1D1R1S4V09	No	55		-	1421 dt24.03.03	-
55	Banardiha	Raijharan	Chhendipada	Badakerjang	Durgapur	R.F	50.000	yes	C1D1R1S4V10	No	115		-	4006 dt. 04.08.07	-
56	Bhimabhoi (odakapa)	Raijharan	Chhendipada	Tukuda	Durgapur	RF	95.000	Yes	C1D1R1S4V11	No	116		OFSDP-III Phase		
	TOTAL						**8255.926**				**9713**				
	JARAPADA RANGE														
1	Kandhakoili	Antulia	Durgapur	Manikjodi	Antulia Tabeda	R.F.	195.45	Yes	C1D1R2S1V01	No	110		-	5226 dtd.23.07.04	-
2	Roadsingha	Antulia	Durgapur	Antulia	Antulia Tabeda	RF	200	yes	C1D1R2S1V02	No	133		-	2417 dt. 8.4.08	-
3	Badamul	Balipata	Durgapur	Katada	Similipathar	R.F.	73	Yes	C1D1R2S2V01	No	79		-	108 dtd. 06.01.05	-
4	Basantapur (Radhakrishan)	Balipata	Durgapur		Debinagar	RF	200	Yes	C1D1R2S2V07	No	216		-	655 dtd.14.02.06	-
5	Dahimal	Balipata	Durgapur	Katada	Similipathar	R.F	198.512	Yes	C1D1R2S2V02	No	52		-	7993 dtd. 16.11.04	-
6	Deunriajharan	Balipata	Durgapur	Basantpur	Debinagar	RF	200	Yes	C1D1R2S2V06	No	216		OFSDP-II Phase	762 dtd. 18.02.06	Yes
7	Ghuntulipasi & Dhaurakhman	Balipata	Durgapur	Basantpur	Debinagar	P.R.F.	200	Yes	C1D1R2S2V03	No	167		OFSDP-II Phase	Nil dtd. 19.12.95	Yes
8	Kisinda	Balipata	Durgapur	Balipata	Similipathar & Devinagar	R.F. & P.R.F.	174	Yes	C1D1R2S2V04	No	209		OFSDP-I Phase	1676 dtd. 21.03.05	Yes
9	Naupada	Balipata	Durgapur	Balipata	Similipathar	R.F.	200	Yes	C1D1R2S2V05	No	175		FDA-I Phase	7084 dtd. 16.10.01	Yes
10	Pitachari	Balipata	Durgapur	Balipata	Similipathar	RF	63.21	Yes	C1D1R2S2V06	No	36		OFSDP-I Phase	2415 dt. 8.4.08	Yes
11	Balikudia	Balipata	Durgapur	Balipata	Devinagar	PRF	200	yes	C1D1R2S2V07	No	336		OFSDP-II Phase	2412 dt. 17.04.09	Yes
12	Chandrapur	Balipata	Durgapur	Balipata	Devinagar / Chandrapur	PRF/KF	44.537	yes	C1D1R2S2V08	No	60		OFSDP-II Phase	2404 dt. 17.04.09	Yes
13	Balipata	Balipata	Durgapur	Balipata	Similpathar / Mudugola	RF/PRF	173.5	yes	C1D1R2S2V09	No	336		OFSDP-II Phase	2410 dt. 17.04.09	Yes
14	Bakala	Balipata	Durgapur	Katada	Simlipathar	RF	100.281	yes	C1D1R2S2V10	No	128		OFSDP-II Phase	2406 dt. 17.04.09	Yes
15	Dhurakhaman	Balipata	Durgapur	Machkota	Devinagar / Village Forest	PRF/ V.F	66.47	yes	C1D1R2S2V11	No	33		OFSDP-II Phase	2408 dt. 17.04.09	Yes
16	Durgapur	Jarpada	Durgapur	Durgapur	Durgapur	R.F.	200	Yes	C1D1R2S3V01	No	616		-	8281 dtd. 27.11.01	-
17	Durgapur Panasahi	Jarpada	Durgapur	Durgapur	Similipathar	R.F.	190	Yes	C1D1R2S3V02	No	211		OFSDP-I Phase	8281 dtd. 27.11.01	Yes
18	Jarapada	Jarpada	Durgapur	Jarapada	Arisulia-sulia	RF	149.84	Yes	C1D1R2S3V19	No	298		-	653 dtd. 14.02.06	-
19	Jereng Bhagirathipur	Jarpada	Durgapur	Jereng-Dehurisahi	Katada	R.F	135	Yes	C1D1R2S3V03	No	123		OFSDP-I Phase	5857 dtd. 06.08.02	Yes
20	Jereng Budhi Pahada	Jarpada	Durgapur	Jereng-Dehurisahi	Katada & Para	R.F. & P.R.F.	200	Yes	C1D1R2S3V04	No	83		OFSDP-I Phase	1248 dtd. 09.03.04	Yes
21	Jereng Dehurisahi	Jarpada	Durgapur	Jereng-Dehurisahi	Katada	R.F.	200	Yes	C1D1R2S3V05	No	165		FDA-I Phase	1441 dtd. 25.02.02	Yes
22	Jereng Nuasahi	Jarpada	Durgapur	Jereng-Dehurisahi	Similipathar	R.F	90	Yes	C1D1R2S3V06	No	115		OFSDP-I Phase	7340 dtd.15.10.04	Yes
23	Kandhakorada	Jarpada	Durgapur	Katada	Kandhakorada & Similipathar	R.F.	196	Yes	C1D1R2S3V07	No	35		supprot to VSS	7788 dtd.06.11.04	Yes
24	Kanjara	Jarpada	Durgapur	Kanjara	Pathargarh	P.R.F.	200	Yes	C1D1R2S3V08	No	490		FDA-I Phase	3272 dtd. 23.05.01	Yes
25	Katada (Dangadhar)	Jarpada	Durgapur	Katada	Katada	RF	200	Yes	C1D1R2S3V20	No	60		supprot to VSS	764 dtd. 18.02.06	Yes
26	Katada (Rudrakali)	Jarpada	Durgapur	Katada	Katada	RF	200	Yes	C1D1R2S3V21	No	102		FDA-II Phase	760 dtd. 18.02.06	Yes
27	Katada Dhaurabani	Jarpada	Durgapur	Katada	Similipathar	R.F	80	Yes	C1D1R2S3V09	No	79		FDA-I Phase	6332 dtd.01.09.04	Yes
28	Katada Gopalsahi	Jarpada	Durgapur	Katada	Katada & Similipathar	R.F.	240	Yes	C1D1R2S3V10	No	52		OFSDP-I Phase	71 dtd.19.01.01	Yes
29	Katada Mundamalasahi	Jarpada	Durgapur	Katada	Katada	R.F.	200	Yes	C1D1R2S3V11	No	82		FDA-II Phase	3098 dtd.25.06.03	Yes
30	Katadapenthei Durga	Jarpada	Durgapur	Katada	Katada	R.F.	200	Yes	C1D1R2S3V12	No	66		FDA-II Phase	1115 dtd. 19.03.04	Yes
31	Laximidharpur	Jarpada	Durgapur	Jereng-Dehurisahi	Similipathar	R.F.	200	Yes	C1D1R2S3V13	No	97		OFSDP-I Phase	720 dtd. 12.02.04	Yes
32	Para (Khambeswari)	Jarpada	Durgapur	Para	Para	DPF	200	Yes	C1D1R2S3V17	No	168		OFSDP-II Phase	651 dtd. 14.02.06	Yes
33	Para Banadurga	Jarpada	Durgapur	Para	Para	P.R.F.	190	Yes	C1D1R2S3V14	No	400		OFSDP-II Phase	4852 dtd. 12.09.05	Yes

34	Para	Jarpada	Durgapur	Para	Para	PR.F.	190	Yes	C1D1R2S3V15	No	200		-	4853 dtd. 12.09.05	-
35	Para Padhanpat	Jarpada	Durgapur	Para	Para	PR.F.	171	Yes	C1D1R2S3V15	No	128		OFSDP-II Phase	4851 dtd. 12.09.05	Yes
36	Ugi	Jarpada	Durgapur	Ugi	Pathargarh & Ugi	P.R.F. & KF	200	Yes	C1D1R2S3V16	No	417		FDA-I Phase	2201 dtd. 14.11.04	Yes
37	Patharapunji	Jarpada	Durgapur	Para	Para	DPF/ PRF	176	Yes	C1D1R2S3V22	No	200		OFSDP-I Phase	4540 dtd. 07.09.06	Yes
38	Jamunalisahi (Handigoda)	Jarpada	Durgapur	Tentuloi	Debinagar	PRF	150.47	Yes	C1D1R2S3V23	No	123		OFSDP-II Phase	4542 dtd. 07.09.06	Yes
39	Kanjara - II	Jarpada	Durgapur	Kanjara	Patharagarh	P.R.F	200	Yes	C1D1R2S3V24	No	186		OFSDP-II Phase	415 dt.19.01.07	Yes
40	Kumursingh	Jarpada	Durgapur	Jarapada	Katada / Para	RF / PRF	60	Yes	C1D1R2S3V25	No	42		OFSDP-III Phase	633 dt. 31.12.09	-
41	Budhapidha	Jarpada	Durgapur	Ugi	Patharagarh	RF	100	Yes	C1D1R2S3V26	No	137		OFSDP-III Phase	631 dt. 31.12.2009	-
42	Palashbania	Balipata	Durgapur	Balipata	Debinagar	PRF	130	Yes	C1D1R2S2V09	No	104		OFSDP-II Phase	4581 dtd. 08.09.06	Yes
43	Betar	Balipata	Durgapur	Ugi	Patharagarh	RF	199	Yes	C1D1R2S2V08	No	48		OFSDP-II Phase	4579 dtd. 08.09.06	Yes
44	Machkuta	Balipata	Durgapur	Machkota	Devi nagar	PRF	200	Yes	C1D1R2S2V14	No	475		OFSDP-III Phase	632.dt 31.12.2009	Yes
45	Baragotha	Antulia	Durgapur	Tanish	Bhakatapur, Dandasing	PRF	132	Yes	C1D1R2S1V03	No	43		-	4289 dt. 08.07.08	-
46	Baradihpa , Takarsingha	Antulia	Durgapur	Tanish	Antulia Tabeda	RF	192.27	Yes	C1D1R2S1V04	No	122		-	4269 dt. 02.07.08	-
47	Laxmanpur (Budha thakur)	Antulia	Durgapur	Antulia	Antulia Tabeda	RF	180.77	Yes	C1D1R2S1V05	No	67		-	4685 dt. 10.08.09	-
48	Maa Pitabali (Tabada)	Antulia	Durgapur	Antulia	Tabeda & Antulia	PRF / RF	186.35	Yes	C1D1R2S1V06	No	286		OFSDP-III Phase		
49	Bhagatpur	Antulia	Durgapur	Tanish	Dandasingha	PRF	101	Yes	C1D1R2S1V07	No	314		OFSDP-III Phase	635 dt. 31.12.2009	-
50	Budhathkur	Antulia	Durgapur	Antulia	Antulia Tabeda	RFKF	200	Yes	C1D1R2S1V08	No	303		OFSDP-III Phase	634 dt. 31.12.2009	-
	TOTAL						**8328.66**				**8723**				
	KANIHA RANGE														
1	Badagunduri	Kaniha-I	Kaniha	Bdagunduri	Badagunduri	K.F.	188.380	Yes	C1D1R3S1V01	No	140		FDA-I Phase	3828 dt26.07.00	Yes
2	Badatribida	Kaniha-I	Kaniha	Badatribida	Badakathia	K.F.	80.000	Yes	C1D1R3S1V02	No	120		OFSDP-III Phase	Nil dt12.07.01	Yes
3	Dandasingha	Kaniha-I	Kaniha	Kamarai	Kanheijena	R.F.	128.360	Yes	C1D1R3S1V03	No	55		OFSDP-I Phase	2337 dt30.03.02	Yes
4	Dereng Dehurisahi	Kaniha-I	Kaniha	Dereng	Jaghini & Bhana	R.F.& K.F.	81.000	Yes	C1D1R3S1V04	No	38		-	9608 dt20.12.02	-
5	Derenga Majhisahi	Kaniha-I	Kaniha	Derenga	Chandrapada	R.F.	200.000	Yes	C1D1R3S1V05	No	240		-	1545 dt22.03.04	-
6	Dhobapal	Kaniha-I	Kaniha	Santribida	Rabi-pur	R.F.	99.700	Yes	C1D1R3S1V06	No	57		OFSDP-II Phase	Nil dt12.07.01	Yes
7	Gandaberena-Purunasahi	Kaniha-I	Kaniha	Kamarai	Rabipur	R.F.	49.000	Yes	C1D1R3S1V07	No	25		-	1027 dt16.03.04	-
8	Harichandanpur	Kaniha-I	Kaniha	Badatribida	Badakathia	R.F.	200.000	Yes	C1D1R3S1V08	No	60		OFSDP-III Phase	7944 dt28.11.02	Yes
9	Tolakabeda	Kaniha-I	Kaniha	Kaniha	Patakhaman & Jabalpur	R.F. & V.F.	172.000	Yes	C1D1R3S1V09	No	82		OFSDP-II Phase	3765 dt26.07.05	Yes
10	Mohinipal	Kaniha-I	Kaniha	Dereng	Mohinipal	K.F.	98.320	Yes	C1D1R3S1V10	No	208		supprot to VSS	221 dt.10.01.07	Yes
11	Hanumanpur	Kaniha-I	Kaniha	Hanumapur	Kiajhar	R.F/K.F	200.000	yes	C1D1R3S1V11	No	115		OFSDP-I Phase	3689 dt. 18.07.07	Yes
12	Kaniha	Kaniha-I	Kaniha	Kaniha	Pitalhill	R.F/K.F	15.000	yes	C1D1R3S1V12	No	91		-	3687 dt. 18.07.07	-
13	Santribida-I	Kaniha-I	Kaniha	Santribida	Badakathia	R.F	170.000	yes	C1D1R3S1V13	No	100		OFSDP-III Phase	4230 dt. 17.08.07	Yes
14	Santribida-II	Kaniha-I	Kaniha	Santribida	Badakathia	R.F	160.000	yes	C1D1R3S1V14	No	98		OFSDP-III Phase	4232 dt. 17.08.07	Yes
15	Kaliadama	Kaniha-I	Kaniha	Balipasi	Kaliadama	V.F	104.700	Yes	C1D1R3S1V15	No	210		OFSDP-I Phase	4234 dt. 17.08.07	Yes
16	Ghantianali	Kaniha-I	Kaniha	Derang	Chandrapada	R.F	50.000	Yes	C1D1R3S1V16	No	381		FDA-II Phase	4530 dt. 04.09.07	Yes
17	Kamarei	Kaniha-I	Kaniha	Kamarai	Matharugudi	R.F	60.000	Yes	C1D1R3S1V17	No	110		FDA-II Phase	4820 dt. 19.09.07	Yes
18	Bhojpur	Kaniha-I	Kaniha	Hanumapur	Arakhadehi	RF/KF	172.000	Yes	C1D1R3S1V18	No	89		OFSDP-I Phase	5797dt. 13.11.07	Yes
19	Dalak	Kaniha-I	Kaniha	Dalak	Dhankoli	RF/KF	200.000	Yes	C1D1R3S1V19	No	49		OFSDP-I Phase	5991dt. 19.11.07	Yes
20	Gunduri	Kaniha-I	Kaniha	Bajrakote	Dhankoli	RF/KF	105.000	Yes	C1D1R3S1V20	No	75		OFSDP-I Phase	5950dt. 17.11.07	Yes
21	Kakudia	Kaniha-I	Kaniha	Kakudia	Kakudia	KF	50.000	Yes	CIDIR3SIV21	No	237		-	7032 dt. 03.11.08	-
22	Purunapani	Kaniha-I	Kaniha	Kumunda	Badakathia	RF	100.000	Yes	CIDIR3SIV23	No	266		OFSDP-III Phase		
23	Mardahariharpur	Kaniha-I	Kaniha	Kumunda	Badakathia	RF	95.000	Yes	CIDIR3SIV24	No	149		OFSDP-III Phase		
24	Brihapur	Kaniha-I	Kaniha	Badatribida	Brihapur	KF	130.000	Yes	CIDIR3SIV25	NO	87		OFSDP-III Phase		
25	Santribida (Mahasindhu)	Kaniha-I	Kaniha	Santribida	Badakathia	RF	100.000	Yes	CIDIR3SIV26	No	227		OFSDP-III Phase		
26	Santribida (Mohanpada)	Kaniha-I	Kaniha	Santribida	Badakathia	RF	145.000	Yes	CIDIR3SIV27	NO	100		OFSDP-III Phase		
27	Sardhapur	Kaniha-I	Kaniha	Badatribida	Sardhapur	RF	90.000	Yes	CIDIR3SIV28	No	146		OFSDP-III Phase		
28	Maa hingula (Kumunda)	Kaniha-I	Kaniha	Kumunda	Badakathia	RF	95.000	Yes	CIDIR3SIV29	No	443		OFSDP-III Phase		

29	Jogeswar (Kumunda)	Kaniha-I	Kaniha	Kumunda	Badakathia	RF	84.000	Yes	CIDIR3SIV30	No	233		OFSDP-III Phase		
30	Santrabandha	Kaniha-I	Kaniha	Kakudia	Santrabandha	RF	150.000	Yes	CIDIR3SIV31	NO	167		OFSDP-III Phase		
31	Bainda	Kaniha-I	Kaniha	Bandagunduri	Bainda	VF	73.230	Yes	CIDIR3SIV32	No	435		-		
32	Kakudia(Harijan Sahi)	Kaniha-1	Kaniha	Kakudia	Kakudia	K.F.	33.140	Yes	CIDIR3SIV33	No	95		-	6257 dt.9.9.10	Yes.
33	Sarathipal	Kaniha-II	Kaniha	Kaniha	Purunapani	K.F.	76.400	Yes	C1D1R3S1V11	No	82		FDA-II Phase	3046 dt.26.6.07	Yes
34	Brahmandei	Kanhia-II	Kaniha	Hanumanpur	Phuljhari	R.F.	200.000	Yes	C1D1R3S2V01	No	40		OFSDP-I Phase	6979 dt12.12.03	Yes
35	Jharabereni	Kanhia-II	Kaniha	Hanumanpur	Jharabereni	R.F.& K.F..	200.000	Yes	C1D1R3S2V02	No	127		OFSDP-II Phase	155 dt09.01.04	Yes
36	Kiajhar	Kanhia-II	Kaniha	Talapada	Kiajhar	R.F.	180.000	Yes	C1D1R3S2V03	No	123		OFSDP-I Phase	1179 dt23.03.04	Yes
37	Lodhajhari	Kanhia -II	Kaniha	Balipasi	Nialu-Lodhajhari	R.F.	200.000	Yes	C1D1R3S2V04	No	77		OFSDP-I Phase	3189 dt05.07.05	Yes
38	Nialu	Kanhia -II	Kaniha	Balipasi	Nialu-Lodhajhari	R.F.	200.000	Yes	C1D1R3S2V05	No	55		FDA-I Phase	8283 dt27.11.01	Yes
39	Patakhaman	Kanhia -II	Kaniha	Kaniha	Patakhaman	R.F.	195.000	Yes	C1D1R3S2V06	No	38		FDA-II Phase	893 dt20.02.03	Yes
40	Poipal	Kanhia -II	Kaniha	Dalaka	Dalak Poipal Danda	R.F.	200.000	Yes	C1D1R3S2V07	No	62		OFSDP-II Phase	5790 dt31.07.04	Yes
41	Talapada	Kanhia -II	Kaniha	Talapada	Dalak Poipal Danda	R.F.	184.000	Yes	C1D1R3S2V08	No	131		OFSDP-II Phase	3763 dt26.07.05	Yes
42	Titirima-Kantapal	Kanhia -II	Kaniha	Dalaka	Dalak Poipal Danda	R.F.	180.000	Yes	C1D1R3S2V09	No	135		OFSDP-II Phase	3339 dt13.07.05	Yes
43	Durgapur (Biswal Sahi)	Kaniha-II	Kaniha	Talapada	Durgapur	K.F.	79.920	Yes	C1D1R3S2V10	No	38		FDA-I Phase	915 dt. 1.3.06	Yes
44	Durgapur (Mohapatra Sahi)	Kaniha-II	Kaniha	Talapada	Durgapur	K.F.	90.000	Yes	C1D1R3S2V11	No	41		OFSDP-II Phase	3041 dt.21.06.06	Yes
45	Durgapur Swamivivekananda	Kaniha-II	Kaniha	Talapada	Tamakia	K.F.	201.410	Yes	C1D1R3S2V12	No	35		OFSDP-II Phase	5068 dt. 11.10.06	Yes
46	Bansingh	Kaniha-II	Kaniha	Kaniha	Patakhaman/ Bansingh	R.F/K.F	181.050	Yes	C1D1R3S2V13	No	48		OFSDP-II Phase	5098 dt. 12.10.06	Yes
47	Sapakata	Kaniha-II	Kaniha	Hanumanpur	NialuSapakata	R.F.	200.000	Yes	C1D1R3S2V14	No	83		FDA-I Phase	1795 dt.9.4.07	Yes
48	Birabhuni	Kaniha-II	Kaniha	Bajrakote	Dhankoli	RF/KF	158.000	yes	C1D1R3S2V15	No	78		OFSDP-I Phase	5948dt. 17.11.07	Yes
49	Balaram pur	Kaniha-II	Kaniha	Balipasi	Tangiri	RF/KF	70.000	Yes	C1D1R3S2V16	No	57		FDA-I Phase	6303dt.01.12.07	Yes
50	Nalam	Kaniha-II	Kaniha	Kaniha	Poipal , Dhandkoili	ARF/PRF	200.000	Yes	C1D1R3S2V17	No	132		-	2475 dt 11.4.08	-
51	Badahar	Kaniha-II	Kaniha	Kaniha	Badahar	K.F.	65.000	Yes	C1D1R3S2V18	No	69		FDA-II Phase	4271 dt. 07.07.08	Yes
52	Hatiadanda	Rengali	Kaniha	Rangali	Soleimada	R.F.	160.000	Yes	C1D1R3S3V01	No	62		OFSDP-I Phase	2588 dt10.04.02	Yes
53	Kantola	Rengali	Kaniha	Arkil	Khajuria	R.F.	26.000	Yes	C1D1R3S3V02	No	21		OFSDP-I Phase	8283 dt27.11.01	Yes
54	Khalpal	Rengali	Kaniha	Bajrakote	Godigotha	R.F.& K.F.	100.000	Yes	C1D1R3S3V03	No	121		OFSDP-II Phase	8283 dt27.11.01	Yes
55	Khindo	Rengali	Kaniha	Kuluma	Khindo	K.F.	65.000	Yes	C1D1R3S3V04	No	82		FDA-II Phase	2515 dt06.05.95	Yes
56	Kuadhara	Rengali	Kaniha	Balipasi	Pedi	R.F.	90.000	Yes	C1D1R3S3V05	No	50		OFSDP-I Phase	2055 dt30.03.01	Yes
57	Kulabiri	Rengali	Kaniha	Gandamala	Sachi	R.F.	68.820	Yes	C1D1R3S3V06	No	102		OFSDP-III Phase	8283 dt27.11.01	Yes
58	Palasbahali	Rengali	Kaniha	Balipasi	Tangiri	R.F.& K.F.	167.000	Yes	C1D1R3S3V07	No	120		OFSDP-II Phase	1179 dt23.03.04	Yes
59	Suajhari	Rengali	Kaniha	Balipasi	Godigotha	R.F.	90.000	Yes	C1D1R3S3V08	No	107		FDA-II Phase	7109 dt22.12.03	Yes
60	Suleipal	Rengali	Kaniha	Gandamala	Suleipal	K.F.	83.000	Yes	C1D1R3S3V09	No	80		FDA-II Phase	8584 dt12.11.02	Yes
61	Olanda	Rengali	Kaniha	Rengali	Sadarkhol	R.F. & K.F.	150.600	yes	C1D1R3S3V10	No	150		OFSDP-I Phase	2434 dt.17.5.06	Yes
62	Olanda -II	Rengali	Kaniha	Rengali	Rameswar	R.F/K.F	75.800	Yes	C1D1R3S3V11	No	152		FDA-II Phase	767 dt.07.02.07	Yes
63	Phuljari	Rengali	Kaniha	Bajrakote	Phuljhari	RF/KF	68.000	Yes	C1D1R3S3V12	No	36		FDA-II Phase	6278dt.30.11.07	Yes
64	Andhari	Rengali	Kaniha	Bajrakote	Nialu	RF/KF	76.000	Yes	C1D1R3S3V13	No	24		FDA-II Phase	6299dt. 01.12.07	Yes
65	Luhamunda	Rengali	Kaniha	Balipasi	Tangiri	RF/KF	42.000	Yes	C1D1R3S3V14	No	42		FDA-II Phase	6301dt. 01.12.07	Yes
66	Dwarbandha	Rengali	Kaniha	Dwarbandha	Bandhuli	RF/KF	180.000	Yes	C1D1R3S3V15	No	281		supprot to VSS	6185 dt. 22.09.08	Yes
67	Jhankadapasi	Rengali	Kaniha	Jhankadapasi	Sadarkhol	RF	98.000	Yes	CIDIR3S3V16	No	46		OFSDP-II Phase	1240 dt. 20-02-09	Yes
68	Katrapali	Rengali	Kaniha	Balipasi	Sadarkhol	RF	135.000	yea	CIDIR3S3V17	No	75		OFSDP-II Phase	1242 dt. 20-2-09	Yes
69	Chintamanipur	Rengali	Kaniha	Chintamanipur	Durgapur Danda	RF	100.000	Yes	CIDIR3S3V18	No	91		OFSDP-II Phase	1248 dt.20-02-09	Yes
70	Nakhideul	Rengali	Kaniha	Rengali	Sadarkhol	RF	115.000	Yes	CIDIR3S3V19	No	76		OFSDP-II Phase	1246 dt. 20-02-09	Yes
71	Kuluma	Rengali	Kaniha	Kuluma	Sadarkhol	RF	113.000	Yes	CIDIR3S3V20	No	178		OFSDP-II Phase	1238dt. 20-02-09	Yes
72	sansamara	Rengali	Kaniha	Sansamara	Sansamara	V.F	115.500	Yes	CIDIR3S3V21	No	95		OFSDP-II Phase	1236dt. 20-02-09	Yes
73	Balipasi	Rengali	Kaniha	Balipasi	Sadarkhol	RF	90.000	Yes	CIDIR3S3V22	No	67		OFSDP-II Phase	1222dt.20-02-09	Yes
74	Jharbeda	Rengali	Kaniha	Susuba	Biripal	RF	120.000	Yes	CIDIR3S3V23	No	175		OFSDP-II Phase		
75	Podagada Nuasahi	Rengali	Kaniha	Susuba	Biripal	RF	110.000	Yes	CIDIR3S3V24	No	296		OFSDP-II Phase		
76	Gengutia	Rengali	Kaniha	Susuba	Biripal	RF	200.000	Yes	CIDIR3S3V25	No	327		OFSDP-II Phase		

77	Podagada Purunasahi	Rengali	Kaniha	Susuba	Biripal	RF	200.000	Yes	CIDIR3S3V26	No	564		OFSDP-II Phase		
78	Parmpasi	Rengali	Kaniha	Arkil	Budhia	RF/KF	100.000	Yes	CIDIR3S3V27	No	40		OFSDP-II Phase		
79	Baudabeda	Kaniha	Kaniha	Baudabeda	Dhankoli	RF	110.000	Yes	CIDIR3S3V19	No	122		OFSDP-II Phase	1244 dt. 20-02-09	Yes
80	Atabira	Kaniha	Kaniha	Atabira	Nialu Ludhajari & sapakata	RF	110.000	Yes	CIDIR3S3V20	No	32		OFSDP-II Phase	1234dt. 20-02-09	Yes
81	Burubhal	Kaniha	Kaniha	Kaniha	Dangarpur Danda	RF	120.000	Yes	CIDIR3S3V21	No					
82	Barapada	Kaniha	Kaniha	Balipasi	Tangri RF & Barapada VF	RF & VF	121.687	Yes	CIDIR3S3V28	No					
83	Natitaila Takua	Kaniha	Kaniha	Ka niha	Chandrapur ARF	ARF	85.000	Yes	CIDIR3SIV35	No					
84	Lodhabandha	Kaniha	Kaniha	Bijigola	Lodhabandha VF	VF	10.960	Yes	CIDIR3SIV36	No					
85	Jamujodi	Kaniha	Kaniha	Badatribida	Jamujodi VF	VF	118.000	Yes	CIDIR3SIV34	No	9993				
	TOTAL						**10353.977**				**20105**				
	BANTALA RANGE														
1	Kanja	Kanja	Raigoda	Badakantakul	Nuakheta	R.F.	200.000	Yes	C1D1R5S1V1	No	82		FDA-I Phase	7282 dt28.9.02	Yes
2	Karabira	Kanja	Raigoda	Badakantakul	Nuakheta	R.F.	75.000	Yes	C1D1R5S1V2	No	29		FDA-I Phase	7282 dt28.9.02	Yes
3	Nuagaon	Kanja	Raigoda	Badakantakul	Nuakheta	R.F.	100.000	Yes	C1D1R5S1V3	No	52		FDA-II Phase	791 dt.8.6.07	Yes
4	Kanja Matiasahi	kanja	Raigoda	Badakantakul	Kanja	VF	31.000	Yes	C1D1R5S1V4	No	132		FDA-III Phase		
5	Bhubanpur	Khinda	Raigoda	Talagarh	Bhubanpur	R.F.	100.000	Yes	C1D1R5S2V1	No	49		FDA-I Phase	7282 dt28.9.02	Yes
6	Kantamegha	Khinda	Raigoda	Talagarh	Bolang	R.F.	100.000	Yes	C1D1R5S2V2	No	27		FDA-I Phase	7282 dt28.9.02	Yes
7	Ragudiapada	Khinda	Raigoda	Talagarh	Bolang	R.F.	100.000	Yes	C1D1R5S2V3	No	58		FDA-I Phase	7282 dt28.9.02	Yes
8	Kumursingha	Khinda	Raigoda	Kumursingha	Kumursingha	V.F.	10.000	yes	C1D1R5S2V4	No	101		-	3193 dt.30.6.06	-
9	Bargounia	Khinda	Raigoda	Bargounia	Bargounia	RF	97.500	Yes	C1D1R5S2V5	No	75		OFSDP-I Phase	5793dt. 13.11.07	Yes
10	Madhapur	Khinda	Raigoda	Nandapur	Bolanga	RF	120.000	Yes	C1D1R5S2V6	No	332		OFSDP-II Phase	4693 dt. 25.07.08	Yes
11	Poktunga (Dehury sahi	Khinda	Raigoda	Nandapur	Bolanga	RF	100.000	Yes	C1D1R5S2V7	No	102		OFSDP-II Phase	3628 dt. 19.06.09	Yes
12	Badakantakula	Nuakheta	Raigoda	Badakantakul	Nuakheta	R.F.	200.000	Yes	C1D1R5S3V1	No	55		FDA-I Phase	7282 dt28.9.02	Yes
13	Nuakheta–I	Nuakheta	Raigoda	Badakantakul	Nuakheta	R.F.	200.000	Yes	C1D1R5S3V2	No	159		OFSDP-I Phase	Nil dt 26.5.01	Yes
14	Nuakheta–II	Nuakheta	Raigoda	Badakantakul	Nuakheta	R.F.	200.000	Yes	C1D1R5S3V3	No	58		FDA-I Phase	Nil dt 24.5.01	Yes
15	Bolanga	Pampasar	Raigoda	Bolanga	Bolanga	R.F.	200.000	Yes	C1D1R5S4V1	No	204		FDA-I Phase	2341 dt3.05.03	Yes
16	Hidsingh	Pampasar	Raigoda	Bolanga	Bolanga	R.F.	200.000	Yes	C1D1R5S4V2	No	88		OFSDP-I Phase	2492 dt27.05.05	Yes
17	Labangi	Pampasar	Raigoda	Bolanga	Bolanga	D.P.F.	70.820	Yes	C1D1R5S4V3	No	26		FDA-I Phase	2344 dt3.5.03	Yes
18	Talasira	Pampasar	Raigoda	Bolanga	Bolanga	R.F.	100.000	Yes	C1D1R5S4V4	No	24		FDA-I Phase	2347 dt3.5.03	Yes
19	Purunagarh	Nuakheta	Raigoda	Gadataras	Nuakheta	RF	180.000	Yes	C1D1R5S3V4	No	175		OFSDP-II Phase	4935 dt. 02.08.08	Yes
20	Gadataras	Nuakheta	Raigoda	Gadataras	Nuakheta	RF	200.000	Yes	C1D1R5S3V5	No	188		OFSDP-II Phase	4933 dt. 2.08.08	Yes
21	Nukhuripada	Nuakheta	Raigoda	Gadataras	Nuakheta	RF	200.000	Yes	C1D1R5S3V6	No	175		OFSDP-II Phase	4931 dt. 02.08.08	Yes
	TOTAL						**2784.320**				**2191**				
	ANGUL RANGE														
1	Berhampur-I	Karatapata	Purunagarh	Nandapur	Nandapur/B.pur	R.F.	23.448	Yes	C1D1R4S1V01	No	53		-	1476 dt16.03.00	-
2	Berhampur-II	Karatapata	Purunagarh	Nandapur	Krusshnachakra	R.F.	200.000	Yes	C1D1R4S1V02	No	53		-	2244 dt06.05.00	-
3	Hinsaloi-Nandapur	Karatapata	Purunagarh	Nandapur	Kurudu	P.R.F.	200.000	Yes	C1D1R4S1V03	No	65		-	Nil dt03.01.00	-
4	Karadasingha	Karatapata	Purunagarh	Nandapur	Bhogapal	R.F.	184.724	Yes	C1D1R4S1V04	No	30		OFSDP-I Phase	Nil dt17.03.99	Yes
5	Krushnachakragarh	Karatapata	Purunagarh	Manikjodi	Krushnachakra	P.R.F.	200.000	Yes	C1D1R4S1V05	No	50		-	Nil dt03.08.99	-
6	Kulsar	Karatapata	Purunagarh	Manikjori	Krusnachakra	P.R.F.	590.180	Yes	C1D1R4S1V06	No	36		OFSDP-II Phase	Nil dt 01.12.98	Yes
7	Nandapur	Karatapata	Purunagarh	Nandapur	Nandapur/B.pur	R.F.	23.448	Yes	C1D1R4S1V07	No	50		-	Nil dt 03.08.99	-
8	Nandapur Sadak Sahi	Karatapata	Purunagarh	Nandapur	Krushnachakra	P.R.F.	120.000	Yes	C1D1R4S1V08	No	50		OFSDP-II Phase	Nil dt21.03.99	Yes
9	Pabala	Karatapata	Purunagarh	Nandapur	Krusnachakra	P.R.F.	200.000	Yes	C1D1R4S1V09	No	17		OFSDP-II Phase	Nil dt21.09.01	Yes
10	Hinsrida	Karatapata	Purunagarh	Balanga	Krusnachakra	P.R.F	200.000	Yea	C1D1R4S1V10	No	59		-		-
11	Ambapal –I	Nisa	Purunagarh	Natada	Nisha	R.F.	90.000	Yes	C1D1R4S2V01	No	128		-	Nil dt9.04.99	-
12	Ambapal –II	Nisa	Purunagarh	Natada	Nisha	R.F	94.000	Yes	C1D1R4S2V02	No	61		-	Nil dt22.11.02	-
13	Badamahitaila	Nisa	Purunagarh	Paranga	Badamahitaila	K.F.	114.420	Yes	C1D1R4S2V03	No	47		FDA-I Phase	Nil dt28.11.00	Yes
14	Bahalsahi (Durgapur)	Nisa	Purunagarh	Kankarei	Durgapur	R.F.	220.000	Yes	C1D1R4S2V04	No	60		-	Nil dt20.05.95	-
15	Golabandha(Dwibatisahi)	Nisa	Purunagarh	Sankerjenga	Derjenga-Golabandha	P.R.F.	92.800	Yes	C1D1R4S2V05	No	185		FDA-I Phase	Nil dt1.07.96	Yes
16	Kaliakata	Nisa	Purunagarh	Nisha	Kaliakata	R.F.	298.170	Yes	C1D1R4S2V06	No	108		-	Nil dt 4.07.00	-
17	Maa Kalapat VSS, Natada	Nisa	Purunagarh	Natada	Natada	Gramya Jungle	46.460	Yes	C1D1R4S2V08	No	190		-	4435 dt11.07.01	-
18	Malibrahamani	Nisa	Purunagarh	-do-	Durgapur	R.F.	267.370	Yes	C1D1R4S2V07	No	53		-	Nil dt12.04.99	-
19	Nisha –I	Nisa	Purunagarh	Nisha	Nisha	R.F.	100.000	Yes	C1D1R4S2V09	No	106		-	Nil dt8.04.99	-

20	Nisha –II	Nisa	Purunagarh	Nisha	Malibrahmani	R.F.	56.000	Yes	C1D1R4S2V10	No	155		-	831 dt9.02.00	-
21	Paranga	Nisa	Purunagarh	Paranga	Paranga	R.F.	231.160	Yes	C1D1R4S2V11	No	196		FDA-I Phase	224 3dt6.05.00	Yes
22	Pidhakhaman	Nisa	Purunagarh	Kankarei	Nisa	R.F.	90.000	Yes	C1D1R4S2V12	No	44		FDA-II Phase	Nil dt28.01.00	Yes
23	Ramdiha	Nisa	Purunagarh	Paranga	Malibramani	R.F.	97.040	Yes	C1D1R4S2V13	No	109		FDA-I Phase	Nil dt8.04.99	Yes
24	Sakasingha	Nisa	Purunagarh	Badakerejeng	Durgapur	R.F	200.000	Yes	C1D1R4S2V14	No	70		supprot to VSS	4589 dt21.07.04	Yes
25	Sanamahitaila	Nisa	Purunagarh	Parang	Nisa	R.F.	40.000	Yes	C1D1R4S2V15	No	76		FDA-I Phase	Nil dt27.11.00	Yes
26	Thakurapada	Nisa	Purunagarh	Nisa	Nisa	R.F.	100.000	Yes	C1D1R4S2V16	No	62		OFSDP-I Phase	2238 dt6.05.00	Yes
27	Amarjoti (Bedasar)	Nisa	Purunagarh	Jarasingha	Niranjanpur	Patra jungle	100.540	Yes	CIDIR4S2V17	No	107		OFSDP-III Phase	6776 dt. 21.10.08	Yes
28	Badajarna	Nisa	Purunagarh	Natada	Badajharn	VF	55.818	Yes	CIDIR4S2V18	No	53		OFSDP-III Phase	637 dt. 31.12.2009	
29	Chhitikoili	Pokunda	Purunagarh	Manikjodi	Burti	P.R.F.	302.540	Yes	C1D1R4S3V01	No	46		OFSDP-I Phase	Nil dt21.12.98	Yes
30	Manikjodi	Pokunda	Purunagarh	Manikjodi	Manikjodi	P.R.F.	501.820	Yes	C1D1R4S3V02	No	63		OFSDP-I Phase	Nil dt15.03.99	Yes
31	Matiasahi-Pokunda	Pokunda	Purunagarh	Manikajodi	Pokunda	P.R.F.	365.450	Yes	C1D1R4S3V03	No	73		OFSDP-I Phase	Nil dt 3.08.99	Yes
32	Pokunda	Pokunda	Purunagarh	-do-	Burti	P.R.F.	372.880	Yes	C1D1R4S3V04	No	45		OFSDP-I Phase	Nil dt 3.08.99	Yes
33	Khalamba	Pokunda	Purunagarh	Manikjodi	Burti	RF	200.000	Yes	C1D1R4S3V05	NO	246		OFSDP-I Phase	5989dt.19.11.07	Yes
34	Badadandasahi, Purunagarh	Purunagarh	Purunagarh	Matiasahi	Badadandasahi	R.F.	280.232	Yes	C1D1R4S4V01	No	73		OFSDP-I Phase	Nil dt16.11.00	Yes
35	Bania sahi(Purunagarh)	Purunagarh	Purunagarh	Matiasahi	Kalapat	P.R.F.	220.180	Yes	C1D1R4S4V02	No	95		OFSDP-I Phase	Nil dt7.06.00	Yes
36	Chandanpur	Purunagarh	Purunagarh	Nandapur	Chandanpur	P.R.F.	200.000	Yes	C1D1R4S4V03	No	52		OFSDP-I Phase	Nil dt7.06.00	Yes
37	GaudaSahi(Purunagarh)	Purunagarh	Purunagarh	Matiasahi	Burti	P.R.F.	260.240	Yes	C1D1R4S4V04	No	108		OFSDP-I Phase	Nil dt20.11.00	Yes
38	Guranga	Purunagarh	Purunagarh	Badakera	Guranga	R.F.	55.447	Yes	C1D1R4S4V05	No	35		FDA-I Phase	Nil dt20.11.00	Yes
39	Kulasingha	Purunagarh	Purunagarh	Sardhapur	Kulasingha	R.F.	145.346	Yes	C1D1R4S4V06	No	65		FDA-I Phase	Nil dt 19.04.99	Yes
40	Madanmohanpatna-Baradasahi	Purunagarh	Purunagarh	Matiasahi	Kalapat	PR.F.	291.100	Yes	C1D1R4S4V07	No	109		OFSDP-I Phase	Nil dt15.05.99	Yes
41	Maratira	Purunagarh	Purunagarh	Santrapur	Sorispal	R.F.	40.450	Yes	C1D1R4S4V09	No	60		FDA-II Phase	Nil dt 28.11.99	Yes
42	Matiasahi, Purunagarh	Purunagarh	Purunagarh	Matiasahi	Sorisapal	R.F.	40.750	Yes	C1D1R4S4V08	No	162		FDA-II Phase	Nildt27.11.00	Yes
43	Pathagarh	Purunagarh	Purunagarh	Kanjara	Sorisapal-Hinsar	P.R.F.	200.000	Yes	C1D1R4S4V10	No	139		OFSDP-I Phase	Nil dt 30.08.99	Yes
44	Rajnagarh	Purunagarh	Purunagarh	Nandapur	Chandanpur	PR.F.	242.081	Yes	C1D1R4S4V11	No	67		OFSDP-I Phase	Nil dt12.04.99.99	Yes
45	Ramimunda, Goudasahi	Purunagarh	Purunagarh	Sardhapur	Kulasingha	P.R.F.	224.127	Yes	C1D1R4S4V12	No	61		OFSDP-II Phase	Nil dt 03.08.99	Yes
46	Routal	Purunagarh	Purunagarh	Santrapur	Sorishpal-Hinsar	PR.F.	164.060	Yes	C1D1R4S4V13	No	133		OFSDP-II Phase	Nil dt28.11.00	Yes
47	Sanahinsar	Purunagarh	Purunagarh	Santrapur	Sorispal-Hinsar	P.R.F.	100.000	Yes	C1D1R4S4V14	No	81		OFSDP-II Phase	Nil dt23.04.99	Yes
48	Sardhapur	Purunagarh	Purunagarh	Sardhapur	Mandargiri	P.R.F.	242.490	Yes	C1D1R4S4V15	No	52		OFSDP-I Phase	Nil dt30.07.99	Yes
49	Saruali	Purunagarh	Purunagarh	Nandapur	Kurudu	P.R.F.	200.000	Yes	C1D1R4S4V16	No	23		OFSDP-I Phase	Nil dt15.04.99	Yes
50	Sorispal	Purunagarh	Purunagarh	-do-	Sorispal	R.F.	60.000	Yes	C1D1R4S4V17	No	47		FDA-I Phase	Nil dt 17.04.99	Yes
51	Suda Sahi-Matiasahi	Purunagarh	Purunagarh	Matiasahi	Kulasingha	P.R.F.	200.000	Yes	C1D1R4S4V18	No	78		OFSDP-I Phase	Nil dt 21.03.99	Yes
52	Panjia Sahi	Purunagarh	Purunagarh	Badakera	Sorisapal	RF	42.000	Yes	C1D1R4S4V19	No	94		OFSDP-II Phase	3452 dt. 11.06.09	Yes
53	Badahinsar	Purunagarh	Purunagarh	Jarpada	Sorisapal hinsar	PRF	101.000	Yes	C1D1R4S4V20	No	555		OFSDP-II Phase	3450 dt. 11.06.09	Yes
54	Bindushresagar (sasan)	Purunagarh	Purunagarh	Badakera	Kulasingha	PRF	50.000	Yes	C1D1R4S4V21	No	245		OFSDP-III Phase	636 dt. 31.12.2009	-
55	Kaunsitaila	Town	Purunagarh	Sakasingha	Kuio	R.F.	200.000	Yes	C1D1R4S5V01	No	81		OFSDP-III Phase	4359 dt22.08.05	Yes
56	Kuio	Town	Purunagarh	Sakasingha	Kuio	R.F	200.000	Yes	C1D1R4S5V02	No	73		FDA-I Phase	1483 dt24.03.03	Yes
57	Kumanda	Town	Purunagarh	Kumanda	Kumanda	R.F.	36.460	Yes	C1D1R4S5V03	No	177		OFSDP-III Phase	Nil dt04.06.01	Yes
58	Musapapuli	Town	Purunagarh	Rantalei	Manargiri	R.F	200.000	Yes	C1D1R4S5V04	No	41		FDA-I Phase	2468 dt24.03.03	Yes
59	Tumuni	Town	Purunagarh	Badakera	Mandargiri	RF	104.000	Yes	C1D1R4S5V05	No	513		OFSDP-III Phase	645 dt. 31.12.09	-
60	Saharguda	Town	Purunagarh	Bantala	Saharguda	RF	132.000	Yes	C1D1R4S5V06	No	56		OFSDP-III Phase	644 dt. 31.12.09	-
61	Bhaliapal (Mandrpur)	Town	Purunagarh	Badakera	Nanda	RF	95.000	Yes	C1D1R4S5V07	No	299		OFSDP-III Phase	643 dt. 31.12.09	-
62	Chandrabahal	Town	Purunagarh	Rantalei	Mandargiri	RF	86.000	Yes	C1D1R4S5V08	No	41		OFSDP-III Phase	642 dt. 31.12.09	
63	Shyamsundarpur	Town	Purunagarh	Badakera	Mandargiri	RF	84.000	Yes	C1D1R4S5V09	No	48		OFSDP-III Phase	641 dt. 31.12.09	
64	Sardhapur	Town	Purunagarh	Kumusigha	Mandargiri	RF	58.000	Yes	C1D1R4S5V10	No	48		OFSDP-III Phase	640 dt. 31.12.9	
65	Sabalabhanga	Town	Purunagarh	Kumursingha	Mandargiri	RF	95.043	Yes	C1D1R4S5V11	No	95		OFSDP-III Phase	639 dt. 31.12.09	Yes
66	Betianali	Town	Purunagarh	Natada	Betianali	VF	69.641	Yes	C1D1R4S5V12	No	110		OFSDP-III Phase	638 dt. 31.12.09	Yes
67	Santrapur	Nisa	Purunagarh	Santrarapur	Sorisapal -Hinsar	PRF	44.000	yes	CIDIR4S2V-19	No	86		OFSDP-III Phase	9526 dt.31.12.2008	Yes
68	Amantapur	Nisa	Purunagarh	Santrapur	Sorispal Hinsar	PRF	33.000	yes	CIDIR4S2V-20	No			OFSDP-III Phase		Yes
69	Natada	Nisa	Purunagarh	Natada	Natada	V.F.	98.641	Yes	CIDIR4S2V-21	No	80		OFSDP-III Phase	9525 dt.31.12.2008	Yes
70	Tubey	Purunagarh	Purunagarh	Tubey	Sonspal	RF	135.000	Yes	CIDIR4S4V-22	No	350		OFSDP-III Phase	12 dt. 04.01.20012	Yes

	TOTAL						**11008.556**				**7178**					
	TALCHER RANGE															
1	Badajorada	Dera	Talcher	Badajorada	Kauchiakhol	R.F.	198.000	Yes	C1D1R6S1V01	No	258		-	4598 dt02.07.04	-
2	Danara	Dera	Talcher	Dera	Kauchiakhol	R.F.& KF	95.400	Yes	C1D1R6S1V02	No	140		FDA-I Phase	1141 dt04.04.98	Yes
3	Rakas	Dera	Talcher	Padmabatipur	Rakas	R.F.	171.800	Yes	C1D1R6S1V03	No	49		-	3335 dt26.05.01	-
4	Solada	Dera	Talcher	Kalamchhuin	Solada	K.F.	169.540	Yes	C1D1R6S1V04	No	282		FDA-I Phase	7198 dt26.09.02	Yes
5	Tileipasi	Dera	Talcher	Kalamchhuin	Tileipasi & Khajuria	K.F.	55.840	Yes	C1D1R6S1V05	No	48		FDA-I Phase	636 dt19.01.00	Yes
6	Malibandha	Dera	Talcher	Gopalprasad	Nuabhuin	R.F	200.000	yes	C1D1R6S1V06	No	58		OFSDP-II Phase	1676 dt.31.03.07	Yes
7	Tentaibereni	Dera	Talcher	Sansingida	Rabipur	RF/KF	56.000	yes	C1D1R6S1V07	No	67		FDA-II Phase	6496dt.10.12.07	Yes
8	Julibandha	Dera	Talcher	Kamarai	Rabipur	RF	36.000	yes	C1D1R6S1V08	No	39		FDA-II Phase	6498dt. 10.12.07	Yes
9	Khairanali	Dera	Talcher	Kamarei	Rabipur	R.F.	94.000	Yes	CIDIR6S4V09	No	72		FDA-II Phase	334 dt.15.1.08	Yes
10	Rabipur	Dera	Talcher	Dera	Rabipur	RF-B	120.000	Yes	CIDIR6S4V10	No	53		-	1146 dt. 20.2.08	-
11	Balaramprasad	F.C.I.	Talcher	Balaramprasad	Balaramprasad	R.F.	29.170	Yes	C1D1R6S2V01	No	143		supprot to VSS	9074 dt04.12.02	Yes
12	Belapada	Talcher sadar	Talcher	Brajanathpur	Belpada	K.F.	53.660	Yes	C1D1R6S2V02	No	51		OFSDP-II Phase	Nil dt21.07.01	Yes
13	Sunakhani	Talcher sadar	Talcher	Samal	Kanheijena	R.F/V.F	200.000	Yes	C1D1R6S2V03	No	63		OFSDP-I Phase	3691 dt. 19.07.07	Yes
14	Ganthigadia	F.C.I.	Talcher	Nuahata	Ganthigadia	DPF	114.670	Yes	C1D1R6S2V02	No	42		FDA-I Phase	4899dt06.07.02	Yes
15	Bulajhar	Seepur	Talcher	Biru	Bulajhar	R.F. & KF	160.000	Yes	C1D1R6S3V01	No	37		FDA-I Phase	3086 dt24.06.03	Yes
16	Dangarabeda	Seepur	Talcher	Kulei	Bulajhar	R.F.	139.670	Yes	C1D1R6S3V02	No	51		-	2918 dt24.06.05	-
17	Gaham Batasahi	Seepur	Talcher	Parabil	Gaham	K.F.	79.300	Yes	C1D1R6S3V03	No	72		FDA-I Phase	7073 dt12.12.00	Yes
18	Kulei	Seepur	Talcher	Kulei	Bulajhar & Kulei	R.F.& KF	106.800	Yes	C1D1R6S3V04	No	220		FDA-II Phase	7921 dt11.11.04	Yes
19	Langalkhol	Seepur	Talcher	Biru	Langalkhol	R.F	126.136	Yes	C1D1R6S3V05	No	44		OFSDP-I Phase	5039 dt12.07.04	Yes
20	Parabil	Seepur	Talcher	Parabil	Siling	R.F.	100.000	Yes	C1D1R6S3V06	No	292		FDA-II Phase	164 dt09.01.04	Yes
21	Seepur	Seepur	Talcher	Karnapal	Seepur	R.F	160.000	Yes	C1D1R6S3V07	No	88		OFSDP-III Phase	164 dt09.01.04	in progress
22	Baruan	Seepur	Talcher	Baruan	Bulajhar	R.F.	88.190	Yes	C1D1R6S3V08	No	169		FDA-II Phase	1150 dt. 7.3.06	Yes
23	Balijharan	Seepur	Talcher	Biru	Bullajhar	R.F. & K.F.	200.050	Yes	C1D1R6S3V09	No	31		OFSDP-I Phase	1407 dt. 22.3.06	Yes
24	Tumugola	Seepur	Talcher	Biru	Bulajhar	R.F & V.F.	200.800	yes	C1D1R6S3V10	No	92		OFSDP-I Phase	1811 dt.10.4.06	Yes
25	Dholgandia	Seepur	Talcher	Biru	Bulajhar	R.F/K.F	141.350	Yes	C1D1R6S3V11	No	37		OFSDP-I Phase	112 dt.06.01.07	Yes
26	Biru	Seepur	Talcher	Biru	Kaliadunguri	K.F	72.870	yes	C1D1R6S3V12	No	39		FDA-II Phase	114 dt. 06.01.07	Yes
27	Biru-Nuasahi	Seepur	Talcher	Biru	Mankadachhua	R.F./K.F.	160.000	Yes	C1D1R6S3V13	No	239		OFSDP-II Phase	1922 dt.12.4.07	Yes
28	Burkuna	Seepur	Talcher	Burkuna	Burkuna	VF	70.000	Yes	C1D1R6S3V14	No	108		OFSDP-III Phase		-
29	Naiknali	Seepur	Talcher	Burkuna	Naiknali	VF	80.000	Yes	C1D1R6S3V15	No	81		OFSDP-III Phase		
30	Kandhakhaman	Seepur	Talcher	Biru	Mankadachhua	RF	82.533	Yes	C1D1R6S3V16	No	167		OFSDP-III Phase		
31	Maidhapur	Seepur	Talcher	Burkuna	Maidhapur	VF	117.000	Yes	C1D1R6S3V17	No	275		OFSDP-III Phase		
32	Karnapal	Seepur	Talcher	Karnapal	Karnapal	VF	100.000	Yes	C1D1R6S3V18	No	108		OFSDP-III Phase		
33	Gangadhapur	Seepur	Talcher	Biru	Gangadhapur	VF	120.000	Yes	C1D1R6S3V19	No	111		OFSDP-II Phase		
34	Siaria	Seepur	Talcher	Burkuna	Siaria	VF	85.000	Yes	C1D1R6S3V20	No	102		OFSDP-III Phase		
35	Deragola	Seepur	Talcher	Burkuna	Deragola	VF	106.000	Yes	C1D1R6S3V21	No	136		OFSDP-III Phase		
36	Baidamunda	Talcher sadar	Talcher	Brajanathpur	Pathuria-Pitachari	K.F	42.700	Yes	C1D1R6S4V01	No	25		FDA-I Phase	4451 dt25.08.05	Yes
37	Bilinda	Talcher sadar	Talcher	Samal	Bilinda	K.F.	38.860	Yes	C1D1R6S4V03	No	82		FDA-I Phase	4731 dt01.10.01	Yes
38	Chandrabil	Talcher sadar	Talcher	Santribida	Rabipur	R.F.	160.000	Yes	C1D1R6S4V04	No	11		OFSDP-II Phase	1766 dt19.03.01	Yes

39	Hariharpur	Talcher sadar	Talcher	Samal	Kanteikulia	R.F.	75.000	Yes	C1D1R6S4V05	No	40		FDA-II Phase	3468 dt23.07.05	Yes
40	Jadunathpur	Talcher sadar	Talcher	Hariharpur	Rabipur & Jadunathpur	R.F.& KF	170.000	Yes	C1D1R6S4V06	No	48		OFSDP-II Phase	7802 dt21.10.02	Yes
41	Kandhala	Talcher sadar	Talcher	Kandhala	Kandhal	R.F.	178.132	Yes	C1D1R6S4V07	No	60		FDA-I Phase	6288 dt22.08.02	Yes
42	Rangapur	Talcher sadar	Talcher	Hariharpur	Kanteikulia	R.F.	120.000	Yes	C1D1R6S4V08	No	30		OFSDP-I Phase	6105 dt17.08.02	Yes
43	Rutubhuin	Talcher sadar	Talcher	Hariharpur	Rutubhuin	K.F.	23.440	Yes	C1D1R6S4V09	No	29		OFSDP-I Phase	8283 dt27.11.01	Yes
44	Samal	Talcher sadar	Talcher	Samal	Samal	K.F.	57.280	Yes	C1D1R6S4V10	No	133		FDA-I Phase	8283 dt27.11.01	Yes
45	Tippo	Talcher sadar	Talcher	Samal	Kanheijena	R.F.& KF	96.000	Yes	C1D1R6S4V11	No	70		FDA-I Phase	Nil dt210.11.00	Yes
46	Ekagharia	Talcher sadar	Talcher	Samal	Kanheijena	RF/VF	200.000	Yes	C1D1R6S4V12	NO	102		OFSDP-I Phase	5308dt. 16.10.07	Yes
47	Bolangi	Talcher sadar	Talcher	Hariharpur	Kanejena	RF	200.000	Yes	C1D1R6S4V13	No	46		OFSDP-I Phase	5580dt.01.11.07	Yes
48	Bidyadhapur	Talcher sadar	Talcher	Talcher	Pathuria-Pitachari	RF/VF	60.700	Yes	C1D1R6S4V14	No	124		OFSDP-I Phase		Yes
49	Jandabahal	Talcher sadar	Talcher	Talcher	Pathuria-Pitachari	RF	149.000	Yes	C1D1R6S4V15	No	129		OFSDP-I Phase	6732dt.26.12.07	Yes
50	Gurujang	Talcher sadar	Talcher	Gurujang	Gurjang	KF/GJ	124.000	Yes	CIDIR6S4V16	No	211		OFSDP-II Phase	1114 dt. 20.2.08	Yes
51	Bikisar	Talcher sadar	Talcher	Bikisar	Samal	R.F.	100.000	Yes	CIDIR6S4V17	No	43		OFSDP-I Phase	1142 dt. 20.2.08	Yes
52	Arkhapal	Talcher sadar	Talcher	Brajanathpur	Kanteikolia / Mahadevpur	KF	40.000	Yes	CIDIR6S4V18	No	78		supprot to VSS	2394 dt. 17.04.09	Yes
53	Sivrampur	Talcher sadar	Talcher	Hariharpur	Sivrampur / Kanehijena	RF	100.000	Yes	CIDIR6S4V19	No	113		OFSDP-II Phase	2392 dt. 17.04.09	Yes
54	Bolang-II	Talcher sadar	Talcher	Hariharpur	Kanheijena	RF	100.000	Yes	CIDIR6S4V20	No					
55	Jadunathpur	Talcher sadar	Talcher	Kandhala	Jadunathpur,&Arkhapal.	K.F.	36.850	Yes	CIDIR6S4V21	No	69		OFSDP-III Phase		
56	Jhulakhuntia	Talcher sadar	Talcher	Burukuna	Jhulakhuntia	V.F.	118.468	Yes	CIDIR6S4V22	No					
57	Sasadhapur -I	Talcher sadar	Talcher	Burukuna	Saradhapur	V.F.	110.772	Yes	CIDIR6S4V23	No					
58	Saradhapur - II	Talcher sadar	Talcher	Burukuna	Saradhapur	R.F.	93.903	Yes	CIDIR6S4V24	No					
59	Gaham Purunasahi	Talcher sadar	Talcher	Parabil	Bulajhar RF & Gaham VF	RF	200.000	Yes	CIDIR6S4V25	No					
	TOTAL						**6684.884**				**5307**				
	Grand Total						**47416.323**				**53217**				

A B S T R A C T

Name of the Range	No of VSS	Area in ha.
Chhendipada	56	8255.926
Jarapada	50	8328.660
Kaniha	85	10353.977
Bantala	21	2784.320
Angul	70	11008.556
Talcher	59	6684.884
Grand Total	**341**	**47416.323**

Compansatory Afforestation Plantation from 2009-10 to 2021-22 of Angul Division

Sl. No	Year	Name of the Division	Buget Sub-head & Name of the Project	Location of the Plantation site	Type of plantation CA/PCA/SZ or any other.	Physical Achivement				No of seedling planted	Remarks
						AR in ha	ANR with Gap PLantion in ha	ANR without Gap PLantibg	Bald Hill Pltn. In ha		
1	2	3	4	5	6	7				8	9
1	2009-10	Angul	Ananta Extension OCP by MCL	Rakas RF	SZ	1.77				3000	
				Phuljhari RF	1.5 SZ		5.4			1620	
			Bhartapur OCP by MCL	Kauchiakhol RF	1.5 SZ		40			12000	
			Total 2009-10			**1.77**	**45.4**	**0**	**0**	**16620**	
2	2010-11	Angul	Const, of Railway Track linkage from existing MGR of STPP, Kaniha to Kaniha OCP of MCL by NTPC	Pital Ragudi RF	CA		18			5400	
			Bhartapur OCP by SECL	Kauchiakhol BRF	SZ		30.09			9027	
			Bhubaneswari OCP by MCL	Rakas RF	SZ	6.033				9653	
			Bhartapur OCP by MCL	Kauchiakhol BRF	1.5 SZ			50.13		0	
			Bhubaneswari OCP by MCL	Durgapur RF	1.5 S.Z.		10			3000	
			Rengali Irrigation Project	Debinagar PRF	CATP			50		0	
				Chhendipada RF	CATP			50		0	
				Rabipur RF	CATP			50		0	
				Kanheijena RF	CATP			50		0	
				Chandrapada RF	CATP		50			15000	
				Poipaldanda RF	CATP		50			15000	
				Total			**100**	**200**		**30000**	
			Rengali Irrigation Project	Left Canal	Canal Bank	20				50000	
				Right Canal		30				75000	
				Total		**50**				**125000**	
			Total 2010-11			**56.033**	**158.09**	**250.13**	**0**	**182080**	
3	2011-12	Angul	Nandira UG Mining by MCL	Bulajhar RF	CA			189		0	
			Natraja UG Mining by MCL	Seepur RF	CA		17			5100	
			Kaniha OCP by MCL	Pathermundi V.F	SZ	7.83				12528	
			Jaganath Extension OCP by MCL	Rakas RF	SZ	2.401				6003	
			Rengali Irrigation Project (Cannal Bank Plantation)	Left Canal	Canal Bank	8				12800	
				Right Canal		22				35200	
				Total		**30**	**0**		**0**	**48000**	
			Rengali Irrigation Project (CATP)	Chakhundapal RF	CATP			50		0	
				Jeypur RF	CATP			100		0	
				Kandhbereni RF	CATP			50		0	
				Sibrampur PRF	CATP			50		0	
				Bulajhar RF	CATP			50		0	
				Poipaldanda RF	CATP			50		0	
				Nialu- Lodhajri RF	CATP			100		0	
				Durgapurdanda RF	CATP			50		0	
				Total			**0**	**500**	**0**	**0**	
			Total 2011-12			**40.231**	**17**	**689**	**0**	**71631**	

Sl. No	Year	Name of the Division	Buget Sub-head & Name of the Project	Location of the Plantation site	Type of plantation CA/PCA/SZ or any other.	Physical Achivement				No of seedling planted	Remarks
						AR in ha	ANR with Gap PLantion in ha	ANR without Gap PLantibg	Bald Hill Pltn. In ha		
1	2	3	4	5	6	7				8	9
4	2012-13	Angul	Utakal B-I-Coal by M/s Jindal	Baudbeda	CA	33.722				53956	
			Intigrated Still Complex With CPP by M/S JSPL	Kantamegha,Ragudipada	CA		168.232			33647	
			Utakal B-I-Coal by M/s Jindal	Arakhadihi RF	1.5-SZ		4			800	
			Natraja UG Mining for cool in Talcher Area by M/S MCl	Kauchiakhola RF	SPL-RDF			50		0	
				Hirapur RF				50		0	
				Toatl				**100**		**0**	
			Rengali Irrigation Project- Canal Bank	Right Canal	Canal Bank	30				48000	
			Rengali Irrigation Project CATP	Debinagar PRF	CATP			100		**0**	
				Simlipathar RF	CATP			200		**0**	
				Durgapur RF	CATP			100		**0**	
				Kanloei RF	CATP			100		**0**	
				Sunerijharan PRF	CATP			50		**0**	
				Jaltap RF	CATP			50		**0**	
				Bulajhar ARF	CATP			50		**0**	
				Mankandchua ARF	CATP			50		**0**	
				Langalkhol ARF	CATP			50		**0**	
				Kanteikolia BRF	CATP			50		**0**	
				Patakhamna BRF	CATP			100		**0**	
				Badakathia BRF	CATP			100		**0**	
				Total			**0**	**1000**		**0**	
			Total 2012-13			**63.722**	**172.232**	**1100**	**0**	**136403**	
5	2013-14	Angul	Coal Mining & dumping over burden in village Golgadia & Malibramhani under Chhendipada Tahasil by M/S Monnet Ispat Energy Ltd. **(CA/PCA)**	Katada	CA	12				19200	
			Coal Mining & dumping over burden in village Golgadia & Malibramhani under Chhendipada Tahasil by M/S Monnet Ispat Energy Ltd. **(1.5 SZ)**	Gohiradanda RF	1.5 SZ	10				16000	
			Utkal-C Coal Block in village Raijharan, Nadicora, Simlisahi & Golgadia under Chhaendipada Tahsial for Coal Minning of M/S Utkal Coal Ltd. **(1.5 SZ)**	Gumpha ARF	1.5 SZ		32			6400	
			Rengali Irrigation Project (CATP)	Kankurupal RF	CATP		50			10000	
				Kosala RF	CATP		50			10000	
				Dangapal RF	CATP		100			20000	
				Nunmati RF	CATP		100			20000	
				Marudhip RF	CATP		100			20000	
				Durgapurdanda RF	CATP		50			10000	
				Santrabandha RF	CATP		50			10000	
				Total			**500**			**100000**	
			Total 2013-14			**22**	**532**	**0**	**0**	**141600**	
6	2014-15	Angul									
7	2015-16	Angul	Construction of 2 x 600 MW Thermal Power Plant in Angul Forest Division of Angul District by M/s Jindal India	Kuio-Sakasingha RF	PCA	20				32000	
				Kuio-Sakasingha RF	PCA		295			59000	

Sl. No	Year	Name of the Division	Buget Sub-head & Name of the Project	Location of the Plantation site	Type of plantation CA/PCA/SZ or any other.	Physical Achivement				No of seedling planted	Remarks
						AR in ha	ANR with Gap PLantion in ha	ANR without Gap PLantibg	Bald Hill Pltn. In ha		
1	2	3	4	5	6	7				8	9
			Diversion of 134.41 ha of forest land including safety zone area of 0.18 ha to be maintained as safety zone in addition to the already diverted 71.64 ha of forest land for Bharatpur OCP of M/S Mahanadi Coal Fields Limited .	Mankadchua RF	CA		269			53800	
				Matharagudi RF	PCA		21.5			4300	
				Bulajhar RF	1.5 SZ		16.5			3300	
			Diversion of 324.520 Ha of Revenue Forest land including safety zone area of 5.232 ha for mining of Coal from Mandakini Coal Block-A in Angul District by M/s Mandakini Coal Company Ltd.	Dhenkuli RF	1.5 SZ	2.5				4000	
				Dhenkuli RF	1.5 SZ		5.348			1070	
			Rengali Irrigation Project CATP	Simlipathar RF 7 & 8	CATP		200			40000	
			Total 2015-16			**22.5**	**807.348**	**0**	**0**	**197470**	
8	2016-17	Angul	Compensatory Affn.- Talcher Medical College-**CA**	Dera PRF	C.A		17			3400	
			Compensatory Affn.-Approach Road Jindal	Jucob, Khata No. 999		4.86				7776	
			Compensatory Affn.-CPoling Station Transmission line-**SZ**	Basala	SZ	0.7015				1122.4	
				Antulia Tabada RF Comtt No. 3 & 4	SZ	1.9345				3095.2	
				Angul Poling Station to Jhasuguda Poling Station Transmission line	SZ	1.284				2054.4	
				Lokeipasi	SZ		6.42			1284	
				Antulia Tabada RF Comtt No. 3 & 4	SZ		24.09			4818	
				Angul Poling Station to Jhasuguda Poling Station Transmission line	SZ		15.78			3156	
			Total 2016-17			**8.78**	**63.29**	**0**	**0**	**26706**	
9	2017-18	Angul	**Compensatory Afforestation**- Construction of Railway line from Kalinga OCP Talcher to Angul Railway station by M/S MCL Ltd. CA	Seepur RF	CA	2.48				496	
			Compensatory Afforestation- Construction of Talcher Bimalgarh new BG Rail link by East Cost Railway -CA	Kauchiakhola RF instead of Bulajhar RF	CA	48.5				9700	
			Compensatory Afforestation-Railway Siding Utkal Coal Ltd-100 tree plantation	Kumunda-Taltaila						100	
			Total 2017-18			**50.98**	**0**	**0**	**0**	**10296**	

Sl. No	Year	Name of the Division	Buget Sub-head & Name of the Project	Location of the Plantation site	Type of plantation CA/PCA/SZ or any other.	Physical Achivement				No of seedling planted	Remarks
						AR in ha	ANR with Gap PLantion in ha	ANR without Gap PLantibg	Bald Hill Pltn. In ha		
1	2	3	4	5	6	7				8	9
10	2018-19	Angul	**Compensatory Afforestation**- Diversion of 12.63 ha forest land for laying slurry pipe line for disposal of Ash from capative power plant (CPP) of NALCO to Bharatpur South Coal Block of MCL and to bring backdecanted water from the mines after treatment to CPP for re-use CA	Paturia-Petacheri	CA		26			5200	
			Compensatory Afforestation- Diversion of 6.682 ha forest land for lcoal transporatation to coal washery by M/S Jindal Steel poer Ltd.e CA	Nukhuripada	CA	6.682				10691	
			Total 2018-19			**57.662**	**26**	**0**	**0**	**26187**	
11	2019-20	Angul	Diversion of 1.23 ha Forest land as per Sabika Record for setting up Railway siding by M/S Global Coal Mining Pvt. Land-CA	Khindo Plot No. 542 of Khata No. 276	CA	1.23				1968	
			Diversion 440.53ha of Forest Land including 3.80ha SZ in Hingula-II OCP Expnsaion Phase II by M/S MCL- CA	Pathargarh RF	CA		200			40000	
				Durgapur RF	CA		200			40000	
				Kanheijena RF	CA		100			20000	
				Nialu-Sapkata-Lodhajhari R	CA		272			54400	
				Dhankuli RF	CA		110			22000	
				Total			**882**			**176400**	
			Diversion of 240.672 ha including Forest Land 2.776a SZ within the total MI area of 690.00 ha for Ananta Extension OCP (Phase-III) of M/S MCL Ltd.- 1.5SZ	Kachiakhola RF	1.5 SZ		4.2			840	
			Total 2019-20			**1.23**	**886.2**			**179208**	
			Grand Total			**324.908**	**2707.56**	**2039.13**	**0**	**988201**	

Appendix – XVV

The type of road 583.63 Kms & existing forest road length of 75.5 Kms. spread over 9 roads are not properly maintained due to paucity of funds. These roads are important means for transportation of forest produce, supervision of departmental work and to check smuggling, illicit felling and poaching. Moreover it also serves local people and tribal who use these roads for communication.

Type of Road	**Length in KMs**	**Remarks**
District Road	329.02	
National highway – 149	19.53	
National highway – 53	91.52	
National highway – 55	54.65	
State highway	88.91	
Total	**583.63**	

List of forest roads with length

Sl.No.	Name of Range	Name of Road	Length in KM	Type
1	Raigoda	Nuakheta-Raigoda	5.5	Kucha
2	Raigoda	Rasanda-Kantamegha	6.0	-do-
3	Purunagarh	Purunagarh-Manikjodi	12.0	-do-
4	Durgapur	Lembutaila to Kandhakoili	5.0	-do-
5	Chhendipada	Raijharan-Durgapur	10.0	-do-
6	Talcher	Gaham-Bulajhar	13.0	-do-
7	Talcher	Sibarampur-Kalamachhuin	11.0	-do-
8	Kaniha	Jharabereni-Sapakata	8.0	-do-
9	Kaniha	Sapakata-Andhari	5.0	-do-
	Total		**75.5**	

List of Medicinal Plant Species sampled in Angul division with utilization		
Sl No	**Species name**	**Medicinal**
1	*Dillenia pentagyna*	10-12 ml of stem bark decoction taken twice or thrice in a day to cure stomach-ache
2	*Evolvulus alsinoides*	1-15 ml of whole plant decoction taken orally.
3	*Wrightia tinctoria*	1-2 glasses of tender tips decoction given orally for fever
4	*Vernonia cinerea*	1-2 teaspoons of root decoction taken daily once to 3-4 days.
5	*Oldenlandia affinis*	1-2 teaspoons of whole plant decoction taken twice in a day.
6	*Ixora arborea*	2-3 glasses of stem bark decoction given orally.
7	*Vanda tessellata*	2-3 inches of root crushed with pepper and garlic and extract taken daily once to 3-4 days.
8	*Holarrhena pubescens*	2-3 teaspoons of stem bark decoction taken daily once to 2-3 days.
9	*Gmelina arborea*	2-3 teaspoons of stem bark extract taken with pepper and garlic powder daily once to 3-4 days.
10	*Soymida febrifuga*	3-4 teaspoons of stem bark extract given twice or thrice in a day.
11	*Hemidesmus indicus*	4-5 teaspoons of root decoction taken daily twice to 2-3 days.
12	*Acacia chundra*	4-5 teaspoons of stem bark decoction taken daily twice to one week for rheumatic pains
13	*Cassia obtusifolia*	4-5g of tender shoot tips powder taken with milk daily once to 2-3 days.
14	*Elephantopus scaber*	Astringent, used in diarrhoea, dysentry and swelling or pains in stomach
15	*Dendrophthoe falcata*	bark narcotic, used for asthma
16	*Bauhinia racemosa*	Bark used in dysentery. Decoction of leaves used in malaria. Leaves with onion for diarrhoea.
17	*Boswellia serrata*	Bark used in skin troubles and diarrhoea. Gum used in dysentery,pulmonary affections and cutaneous troubles.
18	*Biophytum sensitivum*	Decoction of leaves used for diabetes,asthma and phthisis. Tonic and stimulant, used in chest complain,convulsions,cramps and inflammatory tumours.
19	*Elytraria acaulis*	Decoction of leaves used for venereal diseases, cough
20	*Butea superba*	Decoction of shoots used in piles. Seeds sedative and antihelmintic.
21	*Madhuca indica*	Dry flower decoction taken orally.
22	*Borreria hispida*	Extract of leaves given for haemorrhoids and gall-stones. Seeds used in diarrhoea,dysentery.
23	*Canscora diffusa*	Fresh juice prescribed in insanity,epilepsy and nervous debility.
24	*Cordia dichotoma*	fruit is astringent, anthelmintic, diuretic, used for diseases of chest.
25	*Terminalia chebula*	Fruit pulp chewed and sap swallowed.
26	*Diospyros melanoxylon*	Fruit pulp taken orally for dyspepsia
27	*Cassia fistula*	Fruit pulp with pepper, garlic, tamarind and common salt are crushed and made it as a Rasa and taken orally.
28	*Bombax ceiba*	Fruits expectorant and diuretic, used in calculus affections and ulceration of bladder and kidneys.

Sl No	Species name	Medicinal
29	*Buchanania lanzan*	Gum used as an external application.
30	*Buchanania angustifolia*	Gum used in diarrhoea and intercostal pain.
31	*Smilax zeylanica*	Half cup of tuberous root decoction taken orally.
32	*Butea monosperma*	Half kilo flowers boiled in a bucket of water and used as a bath water thrice in a week.
33	*Alysicarpus vaginalis*	Leaf juice used as an ear drops and also taken with pepper and garlic powder daily once to till cure for madness
34	*Ampelocissus latifolia*	Leaf juice used in dental troubles. Root decoction in dysentery.
35	*Sida cordata*	Leaf paste applied and tied with bandage.
36	*Waltheria indica*	Leaf paste applied over the insect bitten area f
37	*Miliusa tomentosa*	Leaf paste rubbed over the head twice or thrice in a week.
38	*Ximenia americana*	Leaf paste used as an external application to heal wounds
39	*Gardenia latifolia*	Leaf paste used as an external application.
40	*Mitragyna parvifolia*	Leaf paste used as an external application.
41	*Ziziphus xylopyrus*	Leaf paste with turmeric used as an external application for skin eruptions
42	*Cassia tora*	Leaves purgative, used in ringworm and other skin troubles.
43	*Desmodium triflorum*	leaves used for dysentry, diarrhoea and convulsions
44	*Dodonaea viscosa*	leaves used on burns, swellings and wounds
45	*Phyllanthus urinaria*	liver diseases, jaundice, plant is diuretic
46	*Pterocarpus marsupium*	Oil used in diarrhoea and dysentry and extraction of wood used in diabetes.
47	*Bridelia retusa*	Plant exhibited antiviral,hypoglycaemic and hypotensive properties.
48	*Andrographis paniculata*	Plant used for dysentery, cholera, diabetes, influenza, bronchitis, itches and piles. Decoction used for sluggishness of liver and in jaundice.
49	*Byttneria herbacea*	Pulverized root stock used in cholera and diarrhoea.
50	*Asparagus racemosus*	Root juice is mixed with honey used for dyspepsia.
51	*Tragia involucrate*	Root paste rubbed over the bitten area.
52	*Desmodium pulchellum*	root paste used as an external application in scorpion-sting
53	*Crotalaria albida*	root purgative
54	*Clerodendrum serratum*	root used in rheumatism and dyspepsia, leaves used as febrifuge, external application for cephalagia and opthalmia.
55	*Costus speciosus*	roots and rhizomes used as tonic and anthelmintic
56	*Triumfetta rhomboidea*	Roots fed to cattle's.
57	*Desmodium gangeticum*	roots used as diuretic, expectorant and febrifuge
58	*Schleichera oleosa*	seed oil leg swelling, in perfumery and soap making
59	*Celastrus paniculatus*	seed oil used in scabies, rheumatic pains, eczema, beriberi and paralysis. Used in Hysteria
60	*Semecarpus anacardium*	Seeds burnt and fume spread out at home.
61	*Cassia pumila*	Seeds used as purgative.
62	*Casearia elliptica*	Stem bark crushed and spread to the ditches and ponds for easy hunting of fishes.
63	*Pterospermum xylocarpum*	Stem bark crushed with the sufficient quantity of pepper and garlic and extract given daily twice to 4-5 days.
64	*Xylia xylocarpa*	Stem bark paste applied and tied with bandage for skin eruptions

Sl No	Species name	Medicinal
65	*Lannea coromandelica*	Stem bark paste used as a n external application.
66	*Casearia graveolens*	Stem bark paste used as an external application.
67	*Gardenia resinifera*	Stem bark paste used as an external application.
68	*Dalbergia paniculata*	Stem bark paste with neem oil used as an external application in the case of baldness
69	*Emilia sonchifolia*	Sudorific, decoction used in infantile tyanpanites, used in inflammation, conjunctivities, rheumatism
70	*Phyllanthus amarus*	Tender tips crushed with the pepper and garlic and juice used as nasal drops and eardrops.
71	*Terminalia bellirica*	The fruit pulp with those of Terminalia chebula, Phyllanthus emblica are crushed and powder (1 teaspoon) taken daily twice to 4-5 days.
72	*Dioscorea bulbifera*	tuber apllied to ulcers, used in piles and dysentry
73	*Geodorum densiflorum*	Tuber paste applied and tied with bandage.
74	*Curculigo orchioides*	tuberous roots used for skin troubles, used in piles, jaundice, diarrhoea and asthama
75	*Dioscorea pentaphylla*	tubers used for swellings
76	*Aegle marmelos*	unripe fruits used for diarrhoea,dysentery
77	*Adiantum philippense*	used in blood diseases & epileptic fits.
78	*Anamirta cocculus*	Useful for external application in some types of ringworms & skin affections.

Vernacular Name	Botanical Name	Status Of Species as Per IUCN Red List
Rakta Chandan	*Pterocarpus santalinus*	EN
Agnisikha	*Gloriosa superba*	EN/NT
Acacia	*Acacia auriculoformis*	LC
Chhatian	*Alstonia scholaris*	LC
Cashew	*Anacardium occidentale*	LC
Nima	*Azadirachta indica*	LC
Hinjala	*Baringtonia acutangula*	LC
Manjari / Paldhua	*Brythrina indica*	LC
Salapa	*Caryota urens*	LC
Kusuma	*Cassia fistula*	LC
Sweta Simili	*Ceiba pentandra*	LC
Baruna	*Crataeva religiosa*	LC
Oau	*Dillenia indica*	LC
Anla	*Emblica officinalis*	LC
Dimiri	*Ficus glomerata*	LC
Jari	*Ficus infectoria*	LC
Gambhari	*Gmelina arborea*	LC
Champa	*Michelia champaca*	LC
Kusuma	*Schleichera oleosa*	LC
Sal	*Shorea robusta*	LC
Jamu	*Syzigium cuminii*	LC
Kaiyan / Tentuli	*Tamarindus indica*	LC
Tentuli / Tamarind	*Tamarindus indica*	LC
Ghantal	*Trema orientalis*	LC
Chadaigodi	*Vitex peduncularis*	LC
Barkoli	*Zizyphus jujuba*	LC
Bela	*Aegle marmelos*	NT
Bija/Piasal	*Pterocarpus marsupium*	NT
Piasala	*Ptrocarpus marsupium*	NT
Bheru	*Chloroxylon swietenia*	VU
Karada	*Cleistanthus collinus*	VU
Sisoo	*Dalbergia latifolia*	VU
Chandan	*Santalum album*	VU
Ashoka	*Saraca asoca*	VU
Arguna	*Cycas Circinalis*	EN
Lantana (Naga airi)	*Lantana camara*	G5
Nagairy	*Lantana camara*	G5
Baula	*Mimusops elengi*	LC
Bhersunga	*Murraya koenigii*	LC
Dhatki	*Woodfordia fruticosa*	LC
Ghurudu	*Gardenia gummifera*	LC
Lajakoli	*Mimosa pudica*	LC
Mersunga	*Murrya koenigii*	LC

Rakta Chandan	*Pterocarpus santalinus*	EN	
Local Name	**Vernacular Nmae**	**Scientific Name**	**Status Of Species as Per IUCN Red List**
Animals			
Sambar	Sambar	*Rusa unicolour*	CR
Bajra kapta	Pangolin	*Menis crassicaudata*	EN
Bagha	Tiger	*Panthera tigris*	EN
Balia kukur	Wild dog	*Cuon alpinus dukhunensis*	EN
Hati	Indian elephant	*Elephas maximua*	EN
Badodi	Shortnosed fruitbat	*Cynopterus spinax*	LC
Bilua	Jackal	*Canis sureus indicus Hodgson*	LC
Chittal	Spotted deer	*Axis axis*	LC
Gundichimusa	Squirrel	*Funumbulus pennanti*	LC
Gurandi	Mouse deer	*Tragulus minna*	LC
Jhinka	Porcupine	*Hystrix indica*	LC
Kokisiali	Fox	*Vulpes bengalensis*	LC
Kutura	Barking deer	*Muntiacus mintijack*	LC
Mankada (Pati)	Rhesus macacue	*Macaca mulatta*	LC
Musa	Rat	*Rattus rattus*	LC
Musa (nepali)	Flying squirrels	*Petauristaphili philippinensis*	LC
Neula	Common mangoose	*Herpestes eduardsii*	LC
Saliapatani	Small Indian civet	*Viverricula indica*	LC
Heta	Haeyna	*Hyaena hyaena*	NT
Bhalu	Black bear	*Melursus ursinus*	VU
Gayal	Bison	*Bibos gaurus*	VU
Kalarapatria bagh	Leopard	*Panthera pardus fusca*	VU
Odha	Common otter	*Lutra lutra*	VU
BIRDS			
Sarguna	King vulture	*Sacrongyas calvus*	CR
Bani	Indian myna	*Acridotheres tristis*	LC
Banakukuda	Jungle fowl (Red)	*Gallus gallus*	LC
Bhadabhadalia	Roller / Blue jay	*Coracas bengalensis*	LC
Bhaliakhai	Common grey horn bill	*Tikos birostris*	LC
Chatak	Pied crested cuckoo	*Clammator jacobinus*	LC
Dahuka	White Breasted Hen	*Amanronis phoenicurus*	LC
Gendalia	Open billed stork	*Anastomus oseitans*	LC
Ghar chatia	House scarriw	*Passer domesticus*	LC
Gobara chadhei		*Molpates cafer*	LC
Haladi Basanta	Black headed oriole	*Oriolus xanthornus*	LC
Harada Chadhei		*Crecapus phoenicopterus*	LC
Kajalapati	Black drongo	*Dicrurus macrocercus*	LC
Kau (ati)	King crow	*Corvus splendens*	LC
Koili	Indian cuckoo	*Eudynamis scolopaclus*	LC
Kumbhatua	Crow pheasant	*Cantropus sinensis*	LC
Kapta	Dove	*Streptopellchin oensis*	LC
Mayura	Peacock	*Pavo cristatus*	LC
Machharanka	Pied King fisher	*Ceryle rudis*	LC
Panikua	Little cormorant	*Phalacrocorax niger*	LC
Pecha	Owl	*Athena brama*	LC

Rakta Chandan	*Pterocarpus santalinus*	EN	
Sari	Hyna	*Gracula religiosa*	LC
Sankhachila	Kite brahminy	*Heliastur Indus*	LC
Kochilakhai	Malabr pied Horn Bill	*Anthrococeros coronatus*	NT
SNAKES/AMPHIBIANS			
Laudonkia	Common green whip snake	*Dryophis nasutrus*	LC
Rana	Banded krait	*Bungarus fasiatus*	LC
Tampa	Monocellata cobra	*Naja Naja kuothia*	LC
Ajagarh	Indian python	*Pythonmolurus*	NT
Ahiraj	King Cobra	*Naja Hannah*	VU
LIZARDS			
Bahurupi	Indian chameleon	*Chammaeleon zeylanicus*	LC
Godhi	Cargelandmonitor	*Vernus monitor*	NT
Jhitipiti	House lizard	*Homidactylus flavirividis*	LC
TORTOISE			
Kainchha	Land tortoise	*Testudo elonguta*	CR
Pani Kainchha	Water tortle	*Lissemys punctan granose*	VU
FISHES			
Bhakura		*Catle catla*	LC
Chenga		*Ophiocaphalus gachua*	LC
Dand-khiri		*Esomus dandrica*	LC
Illishi		*Hilsa ilisa*	LC
Jalanga		*Pangasius pangasius*	LC
Kantia		*Myotus cavasius*	LC
Magura		*Clarias batrachus*	LC
Mirkali		*Cirrhina mrigala*	LC
Mahurali		*Amblypharyngodon mola*	LC
Phali		*Notopterus notopterus*	LC
Rohi		*Labeo rohita*	LC
Seula		*Ophiocephalus striatus*	LC
Singi		*Heterophneustes fossil*	LC
Todi		*Mastacembelus armatus*	LC
Chitala		*Notopterus chitala*	NT
Balia		*Wallagonia attu*	VU