



WORKING PLAN OF NAYAGARH FOREST DIVISION



FOR THE PERIOD 2021 - 2031
BY

SMT. KSHAMA SARANGI, OFS-I (SAG)

DIVISIONAL FOREST OFFICER,

NAYAGARH DIVISION

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Rakesh Kumar Sahu, Fr
Mahitama Section



FOREWORD

The revised Working Plan of Nayagarh Forest Division, for the period from 2021-22 to 2030-31 has been approved vide Letter No.8 (31)/32/2016 FCE dated 15.07.2022 of the Govt. of India Ministry of Environment Forest & Climate Change, Integrated Regional Office, Bhubaneswar. Nayagarh Division is one of oldest Division in Odisha, being managed on a scientific manner. After the expiry of outgoing Working Plan (2007-08 to 2016-17), the forests of this Division was managed according to approved Annual working schemes from 2017-18 to 2020-21.

This plan has been prepared with realistic prescriptions to achieve expected outcome based on SWOT Analysis of 11 Working circles, both exclusive and overlapping Working Circle are prescribed in this working plan covering a total area of 105881.2005 Ha. The Car timber Working Circle, a special working circle for this Division which encompasses an area of 100368.5105 Ha. aimed at meeting the requirement of Car Timber for Lord Shree Jagannath, Puri and Shree Lingaraj Temple every year.

Nayagarh Forest Division is very sensitive to wild animal depredation, particularly elephants. The wildlife overlapping working circle recommends many mitigative measures and habitat improvement activities. Adequate attention has also been assigned to the trees outside forest area since they play an important role in amelioration of climate and satisfy public demand for small timber etc.

Smt Kshama Sarangi, OFS – I (STS), Divisional Forest Officer Nayagarh Forest Division has carried out a commendable job in revising the working plan to meet the challenging circumstances linked to modern forest management. I hope, this plan will serve as a technical and scientific document to achieve the stated objectives for the management of forest in Nayagarh Forest Division.

Dated.

Aranya bhawan,
Bhubaneswar, Odisha


Shri Debidutta Biswal, IFS
Pr. CCF & HoFF
Odisha, Bhubaneswar
Principal Chief Conservator of Forests
& Head of Forest Force Odisha
Bhubaneswar-23

PREFACE

Nayagarh Forest Division has been constituted vide Govt. of Orissa Notification No. **1282R dated 3.2. 1950**. It comprises forests of Ex-States of Nayagarh, Khandapara and Daspalla. This division consists of area of all Tahsils except Ranpur. The division has been reorganized vide Office Order No. **238 dated 8.10.1999** of the Principal Chief Conservator of Forests, Odisha Bhubaneswar in which two Reserved Forest Blocks namely Baisipalli RF and Mahanadi RF of Daspalla Tahsil were transferred to Mahanadi Wildlife Division.

The outgoing working plan was prepared by Sri Sudarsan Behera, OFS-I (SB) and was valid up to 2016-17. The PWPR (Preliminary Working Plan Report) was drawn by Smt. P. Mekro, IFS, the then Regional Chief Conservator of Forests, Bhubaneswar and approval of the PWPR made vide memo no.23296 dated.08.12.2016 of O/o Pr CCF, Odisha, Bhubaneswar.

It is a great privilege and opportunity on my part to prepare this “Revised Working plan” as per the National Working Plan Code-2014. Valued experience of the then Asst. Conservator of Forests, Range Officers, Foresters and Forest Guards helped me to compile the data for revision of the Plan and formulate the future working modalities and prescriptions thereof. ORSAC and NRSA, Hyderabad have played a crucial & vital role using the Remote sensing techniques for selecting sample points, collections of primary data from sample points and its analysis for calculating the growing stock and preparation of Maps. Due to their extensive help and co-operation, it could be possible to write the plan within a small span of time.

I am indebted to Smt. Pusa Zhule Mekro, IFS, Ex-RCCF, Bhubaneswar who had taken a lot of pain in giving proper shape to the PWPR and it acts like the torch bearer for this plan.

I am very much thankful to Sri Debidutta Biswal, IFS, Principal Chief Conservator of Forests & HoFF, Odisha, Sri Sisir Ratho, Ex PCCF & Sri AK Jayswal, IFS CCF (P&SM) for their inspiration and valuable guidance from time to time in drafting the working plan.

I am thankful to Sri Manoj Mahapatra, IFS, the Regional Chief Conservator of Forests, Bhubaneswar who has guided all along preparation of this Plan. His pragmatic views and knowledge of long working in the field has made it more informative & will go a long way in achieving the objectives of this plan

Credit must go to Sri L.N. Behera; the then DFO of this Department for his great effort in preparation of PWPR of Nayagarh Forest Division. His effort is extremely commendable. I am thankful to all Range Officers, Foresters, Forest Guards, Ministerial Staffs and Data Entry

Operators of this Division for their Valuable assistance for bringing out this plan to lime light.

My thanks to Sri Dhanraj H.D., IFS the then DFO & Sri Arabinda Mohanty, OFS-I (SB), the then ACF, Sri Himansu S. Muduli ACF(J.B.) of this Division who worked hard for preparation of this plan and timely collecting Data from field, different organizations and compiling voluminous Data for this Plan.

I hope, this Plan will lead to a sustainable management of Forest and act in direction of checking the global Climate Change being faced. It will provide vital guidance to field staffs, managers, planners, readers, Research scholars working in the field of Forestry & Wildlife.

At the end, once again I extend my heartfelt thanks and appreciation to all for their cooperation.

Thanking You all,


Kshama Sarangi, OFS-I (STS)
Divisional Forest Officer.
Nayagarh division.

INDEX MAP OF NAYAGARH FOREST DIVISION



LOCATION MAP OF NAYAGARH FOREST DIVN

Scale 1:5,00,000



Prepared at GIS Cell, O/o the PCDF, Cuttack

~ District Boundary
Nayagarh Forest Division

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I. Introduction

Executive Summery:

- The Nayagarh Forest Division has been constituted vide Govt. of Orissa Notification No. 1282R dated 3.2. 1950. It comprises forests of Nayagarh, Khandapara and Daspalla Ex-states.
- The division has been reorganized vide Office Order No. 238 dated 8.10.1999 of the Principal Chief Conservator of Forests, Odisha Bhubaneswar in which two Reserved Forest Blocks namely Baisipalli RF and Mahanadi RF were transferred to Mahanadi Wildlife Division.
- The division is bounded by Latitude $19^{\circ}54'$ N to $20^{\circ}28'$ N and Longitude $84^{\circ}20'E$ to $85^{\circ}19'E$.
- The total geographical area of Nayagarh Forest Division is 3067.281 Sq. Km. against total Geographical area of the district 3890 Sq. Km. (78.85%).
- The division is coterminous with Nayagarh District except Ranpur CD Block and Reserved Forests constituting the Baisipali Sanctuary.
- It comprises Seven C.D. blocks, three NACs. & one Municipal Council.
- The total Population of the --divided to Seven Ranges,22 Sections &93Beats.
- There are 145 numbers of buildings in the Division. All the Offices under Nayagarh Forest Division are having its own buildings.
- In order to facilitate Protection, Harvesting of Forest Produce and Management of Forests, there are 22numbers of Forest Roads over a length of 222.40 Km.
- The area is a part of Eastern Ghats orogenic province. The joints, fractures, foliations form the prominent conduits for ground water movement. The structures generally trend in NW-SW direction with a dip of 700 to 800 towards east.
- Physio-graphically the division exhibits a rugged and broken mountain system separated by a number of plains and valleys. It is a stable landmass of Indian peninsula but the rise and fall of the hills are not in any systematic order. These hills and plains are criss-crossed by numerous nallas and rivers. Numbers of isolated and scattered hills are seen in the division.
- The Mahanadi, Burtanga, Kaunria, Kamai, Budha nadi constitute the major drainage system of the Division. The drainage is mainly dendritic, radial & centripetal in nature.



- Hot springs have been reported at Tarabalo near the village Nilakantha Prasad. At Tarabalo, the patches of warm water (mud pool) in an elevated area cover about 1,500 Sq.m through which hot water oozes out. The temperature is about 57⁰ C.degree centigrade and has a feebly sulphurous odour. The entire area drains to River Mahanadi which is on northern boundary of the district / Division.
- Major portion of drainage water from the forests of this Division flows into the River Mahanadi. A small portion of forests of the Southern part of Chadiapalli Forest Block, a portion of South-West of Ragadimada Forests Block, Western portion of Bahadajhola Forest Block and South-West of Gochha Forest Block drain in to the Rushikulya River of Ganjam District.
- In the district, the oldest rocks are represented by Eastern Ghat Supergroup of Archaean age. The Eastern Ghat Supergroup comprises of khondalites and charnockites (acid, intermediate and basic). Khondalites and charnockites occur as isolated residual hills throughout the district. Khondalite group of rocks comprise garnet-quartz-feldspar-graphite, schist, gneiss, granetiferous and sillimanite quartzite and leptynite. Granite gneiss and biotite granite of Archaean age represent major country rock of the district.
- Graphite, Semiprecious stone, Dimension and Decorative stone Minerals occurs in the district.
- Graphite: Graphite deposits are located around Sanaperi, Gochhabari (Dungiastaila), Gochhabari (Makastaila) and Sanasilinga, Takara and Narachipara area of the district. The Fixed Carbon in these graphite deposits ranges from 7.83% to 16.4%.
- Occurrences of semiprecious stone are reported around Dimiripat, Malaspadar and Sagarbhanga area of the district.
- Occurrences of Decorative & Dimension stone around Chaupalli, Mardarajpur, Khunta bandh, Singhpada, Khandapada, Sunamundhi, Kantilo, Laxmiprasad, Bebartapur, Malisahi, Bhandarparbat, Damasahi, Kabti hill and Kailama etc. are note worthy.
- A total resource of 2.2836 million cubic meters has been estimated in the district.
- There are two types of soil generally found in the district i.e. Alfisols and Ultisols.
- Alfisols: It consists of a wide range of soils including mixed red and black soils, red earth, red loamy soils, red sandy soils, red gravelly soils and other alluvial soils. The red soils are light textured, usually devoid of lime concretions deficient in nitrogen, phosphate & organic matter. The PH of the soil varies from 6.5 to 7.3. These soils are suitable for cultivation of paddy and other crops.



- Ultisols: These include laterite & lateritic soil, red and yellow soils. They are characterized by low contents of Nitrogen, Phosphate, Potassium & Organic matter. The PH of the soils ranges from 4.5 to 6.0. Due to granular nature of these soils cultivation is possible immediately after heavy rains without the danger of any unsatisfactory physical state. This soil type is mainly encountered in the southern part of the district.
- The District experiences tropical climate, with the summers being hot and the winter's cold. The maximum temperature that this district experiences is well above 40 deg C (during summers) and the minimum can be as low as 10 degree Celsius (during winters).
- The rainy Season usually starts from June- July and continues up to September. The South West monsoon brings rain to this tract. The average rainfall in this district is about 1330 mm.
- There are 42 Reserved Forests covering an area of 90705.713ha, 27 PRF with a total area of 11367.93ha and 21 numbers of DPF with area of 8176.61.
- There are 63 sites declared as Village Forest in the Division. The area under Village Forests is 579.45 ha
- There ten (10) Protected area in the Division covering 1535.24ha. The Compensatory afforestation Land has been declared as PF U/S 33 of the Odisha Forest Act, 1972
- The detail DLC List is furnished at Part-III of the Working Plan.
- The outgoing Plan is by Sri Sudarsan Behera, OFS-I (SB), the then Divisional Forest Officer, Nayagarh Division was valid from 2007-08- to 2015- 2016.
- There are ten working Circles prescribed for management of Forest.
- Out of 10 Working Circle three working Circle were independent Working Circle where as the rest are of Overlapping Working Circle.
- Out of 13289 boundary pillars 2195- number of pillars are in good condition. This constitutes about 20.38 % of the pillar surveyed.
- Hence it is inferred that the boundary of forest blocks are not Secured. An effort is to be made to repair / construct pillars against Damaged / Missing pillars for a secured boundary.
- The boundary position of Village Forests is not assessed. These are in small patches. Its boundary is to be assessed within 2/3 years and maintained throughout the plan period.



- Boundary Pillars / Boundary maintenance are important operation in protecting the forest land against land grabbers / encroachers. To maintain the boundary / Pillars a maintenance cycle of 5 years will be followed.
- The forests of the division are subjected to treat from Natural Calamities as well as from Biotic Factors.
- The forest types observed in this division as per Revised Champion & Seth Classification are 2B/C₃ - Odisha Tropical Semi Evergreen Forest, 3C/C_{1d} - Peninsular (Coastal) Sal Forest, 3C/C_{2e(ii)} - Moist Peninsular low level Sal Forest, 5B/C_{1c} -Dry Peninsular Sal, 5B/C₂ -Northern dry mixed forest, 5B/E₁ -*Anogeissus latifolia* forest and 5B/E₉ -Dry Bamboo Break.
- The TOF are integrated contribution of Plantations taken up outside the conventional Forest area by Forest Department, Horticultural plantation and other department. Plantations raised by private individuals in their fellow land and back yard.
- Agro Forestry practices, Avenue Plantations, Institutional Plantations contribute towards TOF.
- Distribution of Seedlings under farm forestry to a tune of 79.957 lakh has been achieved.
- Shifting cultivation is not observed in Nayagarh Division.
- Nayagarh Division is rich in floral diversity due to moist forests, river systems, hills and table land. Species from drier tract to moist and Semi evergreen are noticed.
- A diversity index (also called phylogenetic or Simpson's Diversity Index) is a quantitative measure that reflects how many different types (such as species) there are in a dataset (a community) and that can simultaneously take into account the phylogenetic relations among the individuals distributed among those types, such as *richness*, *divergence* or *evenness*. These indices are statistically representations of biodiversity in different aspects (richness, evenness and dominance).
- Shannon-Weiner Species Diversity Index, Evenness Index , Index of Dominance, Simpson index, Inverse Simpson index for sample points have been calculated to indicate the bio diversity of the area. At present Biodiversity Conservation has been initiated in the division. As per the instructions of the Biodiversity Board People's Biodiversity Register is being prepared and Biodiversity Committee in various panchayat and panchayat samities are being constituted.
- At present there is no Reservation Plot / Conservation Plot within any forest area.



- Timber supply for Car Festival i.e. Phasi, Dhaura Asan are overexploited.
- Cane is available in moist forests of this division. There Cane artisans in and around Nayagarh Town ship.
- Important Habitats of Nayagarh Division are Mahanadi Elephant Reserve, Eco Sensitive Zone of Satkosia Tiger Reserve, Elephant Corridor i.e. Buguda-Central Reserve Forest Corridor are coming within the division.
- Threats to this corridor are National Highway 57 connecting Nayagarh to Boudh district bisects the corridor near Buguda colony.
- Vehicular traffic on the road remains round the clock.
- A private collage (Maninaga Bahumukhi College) has been established since 1994. Due to the establishment of college, subsequent expansion of shops, hotels and other structures spreading along the highway and obstructing the corridor has affected elephant movement.
- Human settlements and agriculture fields are present within the corridor.
- In order to mitigate human-wildlife conflict and to provide safe passage to elephants, Forest Department has erected solar fence. The solar fencing has become a barrier to elephants using the corridor rather than providing safe passage.
- Rain water flowing from the Baisipali WLS has eroded soil forming deep pit of more than 15 ft along the highway in the corridor hindering elephant movement.
- Brutanga Irrigation Project on the Brutanga River (a tributary of river the Mahanadi) has been approved and irrigation canal will pass through the corridor. Construction of irrigation canal through the corridor will affect corridor usage.
- Khurdha – Balangir New BG Rail Line is under consideration and partly commission from both the end.
- Besides the Elephant Corridor as stated Elephant Movement is experienced in many routes. These have been named as “*Hati Chala Patha*”. The routes identified by field staff is approximately 19 in number.



- Threats and Challenges to wildlife are fragmentation of Habitat due to construction / widening of Roads, Transmission lines, Depletion of tree cover / Forest crop density.
- Scarcity of Water in interior & high altitude Forests in summer, Depletion of Food stock and deterioration of quality Food / Fodder, Depletion of Prey base / herbivorous, Annual Fire and loss of Ground Flora, Heavy biotic interference and intrusion by domestic animals (Cattle/ Goat/ Sheep), Illegal hunting by putting nets, electric live wire, etc are the real challenges to wildlife & its management. .
- Management Practices adopted are Deployment of Squad, Creation of Water Body Maintaining Salt licks Improved Communication System Public Awareness camps & legal action to the wrong doers.
- Regeneration survey has been conducted during point sampling enumeration. The procedure followed is as per Para 74 of the National Working Plan Code-2014.
- There is no regeneration which can be categorized as **“in plenty / abundant”** for any specific species in the division confined to specific forest blocks noticed during Regeneration Survey.
- The overall status of regeneration is good to fair. Suitable strategy is required to be incorporated in management practices to achieve establishment of regeneration.
- All culms occurring in the clump has been enumerated as per different classes of National Forest Inventory and these data has been used to assess the availability of bamboo/rattan using post stratification for a management unit as per the methodology adopted by FSI.
- Data from plot enumeration has been used to estimate the number of clumps per management unit. The overall regeneration status inference is fair.
- Forest Fire is of common occurred in forests of this division during fire season. The dry season in the area extends from the month of October to June and experiences a very hot summer during April to June.
- Due to the prolonged hot weather, not a single forest block is free from forest fire.
- Almost all instances of forest fire are man-made. Though Forest fire has a better role in management of Grass Land, induce regeneration of species having hard coat seeds, Reduce thickness of un-decomposed coarse leaf litters, control weeds, burning of seeds of unwanted species. Fire as a good servant has some role in forest



management in this division. Forest fire occurs annually and the damage caused enormously

- The buffalo and goats usually like to eat from lopped branches of trees. The cowherd boys while let their cattle / goats in the forest for food / grazing, they used to lop the branches.
- The species mostly affected due to lopping are Kanchan, Bija, Bamboo, Babool, Aamba, Panasa (Jack Fruit), Sirisa, Bada Chakunda, Kumbhi, Zyziphus, Kusuma, Kendu, Anla, Bahada, Neem, Gambhari, Sisoo, Sal etc.
- The trees not only lopped for fodder, in many a time many NTFP trees are lopped for collection of fruits / leaf/ flowers.
- The forests those are severely affected by Fire, having permanent opening of canopy, heavy grazing or permanent blank space are occupied by weeds.
- Eupatorium, Lantana and Bana tulasi are seen in major part of open space and periphery of forest blocks. Sometimes it became an impenetrable ground flora.
- Controlling of weeds is of paramount importance to allow natural regeneration to establish and check invasion. It may be of Physical method, Chemical method and combination of both.
- No massive infestation by pests is recorded during last plan period. In dry tract Sal heart rot disease has been noticed.
- Sal borers, Teak defoliators, Teak Skeletonizer and termite attack to seedlings at early stage are noticed.
- Forest degradation is mainly due to illegal removal of Forest Produce i.e. timber & Fire wood.
- Due to Biotic pressure & interference like heavy grazing, Ground fire and above all pressure from increasing population which exert pressure on land resulting encroachment.
- At present there are no mining / industrial projects in the division.



- Minor minerals are allowed at many places.
- Considering the importance and fragile nature of the eco system, Wildlife many regulations to protect the environment have been in force.
- In course of implementing working plan prescriptions, ANR (Aided Natural Regeneration), Plantation and various Soil & Moisture Conservation measures are being taken up in the division.
- In all forest vegetation improvement activities Soil & Water Conservation Measures are being implemented.
- Sixty Six numbers of New Water Bodies have been created in forests during last plan period and beyond.
- There are number of nalla / Stream in the forest & outside the forest. Most of the nalla are of seasonal in nature. Water flows in it mostly up to February / March and thereafter, the nalla dries up.
- Wetlands are one of the crucial natural resources. Wetlands are areas of land that are either temporarily or permanently covered by water. This means that a wetland is neither truly aquatic nor terrestrial; it is possible that wetlands can be both at the same time depending on seasonal variability.
- Wetlands exhibit enormous diversity according to their genesis, geographical location, water regime and chemistry, dominant plants and soil or sediment characteristics.
- Despite these benefits, wetlands are the first target of human interference and are among the most threatened of all natural resources.
- Around 50% of the earth's wetlands are estimated to have already disappeared worldwide over the last hundred years through conversion to industrial, agricultural and residential developments.
- Even in current scenario, when the ecosystem services provided by wetlands are better understood, degradation and conversion of wetlands continues. This is largely



due to the fact that the 'full value' of ecosystem functions is often ignored in policy-making, plans and corporate evaluations of development projects.

- A perusal of the data indicates that the average depth to water level in the district ranges from 0.9 m below ground level (at Daspalla -i) to 11.02 m below ground level (at Khandapada) during pre-monsoon period and from 0.30 m below ground level (at Daspalla-i) to 6.01 m below ground level (at Khandapada) during post monsoon period respectively.
- The decadal water level trends during pre-monsoon period indicate that 66.7 percent stations show rising trend of water level, the maximum being 0.199 m/Yr. The falling trend of water level is shown by about 37 % of the stations and maximum fall recorded is 0.105 m/yr.
- There is large scope for development of ground water, suitable schemes may be launched for ground water development to boost agricultural production in the district. The financial institutions should generously finance such schemes.
- In construction of ground water abstraction structures, such as dug wells, dug cum bore wells and bore wells, for irrigation minimum safe spacing should be maintained to avoid interference of the wells.
- For optimum utilization of the groundwater potential, necessary steps should be taken for providing energy to the wells.
- The Growing stock has been estimated basing on Sample enumeration carried out at 917 Sample points furnished by ORSAC.
- The field staff enumerated the trees available within 1000 m² taking the Sample points on the centre of the Square of 31.623m side. The collected data has been analyzed. On analysis the Growing stock in each forest block has been computed.
- Basing on Sample point analysis the growing stock of the division has been estimated. The Range wise available growing stock in Cum is furnished in the text.
- The total growing stock has been estimated to be **14.76 Million Cum**
- During Sample point enumeration occurrence of Bamboo has been recorded in many forest blocks Daspalla, Mahipur range in abundance. In Panchirda, Odogaon and Khandapada bamboo in fairly dense form is observed. Out of total bamboo forests i.e. 61151.015 ha in outgoing plan clumps per ha and culms available per clump are assessed.



- From the growing stock assessment it is predicted that about 2.45 lakh Sale Unit of bamboo can be harvested in a Cutting Cycle of four years. Bamboo Potential of the division is estimated to bear harvesting of 60000 SU of bamboo every year.
- Enrichment of Forests through silviultural practices and enrichment through Plantation is being practiced many decades ago. Conversion of miscellaneous forest to Teak plantation by Economic plantation is attempted.
- It is required to improve regeneration by resorting to High Forest System than coppice.
- Diameter growth is required to be attempted.
- It is observed that Sal is of Quality Class II/III in moist areas where as it is of III/ IV quality Class in a dry low altitude areas. Improvement of Soil quality by SMC will enhance the quality of Forest coupled with rigid Fire protection.
- In the outgoing plan coupe working has been prescribed in two Working Circle i.e. Sal Conversion Working Circle and Selection Working Circle. Under Sal Conversion Working Circle One Felling Series was prescribed i.e. Maichheli Felling Series under PB-I (Periodic Block) with 20 year's establishment period.
- Under Selection Working Circle Six (6) number of felling series namely, Ratadei, Central-1, Central-2, Chadiapalli-1, Chadiapalli- 2 and Nasaghar was suggested.
- In total 7 number of coupes were worked out every year during Plan period and under Annual Scheme from 2017-18 to 2020-21.
- The total timber production from Coupe is 12377.197 Cum and from other sources is 8045.267 cum
- Firewood from Coupe is 3676.5 Stacks (12'x3'x3') and from other sources 6142.29 Stacks obtained.
- 1Stack is equivalent to 1.50 Ton.
- Most of the available NTFP & MAP are now collected by the registered collectors under Gram Panchyat jurisdiction.
- Records of removal of NTFP except Sal leaf are not available.



- After use of Paper plates in a large Scale, Collection & use of Sal leaf is in a declined trend. This is a good trend from Forest management point of view.
- Kendu Leaf is also another Non Timber Forest Produce being managed by Kenduleaf Wing of the Department. The area comes under Phulbani KL Division Daspalla Range. 1.13 lakh Tons of fuel wood is required annually.
- It is exstimated that about 94,110 cum timber is required in the division per annum.
- For bamboo on an average their requirement is about 3 bamboos per day per artisan family.
- Taking 300 days of working the bamboo requirement for artisans is $398 \times 3 \times 300 = 358200$ number per annum. (398 family identified)
- They usually required 1st year bamboo for basket making. They usually depend on nearby forest for bamboo. There is a private Licensed Saw Mill Narayan Saw Mill, Badabhuin There is no record of Import / Export of timber in this division.
- Grazing in forests is a common sight. Rearing of Goat is extensively adopted in villages. They usually feed on forests. The ground floor of forest is highly disturbed and there is lack of grasses for herbivorous in forest. There is also lopping of trees for feeding to goats.
- It has a very adverse effect on plant growth. Physically there is no removal of fodders for cattle / domestic animals by removal by way of grazing are rampant.
- As per the NTFP Policy 2002, most of the NTFP items are being regulated by Gram Panchyat. There are no records on collection of NTFP in various Panchyat / Blocks. It is not practically possible to quantify the products being collected and its valuation, effect on family income of this division.
- Under the provisions of Joint Forest Management Resolution, 2011 ; 336 number of VSS (Vana Surakshya Samiti) has been constituted in the division.
- Plantations have been raised in this division during Social Forestry Project during 1985 onwards till 1995 which has been declared as village forest under section 30 of



the Odisha Forest Act, 1972. All total there are 63 VFC and Village Forest under their management is 579.45 ha.

- The empowerment of JFMC is at a medium to higher level. The Villagers are taking interest in Protection & Management of Forest assigned to them.
- Under National Afforestation Program, the involvement of VSS is of Participation level-V.
- For uplift of labours, occasional health camps, Skill up-gradation training camps are being conducted by the department. Now LPG connection, Gas Stove, LED bulb and water filter are being distributed in various villages of the division.
- No Socio Economic study has been conducted by the Forest department to ascertain economic status of villages and effect of Forest on improvement of Socio Economic status.
- The Economic study conducted in the State during 2014-15 by Planning & Coordination Department.
- The world famous Ratha Yatra (Chariot Festival) of Lord Jagannath at Puri is one of the most important festivals of Odisha. The festival celebrates the trinity of Jagannatha, Balabhadra and Subhadra and is held annually between June-July. The species used for the rathas comprise of dry-deciduous species.
- Timbers are mostly collected from Nayagarh Division / District.
- For Selection and felling of trees, a ritual is being conducted by Prits (Sabayat) from Puri coming with "Agyan mala" of Lord Jagannath.
- Besides various rights & concessions given under Joint Forest Management Resolution, Forest Rights Act, 2006 and Reserved Forest Notifications, there is no other rights & concessions allowed in favour of people of this division.
- The important NTFP collected from forests of Nayagarh division are Sal leaf, Siali Leaf, Siali fiber, Myrobalance (Harida, Bahada and Aonla), Honey, Mahula, Kochla, Kendu, Cane etc. The collection is decreasing year after year as it is not



remunerative due to poor abundance. On an average NTFP contributes up to 10% of tribal people's income in this region.

- Nayagarh Division own responsibility for supplying Timber for construction of Chariot (Ratha) for Lord Jagannath Temple, Puri and Lord Lingaraj Temple Bhubaneswar.
- Due to non availability of Specified timber, private devotees are providing timbers from their land. More people is required to be motivated for donating trees for construction of Chariot.
- People may also be motivated to plant trees in their land to meet the demand of such Timber in a long term basis. Motivation & Devotional aspect may be jointly explored and massive tree planting of desired species is to be taken up.
- For management of Forests, regulation of forest produce, protection of Wildlife, For collection & use of NTFP various Acts, Rules and Regulation, policy have been framed by the Central Government and State Government.
- Nayagarh Division is functioning since 1947. The approved working plans of past era and its author are
 - Working Plan of Nayagarh State by Mr. H.F.Mooney, IFS1941-1961,
 - Working Plan of Daspalla State by Mr. H.F.Mooney, IFS1938 to 1953,
 - Working Plan for Khandpada State (1936 to 1966),
 - Working Plan by C.L.MOHAPATRA for Nayagarh Division. 1960-61 to 1979-80,
 - Working Plan By Sri N.C.BAL1983-84 to 2002-03.
 - Working Plan By Sri Sudarsan Behera2007-08 to 2016-17,
 - Annual Working Schemes2017-18, 2018-19, 2019-20 & 2020-21.
- This revised working Plan comprising all the Reserved Forests (RF), Proposed Reserved Forests(PRF), Demarcated Protected Forests (DPF), Protected Forests (PF) and Village Forests (VF) of the Division.



- On event of its approval it will be for the period from 2021 to 2031 (For 10 years) i.e. from **1st April, 2021 to 31st March, 2031**.
- In course of preparation of Plan modern techniques has been adopted to estimate the Growing Stock, Carbon sequestration and Crop density.
- The village forests of the erstwhile Social Forestry Project have been included in this plan to have a better management of forests created under participatory approach.
- For Human Resource Capacity Building, circle level training camps have been organized under CAMPA to improve working skill.
- Training on following subject matter is being conducted under various training program for Foresters, Deputy Range Officer & Range Officers.
- Public awareness on various Forest & Environment matters is regularly being conducted by the division.
- World Wet lands Day, World Forestry day, Earth Day, World Environment Day, Elephant Day, Vanamahotsava week , Mass tree Planting Program, Wildlife Week are being celebrated at Division Level & Range Level.
- The outgoing Plan was by Sri Sudarsan Behera, OFS-I (SB) and was for the period 2007-08 to 2016-17. The plan prescribed The Sal Conversion Working Circle, The Selection Working Circle, The Rehabilitation Working circle, The Plantation (Overlapping) Working Circle, The Forest protection (Overlapping) Working Circle, The Bamboo (Overlapping) Working Circle, The NTFP (Overlapping) Working Circle, The Wild life (Overlapping) Working Circle, The Joint Forest Management (Overlapping) Working Circle, The Car Timber (Overlapping) Working Circle.
- Out of ten Working Circles prescribed three Working Circle are independent Working Circle where as the rest are of Overlapping one.
- During Plan period special works has been taken up to improve Infrastructures like buildings, Improvement of Central Nursery at Mahipur, Improvement of communication net work and Involvement of People through FDA.



- Nayagarh Forest Division is one of the good moist forests of the State. It is a combination of Plane Forests, Hill Forests, Valley Forests and Riparian Forests.
- To assess the Growing stock Sample enumeration has been taken up over 917 points.
- Analysis by NRSC has been carried out over 821 Sample points through various modeling by NRSC, Hyderabad. The growing stock has been assessed.
- The Forest is the greatest Carbon sink. It is associated with bio mass production and retention over a long period.
- No systematic carbon sequestration has been assessed; an attempt has been made to predict the carbon stock of Nayagarh Division.
- The available Biomass over one hectare of Forest is projected at 95.54cum (Leaves / braches etc not included)
- The forest area (RF/ DPF/ PRF / PF/ VF) of the Division is 112500.09 ha. The total Growing Stock of the division is projected at 10748257 cum or say 107.48 lakh Cum. Taking average wood density at 0.7 T/ cum and 30 ton of Bio Mass contains 11.7 T carbon, the forest of Nayagarh may contain 29.128 lakh Tons of carbon. All steps will be initiated to induce growth through silvicultural operation to enhance the carbon sink to grow 3-4% every year.
- Plantations have been raised outside the Forest area. The plantations are in good growing condition. It is also contributing to Sequestration of carbon and act as carbon sink.
- It is felt necessary to calculate the carbon stock in TOF created / maintained by the department.
- The carbon Stock of the Division has been estimated to be **2912.8 x10³ Ton of Carbon which is equivalent to 10680.14 x10³ Tons of Carbon Dioxide.**
- Nayagarh Forest Division has a vast treasure of Peninsular Moist Sal Forest. Its growing stock matches with the ideal crop distribution both in number of trees in



different girth class as well as Biomass distribution slightly tilted towards more matured crops (Girth Class 120 cm – 150 cm and above.

- Most of the Forests are Reserved Forests and PRF. It is one of the best Elephants landscape. A part of the forest comes within Eco Sensitive Zone of Baisipali Sanctuary and Mahanadi Gorge Sanctuary (on default).
- Buguda- Central RF Elephant Corridor is within this division.
- Due to National Highway -57 joining Khurdha – Bolangir and proposed New Broad Gauge Rail line connecting Khurdha - Bolangir intersecting the Buguda- Central RF Elephant Corridor, the elephant's movement as well as living in this tract to be considered during management of forests.
- Though Baisipali Sanctuary which is part of Satkosia Tiger Reserves is under the management of Mahanadi Wildlife Division, the Eco Sensitive Zone falls within the jurisdiction of this division.
- Mahanadi after Satkosia Gorge forms the North – Eastern Boundary. Protecting the River banks through Suitable forest management requires attention.
- The forests of Nayagarh Division are broadly categorized in to six categories i.e. Moist Peninsular Sal Forest having site quality (II/III) in most blocks. Dry Deciduous mixed forests with biotic interference. Dry Bamboo forests with good to moderate juvenility.
- Forests assigned to VSS for Protection, Enrichment & Management, Village Forests of erstwhile Social Forestry Project, Economic Plantations (Mostly Teak) in various forest blocks.
- The working Circles constituted are Selection Working Circle (28557.8841 ha), Rehabilitation Working Circle (70241.8414ha), Plantation Working Circle (3683.4750 ha), Protection Working Circle (3278.00Ha), Miscellaneous Working circle (120.00 Ha), Bamboo (Overlapping) Working Circle (57071.9406ha), Non Timber Forest Produce (Overlapping) Working Circle (103766.5105 Ha), Wildlife (Overlapping) Working Circle (103766.5105 Ha), Joint Forest Management (Overlapping) Working



Circle (33786.6140 Ha), Car Timber (Overlapping) Working circle (100368.5105 ha), TOF Working Circle (2015 Ha + 1042.90RKM avenue Plantation)

- All total it is proposed to have Ten Working Circle. Out of these working circles, Five Working Circle will have independent area where as other Five Working Circle will have overlapping jurisdiction. The TOF (Tree outside the Forest Area) Working Circle does not cover any RF/ PRF or VF.
- The details of prescriptions have been summarized under Chapter-28. It is not repeated here.

(A).Vision Statement-

This Working Plan shall cover 1,12,500.09 ha of forest blocks, which comprises 42 RFs (constituting 90,840.84 Ha), 27 PRFs (constituting 11,367.93 ha), 21 DPFs (constituting 8,176.63 ha), 10 Protected Forests (constituting 1535.24 ha) and 63 Village Forests (constituting 579.45 ha).

(B).Goals of Management-

The Forests of Nayagarh is being managed under “Sustainable Management Practices” and contributes to harvest of Timber to a major extent in the state. It fulfils demand of timber not only of the division but also of the state and outside. Keeping these vital factors in mind the management practices are to be designed with a long-term vision. The objectives of this working plan is to provide a basic approach for sustainable management of forests and preserve its biodiversity in light of the National Forest Policy, encompassing the ecological (environmental), economic (production) and social (including cultural) dimensions.

- i. To enhance species composition towards a climatic climax species of more important and of valuable species.
- ii. To ensure Annual Biomass Production is sustainable throughout the plan period so as to ensure a specific quantum of carbon sequestration.
- iii. To enhance Bio Diversity of a Forest through various management practices & proper documentation.



- **iv.** To ensure sustainable & dependable production of timber / fuel wood and other available forest produce.
- **v.** To enhance availability of NTFP species by conservation, natural regeneration and follow a systematic sustainable harvesting practices.
- **vi.** To create forests near to habitations / industrial houses to control effect of GHG (Green House Gases)

(C)SWOT Analysis:

a.STRENGTH

- i. Nayagarh Division comprises forests of Nayagarh, Khandapara and Daspalla Ex-states. The division is co-terminus with Nayagarh district except RanpurTahasil. Hence, the division administration almost covers the district for which there is a scope for smooth functioning in respect of interdepartmental coordination.
- ii. For administrative convenience, the division is sub-divided to Seven Ranges, 22 Sections & 93 Beats.
- iii. There are 42 Reserved Forests covering an area of 90840.84 ha, 27 PRF with a total area of 11367.93ha and 21 numbers of DPF with area of 8176.61 ha.
- iv. Nayagarh Forest Division has a vast treasure of Peninsular Moist Sal Forest. Its growing stock matches with the ideal crop distribution both in number of trees in different girth class as well as Biomass distribution slightly tilted towards more matured crops (Girth Class 120 cm – 150 cm and above).
- v. Nayagarh Division own responsibility for supplying Timber for construction of Chariot (Ratha) for Lord Jagannath Temple, Puri and Lord Lingaraj Temple Bhubaneswar.
- vi. The Compensatory afforestation Land has been declared as PF U/S 33 of the Odisha Forest Act, 1972.
- vii. Shifting cultivation is not observed in Nayagarh Division.
- viii. Important Habitats of Nayagarh Division are Mahanadi Elephant Reserve, Eco Sensitive Zone of Satkosia Tiger Reserve, Elephant Corridor i.e. Buguda-Central Reserve Forest Corridor are coming within the division.

b.WEAKNESS

- i. Physio-graphically the division exhibits a rugged and broken mountain system separated by a number of plains and valleys. It is a stable landmass of Indian



peninsula but the rise and fall of the hills are not in any systematic order. These hills and plains are criss-crossed by numerous nallas and rivers. Numbers of isolated and scattered hills are seen in the division.

- ii. Out of 13289 boundary pillars 2195- number of pillars are in good condition.
- iii. Hence it is inferred that the boundary of forest blocks are not Secured.
- iv. There is no regeneration which can be categorized as “in plenty / abundant” for any specific species in the division confined to specific forest blocks noticed during Regeneration Survey.

c.OPPORTUNITIES

- i. The TOF are integrated contribution of Plantations taken up outside the conventional Forest area by Forest Department, Horticultural plantation and other department. Plantations raised by private individuals in their fellow land and back yard.
- ii. Due to non-availability of Specified timber, private devotees are providing timbers from their land. More people is required to be motivated for donating trees for construction of Chariot.
- iii. Agro Forestry practices, Avenue Plantations, Institutional Plantations contribute towards TOF.
- iv. In order to mitigate human-wildlife conflict and to provide safe passage to elephants, Forest Department has erected solar fence. The solar fencing has become a barrier to elephants using the corridor rather than providing safe passage.
- v. The overall status of regeneration is good to fair. Suitable strategy is required to be incorporated in management practices to achieve establishment of regeneration.

d.THREAT

- i. The forests of the division are subjected to threat from Natural Calamities as well as from Biotic Factors.
- ii. Due to the prolonged hot weather, not a single forest block is free from forest fire.
- iii. Timber supply for Car Festival i.e. Phasi, Dhaura Asan are overexploited.
- iv. Threats to the elephant corridor are National Highway 57 connecting Nayagarh to Boudh district bisects the corridor near Buguda colony.



- v. Threats and Challenges to wildlife are fragmentation of Habitat due to construction / widening of Roads, Railway line, Transmission lines, Depletion of tree cover / Forest crop density.

Expected outcome:

With the above objectives of management and proper execution of the Working Plan prescriptions the following outcome is expected:

1. Protection of the hill slopes and Forest floor against erosion and restore the humus in forest floor.
2. Protection of River banks against erosion and save riparian forests.
3. Protection of forests against drivers of forest degradation with special importance to Soil conservation.
4. Checking soil erosion in forest floor – sheet erosion, Rill erosion, Splash erosion, Gully and ravine formation.
5. Species composition towards a climatic climax species of more important and of valuable species can be ensured.
6. Sustainable annual Biomass Production throughout the plan period so as to ensure a specific quantum of carbon sequestration.
7. Enhancement Bio Diversity of a Forest through various management practices & proper documentation.
8. Sustainable & dependable production of timber / fuel wood and other available forest produce.
9. Availability of NTFP species by conservation, natural regeneration and systematic sustainable harvesting practices.
10. Creation of forests near to habitations / industrial houses to control effect of GHG (Green House Gases)



Year wise Annual Physical Target proposed under different Working Circle						
Year	Selection Working Circle	Rehabilitation Working Circle	Plantation Working Circle			Bamboo (OL) Working Circle
			Planting Series	Thinning Series	Village Woodlot	
1	2	3	4	5	6	7
2021-22	3116.9713	7383.2410		130	60.12	14865.2249
2022-23	2906.1135	7334.3270		100	60.96	13603.0300
2023-24	2876.2335	7097.1757		130	54.86	14601.4600
2024-25	2687.4296	6835.5782		160	50	14002.2200
2025-26	2333.9616	6949.6959		145	59.76	14865.2249
2026-27	3561.4041	6946.1791		165	50.21	13603.0300
2027-28	2987.0097	6504.4337		180	61.39	14601.4600
2028-29	2581.3131	6997.1394		165	58.44	14002.2200
2029-30	2881.3000	7282.0716		145	58.77	14865.2249
2030-31	2626.1477	6911.9999		200	64.94	13603.0300
Total	28557.8841	70241.8415	3683.475	1520	579.45	

13.5 Abstract of Plan Prescription

Chapter No.	Para No./ Sub Para No.	Prescribed activity	Remarks
1	2	3	4
14	14 Selection Working	i. To remove mature and silviculturally available trees before they become unsound.	Total assigned area = 28557.8841



	Circle	ii. To create openings in the canopy to allow adequate lights to pass to allow establishment of light demanding species i.e. principally Sal. iii. To thin out the congested pole crop to allow diameter growth and also have in term in harvest through which the VSS looking after the area will be benefited. iv. To allow natural regeneration and cover the entire area with vegetation of climatic species. v. To improve the density of the forest crop as well as stand structure by suitable silvicultural operations. vi. To remove dead and unsound trees for creating hygienic condition in the forest. vii. To carry out subsidiary silvicultural operations so that conducive situation can be created for better growth of existing crop and natural regeneration. viii. To manage the forest to maintain it at this Climatic Stage so as to keep this composition of Forest with majority of Sal.	Ha
15	15 Rehabilitation Working Circle	i.To induce natural regeneration & improve the condition of existing forests through protection against encroachment, grazing, fires and illicit felling. ii.To improve the crop density to more than 50% from the present position through protection, Silvicultural practices. iii.To enhance oil enrichment through Soil & Moisture Conservation measures. iv.To regulate the surface water run off to enhance percolation and water availability down the streams. v.To protect against the River Bank/ Stream Bank erosion through vegetative measures. vi.To restock barren areas through artificial regeneration	Total assigned area = 70,241.8414 Ha



		with most desirable indigenous species. vii.To have partnership with the local community in protection and managemen to the forests. Viii,To increase the water retaining capacity of the soil & bring the crop to climax species composition. ix.To Control/eradicate the weeds and check its invasion. x.To restore and improve the microclimate and microedaphic condition of forests. xi.To increase the biodiversity and heterogeneity in the forest crop by encouraging natural regeneration.	
16	16 Plantation Working Circle	I. To manage Economic plantations/ Teak Plantations of outgoing plans in as cattered manner and improve growth status through Silvicultural practices. ii.To bring the plantations raised here and there to a single management fold and scientifically manage to optimize the yield. iii. To encourage participatory managemen to ferst while Social Forestry Plantations and activate the VFC. iv. To manage the plantations raised under Compensatory Afforestation Scheme and declared as Protected Forest there after. v. To Increase availability of Firewood and timbers in the locality and reduce pressure on forests for fuel wood and furniture wood. vi.To increase the crop density of forests and improve the Carbon Sequestration. vii.To develop a healthy <u>usufruct</u> benefit sharing mechanism in the villages and encourage natural resource management with a community approach method. viii.To take suitable measures to prevent soil erosion and	Total assigned area 3683.4750 Ha.



		conserve soil and moisture in barren hilly tracts. ix.To cover-up the encroached areas under tree cover after its eviction.	
17	17 Protection Working Circle	i.To provide a continuous undisturbed habitat for elephants & ensures a safe movement of mega animals. ii.Nalla banks/ Spring origin are to be well covered with vegetation of all classes (Trees/ Herbs/ Shrubs/ Grasses) to provide a “Food Corridor” for animals. iii.The bamboo forests coming within the allotted area to be well maintained. iv.Soil Erosion of any form is to be completely reduced/ checked. v.Full protection to vegetation against illicit felling, Fire. vi.Ensure regeneration of palatable food/ grass stock all along the protected area. vii.No tree felling in any forest for any purpose within this area will be taken up.	Total assigned area = 3,278 Ha.
18	18 Bamboo (Overlapping) Working Circle	i.To enforce scientific harvesting of Bamboo and provide bamboo to local artisans and industrial purpose basically to paper mills for raw materials on sustainable basis. ii.To restore the bamboo forests through intense silvicultural practices and checking fire & soil erosion. iii.To enhance fodder availability to wildanimals from bamboo crops. iv.To improve the bamboo growing stock through plantations. v.To improve bamboo forests through JFM and provide employment to bamboo artisans.	Total Assigned Area = 57,071.9406 Ha
19	19	i.To educate VSS / JFM Committee and Gram panchyat about	Total Assigned Area



	NTFP (Overlapping) Working Circle	scientific collection methods of NTFP on a sustainable basis. ii.To educate primary collectors of NTFP about contribution of NTFP towards their livelihood and share of income from NTFP. iii.To educate VSS / Primary collectors about propagation of various herbs / shrubs / climbers and how to improve the stock in forest both quality and quantity. iv.To enhance abundance of NTFP species in forest through regulatory mechanism in non-assigned VSS areas / VSS areas. v.To conserve and protect the depleting natural medicinal plant resources in the forest area. vi.To encourage local community for ex-situ / in situ conservation of NTFP & medicinal plants through VSS. vii.To generate self employment and livelihood support for the forest fringe dwellers. viii.To develop and disseminate scientific harvesting, processing and storage techniques relating to NTFP products. ix.To share market information to primary gatherers. x.To impart training on value addition	= 1,03,766.5105 Ha
20	20 Wildlife (Overlapping) Working Circle	i.ToConserve, Protect and improve existing wildlife and their habitat. ii.To enhance bio-diversity and WildLife population in the region. iii.To involve people in management of Wildlife & associate them in preventing crime against Wildanimals. iv.To build up scientific knowledge on wildlife resources of the region. v.To train personnel at various levels for conservation and management of wildlife. vi.To educate people about wildlife and need for their conservation.	Total Assigned Area = 1,03,766.5105 Ha



		vii.To prevent sporadic and strategic crime against wild animals/ birds. viii.To protect Life and properties of public against animal depredation.	
21	21 Joint Forest Management (Overlapping) Working Circle	i.To restock the degraded Forests through community participation. ii.To ensure protection, regeneration and management of the forest wealth through a participatory approach. iii.Mass Awareness campaign and motivation to the villagers is to be spread to every forest fringe village. iv.To make the people and Forest Department equal partners in management process. v.DemarcationandSurveyoftheareaallottedunderV.S.S. vi.Artificial regeneration in the degraded forest area is to be taken up to restore thebarrenandblankarea. vii.Soil and Moisture Conservation Measureshave to be adopted in the VSS assigned area and preparation of micro-plan to each VSS. viii.To reduce the dependency on forest, income generating activities are to be created. ix.The other Department involve in people'sparticipatory aspects like Agriculture, Horticulture, Soil Conservation, veterinary; Health, mass education etc. have to be involved to achieve all-round socio-economic development of the village. xi.To develop VSS as an institution at local level to manage "Natural Resource". xii.To have special thrust on "Fringe Forest Management."	Total Assigned Area = 33,786.614 Ha
22	22 Miscellaneous	<i>ForNursery:</i> i.To have production of Quality Planting Materials (QPM) and made available to public through out the year to meet	Total Assigned Area = 120 Ha



	Working Circle	any occasion/ event. ii.To encourage clonal propagation facilities to retain genetically superiority and not to degrade the Gene pool due to cross pollination with inferior species. iii.To provide Root trainer facilities, Mist Chamber etc. iv.To produce organic manure from Nursery waste/ weeds for use in nursery. For Places of Worship: i.To provide peace and tranquility of the area. ii.To maintain Cleanness/ hygienic atmosphere compatable with the spiritual and environmental conditions. iii.To extent necessary help/ assistance to the devotees on their visit to the place. iv.To propagate/ spread message on Forest Conservation, Forest Diversity, Importance of wild animals etc. through posters /signages. For Recreational/ Eco Tourisim Sites: i.To provide a healthy/ hygienic atmosphere to nature lovers. ii.To facilitate nature lovers on tracking inside the forests and make them familiar with the situation/ forests and its importance. iii.To enhance children's concern toward forest & wildlife. iv.To educate people to have co-habitation with nature than in modern township.	
23	23 Car Timber (Overlapping) Working Circle	i.To provide required timber to Puri Shree Jagannath Temple Trust for construction of Chariots annually. ii.To provide required timber to Lord Lingaraj Temple trust for construction of Rukuna Ratha as and when required.	Total Assigned Area = 100368.5105 Ha



		iii.To maintain and improve the available growing stock with a view to ensure sustained supply of timber for car festival annually. iv.To induce conditions that would promote regeneration of principal species specially for Asan, Dhaura and Sal in these Forests. v.To ensure conditions that would encourage bio-diversity, soil and moisture conservation, with canopy closure. vi.To restock barren areas through artificial regeneration with desirable indigenous species like Asan, Dhaura and Simili. Vii.To increase heterogeneity in the forest crop by encouraging natural regeneration of principal species and to encourage ecological stability.	
24	24 Tree outside Forest (ToF) Working Circle	i.To increase tree cover of the district/ division through planting outside the forest land. ii.To increase biomass production by planting quick growing species. iii.To stabilize the loose soil through planting & protect catchment area of River / Reservoir. iv.To improve the aesthetic value along the road network. v.To encourage Farm forestry to meet the demand of Raw materials of paper mill. vi.To enhance the Economic Condition of People.	2015 Ha & 1024.29 Ha

1. Glossary of Terms :

AJY	Ama Jungal Yojana
ANR	Aided Natural Regeneration
AR	Artificial Regeneration
BARS	Barakhol Rehabilitation Series
BJRS	Banijhari Rehabilitation Series
BPRS	Baisipali Rehabilitation Series



BRS	Balaram Rehabilitation Series
CCF (P&SM)	Chief Conservator of Forests (Protection & Sustainable Management)
CD	Community Development
CFS-I	Central-I FS
CFS-II	Central-II FS
COP21	Conference of the Parties (COP21)
CPFS-I	Chadiapali-I FS
CPFS-II	Chadiapali-II FS
CRS	Chhadesha Rehabilitation Series
DGMS	Daspalla- Gania- Mahipur VWL Series
DGPS	Differential Global Positing System
EDC	Eco Development Committee
EESN	Encroachment Eviction Series- Nayagarh
EPA	Entry Point Activities
ER	Elephant Reserve
ESZ	Eco Sensitive Zone
FAO	Food & Agriculture Organization
FDA	Forest Development Agency
FSI	Forest Survey of India
FW	Fire wood
FYM	Farm Yard Manuer
GIS	Geo-information System
GOI	Government of India
GoRS	Gochha Rehabilitation Series
GRS	Gayalsingh Rehabilitation Series
HRS	Hatimunda Rehabilitation Series
IGA	Income Generation Activities
INDC	Intended Nationally Determined Contribution
KuRS	Kuradhinisa Rehabilitation Series
LBCD	Loose boulder Check dams
LIDAR	Light Detection and Ranging)
Misc.WC	Miscellaneous Working Circle
MKRS	Makarapalli Rehabilitation Series
MoEF & CC	Ministry of Environment , Forest and Climate Change



MPRS	Makarprasad Rehabilitation Series
MRS	Manibhadra Rehabilitation Series
NAC	Notified Area Council
NAP	National Afforestation Program
NAS	Nayagarh Avenue Series (NAS)
NBB	National Biodiversity Board
NDCs	Nationally Determined Contributions (NDCs):
NFS	Nasagarh FS
NKOS	Nayagarh- Khandpara- Odogaon VWL Series
NTFP (O) WC	Non Timber Forest Produce (Overlapping) Working Circle
NTS	Nayagarh Thinning Series
OBB	Odisha Bio Diversity Board
OFA	Odisha Forest Act
OFDC Ltd	Odisha Forest Corporation Limited
OFSDP	Odisha Forest Sector Development Project
PAN	Panchirida VWL Series
PDRS	Panchirida-1 Rehabilitation Series
PF	Protected Forest
PI.WC	Plantation Working Circle
PNRS	Panchirida-2 Rehabilitation Series
PPRS	Panchupandav Rehabilitation Series
Pr. WC	Protection Working Circle
PRI	Panchyat Raj Institutions
PRS	Pokharigochha Rehabilitation Series
PTRS	Patharaganda Rehabilitation Series
REED+	Reduce Emissions From Deforestation And Forest Degradation
RFS	Ratadei FS
RRS	Ragadimada Rehabilitation Series
RWC	Rehabilitation Working Circle
S1RS	Sapua -1 Rehabilitation Series
S2RS	Sapua -2 Rehabilitation Series
S3RS	Sapua -3 Rehabilitation Series
SARS	Sulia-4 Rehabilitation Series
SDGS	Sustainable Development Goals (SDGs)



SFP	Social Forestry Project
SKRS	Sikarpur Rehabilitation Series
SLRS	Sulia-3 Rehabilitation Series
SMRS	Sukarmala Rehabilitation Series
SPRS	Sapua- Patrabani Rehabilitation Series
SRS	Sirisabadi Rehabilitation Series
SRS	Sulia -1 Rehabilitation Series
SURS	Sulia -2 Rehabilitation Series
SWC	Selection Working Circle
TOF	Tree Outside Forest
TOFS	Nayagarh TOF Series (TOFS)
UNFCCC	United Nations Framework Convention on Climate Change
WC	Working Circle
WFP	World Food Programme.
WL(O) WL	Wildlife (Overlapping) Working Circle

II. List of Flora:

Name	Scientific Name	Family
Trees		
Acacia	<i>Acacia auriculoformis</i>	<i>Fabaceae</i>
Achhu	<i>Morinda tinctoria</i>	<i>Rubiaceae</i>
Agasti	<i>Sesbania grandiflora</i>	<i>Fabaceae</i>
Agnisikha	<i>Gloriosa superba</i>	<i>Colchicaceae</i>
Amba	<i>Mangifera Indica</i>	<i>Anacardiaceae</i>
Ambada	<i>Spondias pinnata</i>	<i>Anacardiaceae</i>
Ambta	<i>Bauhinia racemosa</i>	<i>Fabaceae</i>
Ankula	<i>Alangium lamarckii</i>	<i>Cornaceae</i>
Amla	<i>Emblica officinalis</i>	<i>Phyllanthaceae</i>
Arjuna	<i>Terminalia arjuna</i>	<i>Combretaceae</i>
Asan	<i>Terminalia tomentosa</i>	<i>Combretaceae</i>
Ashoka	<i>Saraca asoca</i>	<i>Fabaceae</i>
Aswastha	<i>Ficus religiosa</i>	<i>Moraceae</i>
Babul	<i>Acacia nilotica</i>	<i>Fabaceae</i>
Bahada	<i>Terminalia belerica</i>	<i>Combretaceae</i>
Bandhana	<i>Desmodium oojeinensis</i>	<i>Fabaceae</i>



Bara	<i>Ficus bengalensis</i>	<i>Moraceae</i>
Barada	<i>Bauhinia retusa</i>	<i>Fabaceae</i>
Barbakulia / Dhobi	<i>Delbergia paniculata</i>	<i>Fabaceae</i>
Barkoli	<i>Ziziphus jujuba</i>	<i>Rhamnaceae</i>
Baruna	<i>Crataeva religiosa</i>	<i>Capparaceae</i>
Bastura	<i>Litsea polyantha</i>	<i>Lauraceae</i>
Batra	<i>Melia composita</i>	<i>Meliaceae</i>
Behenta	<i>Limonia acidissima</i>	<i>Rutaceae</i>
Bela	<i>Aegle marmelos</i>	<i>Rutaceae</i>
Bhaincha	<i>Flacourtia indica</i>	<i>Salicaceae</i>
Bhalia	<i>Semecarpus anacardium</i>	<i>Anacardiaceae</i>
Bhendiamardan / Genduli / Girdhini	<i>Sterculia urens</i>	<i>Malvaceae</i>
Bheru	<i>Chloroxylon swietenia</i>	<i>Rutaceae</i>
Bija/Piasal	<i>Pterocarpus marsupium</i>	<i>Fabaceae</i>
Bura / Simuli	<i>Bombax ceiba</i>	<i>Malvaceae</i>
Cashew	<i>Anacardium occidentale</i>	<i>Anacardiaceae</i>
Chadaigodi	<i>Vitex peduncularis</i>	<i>Verbenaceae</i>
Chakundi	<i>Cassia siamea</i>	<i>Fabaceae</i>
Champa	<i>Michelia champaca</i>	<i>Magnoliaceae</i>
Chandan	<i>Santalum album</i>	<i>Santalaceae</i>
Chara	<i>Buchanania lanzan</i>	<i>Anacardiaceae</i>
Chauli	<i>Elaeodendron glaucum</i>	<i>Celastraceae</i>
Chhatian	<i>Alstonia scholaris</i>	<i>Apocynaceae</i>
Chhuinpatuli	<i>Stereospermum aungustifolium</i>	<i>Bignoniaceae</i>
Dalasingha/ Kumbharchikini	<i>Canthium didymum</i>	<i>Rubiaceae</i>
Damkurudu / Katarang	<i>Gardenia latifolia</i>	<i>Rubiaceae</i>
Debadaru	<i>Polyalthia longifolia</i>	<i>Annonaceae</i>
Dhala Sirisa	<i>Albizia procera</i>	<i>Fabaceae</i>
Dhaman	<i>Grewia tiliifolia</i>	<i>Tiliaceae</i>
Dhaura	<i>Anogeissus latifolia</i>	<i>Combretaceae</i>
Dhaurang	<i>Holoptelea integrifolia</i>	<i>Ulmaceae</i>
Dimiri	<i>Ficus racemosa</i>	<i>Moraceae</i>
Gambhari	<i>Gmelina arborea</i>	<i>Lamiaceae</i>
Gandhapalas	<i>Miliusa velutina</i>	<i>Annonaceae</i>
Gangasiuli	<i>Nyctanthes arbortristis</i>	<i>Oleaceae</i>



Ganiari	<i>Cochlospermum gossypium</i>	<i>Bixaceae</i>
Genduli	<i>Sterculia urens</i>	<i>Sterculiaceae</i>
Ghantal	<i>Trema orientalis</i>	<i>Cannabaceae</i>
Ghodalanjia	<i>Albizia stipulata</i>	<i>Fabaceae</i>
Giringa	<i>Pterospermum heyneanum</i>	<i>Sterculiaceae</i>
Gohira	<i>Acacia leucophloea</i>	<i>Fabaceae</i>
Gotha	<i>Croton oblongifolius</i>	<i>Euphorbiaceae</i>
Gundi	<i>Mallotus philippinensis</i>	<i>Euphorbiaceae</i>
Halanda	<i>Diospyros montana</i>	<i>Ebenaceae</i>
Haldu/Kurum/Mundi	<i>Adina cordifolia</i>	<i>Rubiaceae</i>
Harida	<i>Terminalia chebula</i>	<i>Combretaceae</i>
Hentala	<i>Licuala peltata</i>	<i>Areaceae</i>
Hinjala	<i>Barringtonia acutangula</i>	<i>Lecythidaceae</i>
Jaisanda	<i>Litsea sebifera</i>	<i>Lauraceae</i>
Jamu	<i>Syzygium cuminii</i>	<i>Myrtaceae</i>
Jari	<i>Ficus infectoria</i>	<i>Moraceae</i>
Jeotha	<i>Artocarpus lakoocha</i>	<i>Moraceae</i>
Kadamba	<i>Anthocephalus cadamba</i>	<i>Rubiaceae</i>
Kaitha	<i>Feronia limonia</i>	<i>Rutaceae</i>
Kaiyan / Tentuli	<i>Tamarindus indica</i>	<i>Fabaceae</i>
Kala Sirisa	<i>Albizia lebeck</i>	<i>Fabaceae</i>
Kalucha	<i>Diospyros sylvatica</i>	<i>Ebenaceae</i>
Kanchan	<i>Bauhinia purpurea</i>	<i>Fabaceae</i>
Kangada	<i>Xylia xylocarpa</i>	<i>Fabaceae</i>
Kansa	<i>Hymenodictyon excelsum</i>	<i>Rubiaceae</i>
Kapasia	<i>Kydia calycina</i>	<i>Malvaceae</i>
Karada	<i>Cleistanthus collinus</i>	<i>Euphorbiaceae</i>
Karamanga	<i>Averrhoa carambola</i>	<i>Oxalidaceae</i>
Karanja	<i>Pongamia glabra</i>	<i>Fabaceae</i>
Kasi	<i>Bridelia retusa</i>	<i>Phyllanthaceae</i>
Katakala	<i>Strychnos potatorum</i>	<i>Loganiaceae</i>
Katha Champa	<i>Plumeria rubra</i>	<i>Apocynaceae</i>
Kendu	<i>Diospyros melanoxylon</i>	<i>Ebenaceae</i>
Keruan	<i>Sonneratia apetala</i>	<i>Lythraceae</i>
Khair	<i>Acacia catechu</i>	<i>Fabaceae</i>
Khakada	<i>Casearia elliptica</i>	<i>Flacourtiaceae</i>
Kharsan	<i>Ficus glaberrima</i>	<i>Moraceae</i>
Kochila	<i>Strychnos nuxvomica</i>	<i>Loganiaceae</i>



Kodala	<i>Sterculia villosa</i>	Malvaceae
Kumbhi	<i>Careya arborea</i>	Lecythidaceae
Kurein	<i>Holarrhena antidysenterica</i>	Apocynaceae
Kuruma	<i>Adina cordifolia</i>	Rubiaceae
Kusuma	<i>Schleichera oleosa</i>	Sapindaceae
Lembura Moi	<i>Bursera serrata</i>	Burseraceae
Mahalimba	<i>Gmelina azadirachata</i>	Lamiaceae
Mahula	<i>Madhuca indica</i>	Sapotaceae
Manjari / Paldhua	<i>Erythrina indica</i>	Fabaceae
Mankadakendu	<i>Diospyros embryopteris</i>	Ebenaceae
Mitikinia	<i>Mitragyna parvifolia</i>	Rubiaceae
Moi	<i>Lannea grandis</i>	Anacardiaceae
Mukha	<i>Schrebera swietenoides</i>	Oleaceae
Mundi	<i>Mitragyna parvifolia</i>	Rubiaceae
Nageswar	<i>Mesua ferrea</i>	Calophyllaceae
Nima	<i>Azadirachta indica</i>	Meliaceae
Oau	<i>Dillenia indica</i>	Dilleniaceae
Paladhua	<i>Erythrina indica</i>	Fabaceae
Palasa	<i>Butea monosperma</i>	Fabaceae
Panasa	<i>Artocarpus heterophyllus</i>	Moraceae
Panigambhari	<i>Trewia nudiflora</i>	Euphorbiaceae
Patuli	<i>Stereospermum suaveolens</i>	Bignoniaceae
Phasi	<i>Anogeissus acuminata</i>	Combretaceae
Piasal	<i>Pterocarpus marsupium</i>	Fabaceae
Pitamoi	<i>Garuga pinnata</i>	Burseraceae
Rai	<i>Dillenia pentagyna</i>	Dilleniaceae
Rakta Chandan	<i>Pterocarpus santalinus</i>	Fabaceae
Rithaphala	<i>Sapindus laurifolia</i>	Sapindaceae
Rohini	<i>Soymida febrifuga</i>	Meliaceae
Saguan	<i>Tectona grandis</i>	Lamiaceae
Sahada	<i>Streblus asper</i>	Moraceae
Sal	<i>Shorea robusta</i>	Dipterocarpaceae
Salai	<i>Boswellia serrata</i>	Burseraceae
Salapa	<i>Caryota urens</i>	Arecaceae
Sidha	<i>Lagerstroemia parviflora</i>	Lythraceae
Simili	<i>Bombax ceiba</i>	Malvaceae
Sirisa (Dhala)	<i>Albizia procera</i>	Fabaceae
Sirisa (Kala)	<i>Albizia lebeck</i>	Fabaceae



Sisoo	<i>Dalbergia latifolia</i>	<i>Fabaceae</i>
Suam	<i>Soymida febrifuga</i>	<i>Meliaceae</i>
Sunari	<i>Cassia fistula</i>	<i>Fabaceae</i>
Sweta Simili	<i>Ceiba pentandra</i>	<i>Malvaceae</i>
Tala	<i>Borassus flabellifer</i>	<i>Arecaceae</i>
Tela keruan	<i>Ixora parviflora</i>	<i>Rubiaceae</i>
Tinia	<i>Albizia odoratissima</i>	<i>Fabaceae</i>
Naygad cycas	<i>Cycas nayagarhensis</i>	<i>Cycadaceae</i>
Shurb		
Agnijal	<i>Vernonia roxburghii</i>	<i>Compositae</i>
Anka-Koli	<i>Carissa spinarum</i>	<i>Apocynaceae</i>
Arakha	<i>Calotropis gigentia</i>	<i>Apocynaceae</i>
Arguna	<i>Cycas Circinalis</i>	<i>Cycadaceae</i>
Baincha koli	<i>Flacourtia jangomos</i>	<i>Salicaceae</i>
Basanga	<i>Adhatoda vasica</i>	<i>Acanthaceae</i>
Baula	<i>Mimusops elengi</i>	<i>Sapotaceae</i>
Begunia	<i>Vitex negundo</i>	<i>Lamiaceae</i>
Beta (Gouri)	<i>Calamus latifolius</i>	<i>Arecaceae</i>
Beta (Kanta)	<i>Calamus guruba</i>	<i>Arecaceae</i>
Beta (Pani)	<i>Calamus viminalis</i>	<i>Arecaceae</i>
Bhalia	<i>Semecarpus anacardium</i>	<i>Anacardiaceae</i>
Bhersunga	<i>Murraya koenigii</i>	<i>Rutaceae</i>
Bhuin Anala	<i>Phyllanthus niruri</i>	<i>Phyllanthaceae</i>
Bhuin nima	<i>Andrographis paniculata</i>	<i>Acanthaceae</i>
Bichhuati	<i>Tragia involacrata</i>	<i>Euphorbiaceae</i>
Chakundi	<i>Casia tora</i>	<i>Fabaceae</i>
Dhatki	<i>Woodfordia fruticosa</i>	<i>Lythraceae</i>
Dudura	<i>Datura stramonium</i>	<i>Solanaceae</i>
Durikoli	<i>Opilia amantacea</i>	<i>Opiliaceae</i>
Gangasiuli	<i>Nyctanthes arbortristis</i>	<i>Oleaceae</i>
Ghurudu	<i>Gardenia gummifera</i>	<i>Rubiaceae</i>
Giliri	<i>Indigofera pulchella</i>	<i>Fabaceae</i>
Guakoli	<i>Maba boxifolia</i>	<i>Moraceae</i>
Jhumpuri	<i>Phyllochlamys spinosa</i>	
Kantaikoli	<i>Zyziphus oenoplia</i>	<i>Rhamnaceae</i>
Khirkoli	<i>Mymuspos hexendra</i>	<i>Sapotaceae</i>
Lajakoli	<i>Mimosa pudica</i>	<i>Fabaceae</i>
Lantana (Naga airi)	<i>Lantana camara</i>	<i>Verbenaceae</i>



Lodha	<i>Symplocus racemosa</i>	<i>Symplocaceae</i>
Mamari	<i>Antidesma diandrum</i>	<i>Phyllanthaceae</i>
Mersunga	<i>Murraya koenigii</i>	<i>Rutaceae</i>
Mura	<i>Helectris isora</i>	<i>Malvaceae</i>
Nagairy	<i>Lantana camara</i>	<i>Verbenaceae</i>
Nalbeli	<i>Sipadesa fruticosa</i>	<i>Meliaceae</i>
Narguni	<i>Atlantia monophylla</i>	<i>Rutaceae</i>
Panijamu	<i>Wedlandia excreta</i>	
Patalagaruda	<i>Rauwolfia serpentina</i>	<i>Apocynaceae</i>
Phanaphana	<i>Oroxylum indicum</i>	<i>Bignoniaceae</i>
Pokasungha	<i>Eupatorium odoratum</i>	<i>Asteraceae</i>
Ranidantakathi	<i>Flemingi-a-chappar</i>	<i>Fabaceae</i>
Ranidanturi	<i>Desmodium cephalotes</i>	
Siju	<i>Euphorbia royalenna</i>	<i>Euphorbiaceae</i>
Soyam nai	<i>Ichnocarpus frutiscens</i>	<i>Apocynaceae</i>
Tilei	<i>Wedlandia tinctoria</i>	<i>Rubiaceae</i>
Climber		
Anantamula	<i>Hemidesmus indicus</i>	<i>Apocynaceae</i>
Asadua	<i>Capparis horrida</i>	<i>Capparaceae</i>
Atundi	<i>Combretum decandrum</i>	<i>Combretaceae</i>
Baidanka	<i>Mucuna pruriens</i>	<i>Fabaceae</i>
Banamali	<i>Jasminum arborescens</i>	<i>Oleaceae</i>
Buduli	<i>Butea Superba</i>	<i>Fabaceae</i>
Dantari	<i>Acacia Pennata</i>	<i>Fabaceae</i>
Durkoli	<i>Erycibe paniculata</i>	<i>Convolvulaceae</i>
Gaja	<i>Millettia auriculata</i>	<i>Fabaceae</i>
Gila	<i>Entada scandens</i>	<i>Fabaceae</i>
Gudamari	<i>Gymnema sylvestre</i>	<i>Apocynaceae</i>
Guluchi	<i>Tinospora cordifolia</i>	<i>Menispermaceae</i>
Kaincha	<i>Abrus precatorius</i>	<i>Fabaceae</i>
Malati	<i>Aganosma dichotoma</i>	<i>Apocynaceae</i>
Marda	<i>Millettia racemosa</i>	<i>Fabaceae</i>
Muturi	<i>Smilax macrophylla</i>	<i>Smilacaceae</i>
Raktapituli	<i>Gouarnia leptostachya</i>	<i>Rhamnaceae</i>
Satabari	<i>Asparagus racemosus</i>	<i>Asparagaceae</i>
Siali	<i>Bauhinia vahlii</i>	<i>Fabaceae</i>
Uturudi	<i>Pergularia daemia</i>	<i>Apocynaceae</i>
Grass		



Baguli	<i>Eulaliopsis binata</i>	Poaceae
Bena	<i>Vetiveria zizanioides</i>	Poaceae
Chhana	<i>Imperata arundinacea</i>	Poaceae
Dhanwantary	<i>Cymbopogon martini</i>	Poaceae
Duba grass	<i>Cynodon dactylon</i>	Poaceae
Phulchanchhuni	<i>Thysanolaena maxima</i>	Poaceae
Bamboo		
Daba baunsa	<i>Bambusa arundinacea</i>	Graminae
Salia baunsa	<i>Dendrocalamus strictus</i>	Poaceae
Balangi baunsa	<i>Oxytenanthera nigrociliata</i>	Poaceae
Pani baunsa	<i>Bambusa pallida</i>	Poaceae

Rare Endangered and threatened / RET Plant Species Listed in IUCN Red Data Book:

IUCN have estimated that about 10 % of world's vascular plant species to tune of 20-25 thousands species are under varying degree of threat on global basis. In India about 1500 species i.e about 10 % of the flowering plants are under varying degrees of threat in India. Some 75 species of vascular plants are threat to be endemic to Eastern Ghat region of India spreading across the states of Odisha, Andhra Pradesh, Tamil Nadu and Karnataka. In a recent census 17 endemic, 12 apparent endemic and 56 rare/ endangered plant species have been reported from Odisha state alone.

Presently, the Regional Plant Research Centre (RPRC), Bhubaneswar has a collection of 31 species of plants which are endemic / rare / endangered/ threatened plants to Eastern Ghat region. These species are being maintained in Botanical Garden of RPRC for conservation, propagation, study, education and public awareness.

SI No.	BOTANICAL NAME	FAMILY	COMMON NAME
1	<i>Alphonsea maderaspatana</i>	Annonaceae	<i>Ghanti</i>



2	<i>Cajanus cajanifolius</i>	Fabaceae	<i>Bana Harada</i>
3	<i>Cassipourea ceylanica</i>	Rhizophoraceae	<i>Kannum</i>
4	<i>Cordia macleodii</i>	Ehretiaceae	<i>Samar Singha</i>
5	<i>Cryptocarya amygdalina</i>	Lauraceae	<i>Guala</i>
6	<i>Cycas beddomei</i>	Cycadaceae	<i>Kamakshi</i>
7	<i>Cycas sphaerica</i>	Cycadaceae	<i>Orguna</i>
8	<i>Dendrobium regium</i>	Orchidaceae	<i>Orchid</i>
9	<i>Dimorphocalyx glabellus</i>	Euphorbiaceae	<i>Gaigothia</i>
10	<i>Drypetes assamica</i>	Euphorbiaceae	<i>Putranjiva</i>
11	<i>Eria meghasaniensis</i>	Orchidaceae	<i>Orchid</i>
12	<i>Gnetum ula</i>	Gnetaceae	<i>India Jaintfin</i>
13	<i>Gyrocarpus americanus</i>	Hernandiaceae	<i>Helicopter tree</i>
14	<i>Heritiera fomes</i>	Malvaceae	<i>Sundari</i>
15	<i>Hildegardia populifolia</i>	Sterculiaceae	<i>Pichipoliki</i>
16	<i>Hypericum gaitii</i>	Hypericaceae	<i>Gaitti</i>
17	<i>Homalium nepalense</i>	Flacourtiaceae	<i>Chaulia</i>
18	<i>Lasiococca comberi</i>	Euphorbiaceae	<i>Kukruhari</i>
19	<i>Litesa glutinosa</i>	Lauraceae	<i>Medha</i>
20	<i>Pecteilis gigantea</i>	Orchidaceae	<i>Orchid</i>
21	<i>Polyalthia simiarum</i>	Annonaceae	<i>Ojhar</i>
22	<i>Pomatocalpa decipiens</i>	Orchidaceae	<i>Orchid</i>



23	<i>Psoralia corylifolia</i>	Fabaceae	<i>Bakuchi</i>
24	<i>Pterocarpus santalinus</i>	Fabaceae	<i>Rakta chandan</i>
25	<i>Saraca asoca</i>	Caesalpiniaceae	<i>Ashoka</i>
26	<i>Siphonodon celastrineus</i>	Siphonodontaceae	<i>Ivory wood</i>
27	<i>Stemona tuberosa</i>	Stemonaceae	<i>Kelia Kanda</i>
28	<i>Symplocos racemosa</i>	Symplocaceae	<i>Lodha</i>
29	<i>Tainia hookeriana</i>	Orchidaceae	<i>Orchid</i>
30	<i>Uraria picta</i>	Fabaceae	<i>Krushnaparni</i>
31	<i>Uvaria hamiltonii</i>	Annonaceae	<i>Laxman Koli</i>

Source: RPRC, Bhubaneswar

LIST OF LICHENS, ALGAE, FUNGI:

The outcome of the work revealed the occurrence of 252 species of Lichens belonging to 81 genera and 35 families in the state of Odisha. In Nayagarh district species of Lichens are found as given below.

Distribution of Lichens		
Sl No	Name of the Species	Family
1	Arthimia sps	Arthoniaceae
2	Cryptothecia sps.	Arthoniaceae
3	Lecanora sps.	Lecanoraceae
Distribution of Algae		



Sl No	Name of the Species	Family
1	Calothrix sps.	Rivulariaceae
2	Oscillatoria sps.	Arthoniaceae
3	Oedogonium sps.	Lacnariaceae
4	Rivularia sps.	Rivulariaceae
5	Spirulina sps.	Spirulinaceae
6	Spirogyra sps.	Zygnemataceae
7	Tetraspora sps.	Tetrasporaceae
8	Ulothrix sps.	Ulotrichaceae
Distribution of Fungi		
1	Agaricus sps.	Agaricaceae
2	Ganoderma sps.	Ganodermataceae
3	Polyporous sps.	Polyporaceae
4	Tricholoma sps.	Tricholomataceae
5	Xylaria sps.	Xylariaceae
6	Auricularia sps.	Auriculariaceae
7	Langermannia sps.	Agaricaceae



III. List of fauna.

Local Name	English name	Scientific name	Schedule
Mamals			
Bajra kapta	Pangolin	<i>Manis crassicaudata</i>	I
Bagha	Tiger	<i>Panthera tigris</i>	I
Badodi	Shortnosed fruitbat	<i>Cynopterus spinax</i>	IV
Banabiradi	Jungle cat	<i>Felis chaus affinis</i>	II
Barha	Wild boar	<i>Sus scrofa cristatus</i>	III
Balia kukur	Wild dog	<i>Cuon alpinus dukhunensis</i>	I
Bhalu	Black bear	<i>Melursus ursinus</i>	II
Bilua	Jackal	<i>Canis sureus indicus Hodgson</i>	II
Chittal	Spotted deer	<i>Axis axis</i>	III
Gayal	Bison	<i>Bibos gaurus</i>	
Gundichimusa	Squirrel	<i>Funumbulus pennanti</i>	IV
Gurandi	Mouse deer	<i>Tragulus minna</i>	III
Hati	Indian elephant	<i>Elephas maximua</i>	I
Heta	Haeyna	<i>Hyaena hyaena</i>	III
Jhinka	Porcupine	<i>Hystrix indica</i>	IV
Kalarapatria bagh	Leopard	<i>Panthera pardus fusca</i>	I
Kokisiali	Fox	<i>Vulpes bengalensis</i>	II
Kutura	Barking deer	<i>Muntiacus mintijack</i>	III
Mankad (Hanu)	Monkey	<i>Presbytis entellus</i>	II
Mankada (Pati)	Rhesus macacue	<i>Macaca mulatta</i>	II
Musa	Rat	<i>Rattus rattus</i>	IV
Musa (nepali)	Flying squirrels	<i>Petauristaphili philippinensis</i>	I
Neula	Common mongoose	<i>Herpestes edwardsii</i>	II
Odha	Common otter	<i>Lutra lutra</i>	II
Sambar	Sambar	<i>Carvus unicolour</i>	III
Saliapatani	Small Indian civet	<i>Viverricula indica</i>	II
Reptiles			
Ahiraj	King Cobra	<i>Naja Hannah</i>	II
Ajagarh	Indian python	<i>Pythonmolurus</i>	I
Chandra Boda	Russels viper	<i>Viper russelli</i>	II



Chiti	Common Indian Krait	<i>Bungarus caeruleus</i>	IV
Dhamana	Rat snake	<i>Ptyas mucosus</i>	II
Gokhar	Indian cobra	<i>Naja naja naja</i>	II
Laudankia	Common green whip snake	<i>Dryophis nasutus</i>	IV
Pani dhanda	Checkered keel back	<i>Natrix piscator</i>	II
Rana	Banded krait	<i>Bungarus fasciatus</i>	IV
Tampa	Monocellata cobra	<i>Naja Naja kuothia</i>	II
Lizards			
Bahurupi	Indian chameleon	<i>Chamaeleon zeylanicus</i>	
Champainali	Mabuya	<i>Mabuya bibro</i>	II
Endua	Common garden lizard	<i>Calotes versicolor</i>	
Godhi	Cargeland monitor	<i>Vernus monitor</i>	I
Jhitipiti	House lizard	<i>Hemidactylus flavirivis</i>	I
Birds			
Bani	Indian myna	<i>Acridotheres tristis</i>	IV
Banakukuda	Jungle fowl (Red)	<i>Gallus gallus</i>	IV
Bhadabhadalia	Roller / Blue jay	<i>Coracias bengalensis</i>	IV
Bhaliakhai	Common grey born bill	<i>Troglodytes birostris</i>	I
Chatak	Pied crested cuckoo	<i>Clamator jacobinus</i>	IV
Dahuka	Water Hen	<i>Amanronis phoenicury</i>	
Deulia para	Pigeon	<i>Anasomus oseitans</i>	IV
Gendalia	Open billed stork	<i>Anasomus oseitans</i>	
Ghar chatia	House scarriw	<i>Passer domesticus</i>	
Gobara chadhei	Nightingale	<i>Molpates cafer</i>	
Haladi Basanta	Black headed oriole	<i>Oriolus xanthornus</i>	IV
Harada Chadhei	Partridge	<i>Creopus phoenicopterus</i>	
Kajalapati	Black drongo	<i>Dicrurus maerocerus</i>	IV
Kau (ati)	King crow	<i>Corvus splendens</i>	V
Kau (Damara)	Jungle crow	<i>Corvus macrohyreos</i>	V
Kochilakhai	Malabr pied Horn Bill	<i>Anthrococeros coronatus</i>	I
Koili	Indian cuckoo	<i>Eudynamis scolopachus</i>	IV
Kumbhatua	Crow pheasant	<i>Cantopus sinensis</i>	IV
Kapta	Dove	<i>Streptopellchin oensis</i>	IV



Mayura	Peacock	<i>Pavo cristatus</i>	
Machharanka	Pied King fisher	<i>Ceryle rudis</i>	IV
Panikua	Little cormorant	<i>Phalacrocorax niger</i>	IV
Pecha	Owl	<i>Athena brama</i>	IV
Sari	Hyna	<i>Gracula religiosa</i>	IV
Sua	Parrot	<i>Psittacula eupilia</i>	IV
Sarguna	King vulture	<i>Sacrongyas calvus</i>	IV
Sankhachila	Kite brahminy	<i>Heliastur Indus</i>	
Turtle			
Kainchha	Land tortoise	<i>Testudo elonguta</i>	I
Pani Kainchha	Water tortle	<i>Lissemys punctan granose</i>	I
Fish			
Balia	Trout	<i>Wallagonia attu</i>	
Baligarada	Sandeel	<i>Glossogobius giuris</i>	
Bhakura	Carp / White fish	<i>Catle catla</i>	
Chenga	Gilt head	<i>Ophiocaphalus gachua</i>	
Chitala	Flat fish	<i>Notopterus chitala</i>	
Dand-khiri	Grig	<i>Esomus dandrica</i>	
Illishi	Hilsa fish	<i>Hilsa ilisa</i>	
Jalanga		<i>Pangasisus</i>	
Jallah		<i>Chela argentea</i>	
Kantia		<i>Myotus cavausius</i>	
Kerandi	Minnow	<i>Barbus ambassis</i>	
Magura	Sheat fish	<i>Clarias batrachus</i>	
Mirkali	Mackerel	<i>Cirrhina mrigala</i>	
Mahurali		<i>Amblypharyngodon mola</i>	
Phali	Flounder	<i>Notopterus notopterus</i>	
Rohi	Breeding fish	<i>Labeo rohita</i>	
Serana		<i>Barbus serana</i>	
Seula	Biggudgeon	<i>Ophiocephalus striatus</i>	
Singi	Scorpion fish	<i>Heterophneustes fossil</i>	

CHAPTER-1

THE TRACT DEALT WITH

1.1 Name and Situation:

The Nayagarh Forest Division has been constituted vide Govt. of Orissa Notification No. 1282R dated 3.2. 1950. It comprises forests of Nayagarh, Khandapara and Daspalla Ex-states. The division has been reorganized vide Office Order No. 238 dated 8.10.1999 of the Principal Chief Conservator of Forests, Odisha Bhubaneswar in which two Reserved Forest Blocks namely Baisipalli RF and Mahanadi RF were transferred to Mahanadi Wildlife Division. The division is bounded by Latitude **19°54' N to 20°28' N and Longitude 84°20'E to 85°19'E**. The Division find place in 12 numbers of Survey of India Topo Sheets as detailed below.

New No	Old No	New No	Old No	New No	Old No
F45 S7	73D/7	F45 S15	73D/15	F45 T7	73H/7
F45 S11	73D/11	F45 S16	73D/16	F45 T8	73H/8
F45 S12	73D/12	F45 T3	73H/3	E45 A13	74 A/13
F45 F14	73D/14	F45 T4	73H/4	E45 B1	74 E/1

The Division is bounded by River Mahanadi on North and other Forest Divisions as furnished below.

North: River Mahanadi& Athgarh Division and Mahanadi Wild Life Division (Cuttack and Nayagarh District)

North East – AthagarhDivision and Khurda Division(Cuttack and Khurda District)

North West - Boudh Division.

South - Ghumusar (South) Division and Khurda Division (Ganjam and Khurda District.

South East - Khurda Division (Khurda District).

South West - Khurda Division and Ghumusar (South) Division(Khurda and Ganjam District).

East - Khurda Division (Khurda District.)

West - Phulbani Division and Ghumusar (North) Division (Kandhamal and Ganjam District.)

1.1.1 Geographical Area:

The total geographical area of Nayagarh Forest Division is **3067.281 Sq. Km.** against total Geographical area of the district 3890 Sq. Km. (78.85%) The division is coterminous with Nayagarh District except Ranpur CD Block and Reserved Forests constituting the Baisipali Sanctuary. It comprises Seven C.D. blocks, three NACs. & one Municipal Council. The range wise geographical area and important township is as furnished at **Table No 1.1**

Table No 1.1 Range Jurisdiction & Geographical area.				
Sl No	Name of Range	Name of CD Block / Tahasil	Area in Sq. Km	Important Town / NAC / MC
1	Nayagarh	Nayagarh / Nuagaon	286.16	Nayagarh, Itamati, Nayagarh Municipal Council
2	Mahipur	Nuagaon	448.103	Mahipur, Nuagaon
3	Dasapalla	Dasapalla	733.929	Dasapalla, Banigochha, NAC-Dasapalla
4	Gania	Dasapalla/ Gania	282.232	Gania, Madhyakhanda, Koska
5	Khandapada	Khandapada / Bhapur	575.026	Khandapada, Khalisahi, Kantilo, Bhapur, Fategarh & NAC - Khandapada
6	Panchirida	Nayagarh/ Odagaon/ Ranapur	415.485	Sarankul, Godipada & Darpanarayanpur
7	Odagaon	Odagaon/ Nuagaon	326.346	Odagaon, Bahadajhola & NAC - Odagaon
Total			3067.281	

The total Population of the district is 9, 62,789 out of which Male population is 5, 02,636 and Female Population is 4, 60,153. The division Population is 7, 85,522 which is about (81.58%) of the district. The district Demographic Profile vis – a-vis Division is furnished at Table No 1.2.

Table No 1.2 Demographic Profile of Nayagarh Division

Name	No_HH	TOT_P	TOT_M	TOT_F	P_SC	P_ST	P_LIT
Nayagarh District	228315	962789	502636	460153	136399	58691	688362
Nayagarh Division							
Gania P.S	9247	38506	20068	18438	9450	4747	26911
Dasapalla P.S	19248	77560	40206	37354	15042	13692	52910
Nuagaon P.S	11254	44036	22764	21272	8068	4976	30251
Khandapada P.S	22613	96214	50428	45786	18114	3397	68848
Fategarh P.S	29311	125616	65660	59956	15098	3234	91199
Nayagarh P.S	13846	60036	31856	28180	7482	326	47086
Itamati P.S	16960	71641	37987	33654	6625	49	54483
Nayagarh Sadar P.S	11493	48977	25863	23114	6575	1252	34352
Odagaon P.S	28465	116027	60553	55474	20336	6763	81071
Sarankul P.S	25788	106909	56644	50265	10791	1423	75678
Total (Division)	188225	785522	412029	373493	117581	39859	562789
%			52.45	47.55	14.97	5.07	71.65

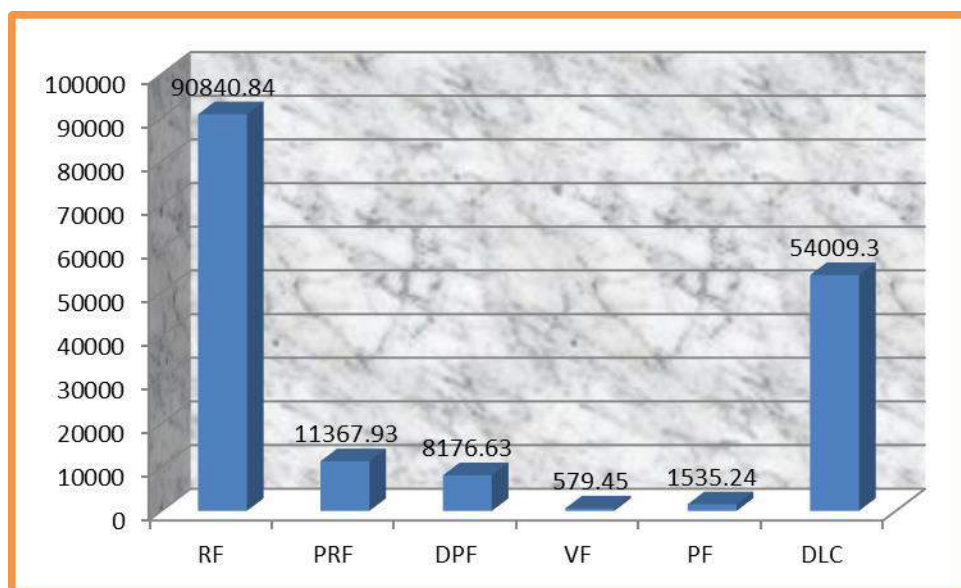
The male female ratio of the division is 906 female per 1000 male. The SC Population is 14.97% and ST population is 5.07%. The literacy rate is 71.65%.

1.1.2 Forest Area:

The forest area of the division is computed to be 1665.09 sq km. The total geographical area of the division is 3067.281 Sq. Km. The forest constitutes about 54.29% of the geographical area. The details of Forest land is furnished below.

Table No - 1.3 Forest Area of the Division

Sl No	Category of Forest	No. of Blocks	Notified Area in Ha.	% of total Forest area of the Division
1	Reserved Forest (RF)	42	90840.84	54.56
2	Proposed Reserve Forest (PRF)	27	11367.93	6.83
3	DPF	21	8176.63	4.91
4	Village Forest (VF)	63	579.45	0.35
5	Protected Forests (PF)	10	1535.24	0.92
6	DLC Forest	540 village	54009.30	32.44
	Total Forest		166509.390	100.00



1.1.3 Administrative Setup:

For administrative convenience, the division is sub-divided to Seven Ranges, 22 Sections & 93 Beats. The name of Ranges / Sections & Beats are furnished in **Table No 1.4**

Table No 1.4 Range / Section / Beat headquarters of the reorganized Division.

Sl No	Name of Range / Hqs	Name of Section / Hqs	Sl No	Name of Beat /hqs	Coordinate of Hqs.
1	Nayagarh	1.Nayagarh		Range Hqs	N 20° 7' 38.22" E 85° 06' 15.85"
2				Sec hqs	N 20° 7' 27.98" E 85° 06' 16.72"
4			1	Ara Beat	N 20° 7' 57.37" E 85° 05' 25.47"
5			2	Machhipada Beat	-
6			3	Dianapada Beat	-
7			4	Bhatasahi Beat	-
8		2. Khedapada		Sec. hqs	N 20° 11' 30.09" E 85° 06' 51.48"
9			5	Khadagprasad Beat	N 20° 11' 41.97" E 85° 07' 19.05"
10			6	Koska Beat	N 20° 12' 1.34" E 85° 05' 26.49"
11			7	Jogiapalli Beat	N 20° 11' 57.51" E 85° 07' 57.99"
12			8	Chahali Beat	N 20° 10' 22.71" E 85° 02' 18.53"
13			9	Gochhabari Beat	N 20° 13' 12.39" E 85° 03' 7.34"
14	Mahipur	3. Mahipur		Sec. hqs	N20°09'47.00" E84°59'38.00"

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15			10	Mahipur	N20°09'47.00" E84°59'38.00"
16			11	Banuasahi	N20°08'57.38" E85°00'12.14"
17			12	Sampada	N20°12'03.90" E84°58'49.40"
18			13	Gateri	N20°08' 44.3" E84° 58' 14.7"
19			14	Kanigiri	-
20		4. Mahitama		Sec. hqs	-
21			15	Jiginipada	N20°15'58.0" E84°59'34.0"
22			16	Nuagaon	N20°15'16.8" E84°58'14.6"
23			17	Korada	N20°16'19.92" E84°57'26.8"6
24			18	Krushna Prasad	N20°20'03.4" E84°58'42.8"
25			19	Khalamada	N20°13'46.2" E84°55'24.9"
26			20	Kosalanga	N20°16'14.0" E85°01'09.0"
27			21	Jagannath Prasad	-
28		5. Gumi		Sec. hqs	N20°09'53.4" E84°51'12.4"
29			22	Gumi	N20°09'53.4" E84°51'12.4"
30			23	Dimiria	N20°09'53.8" E84°51'12.3"
31			24	Senteri	N20°09'53.2" E84°51'11.9"
32			25	Kaptapalli	N20°06'45.7" E84°52'09.9"
33	Daspalla	6. Daspalla		Sec. hqs	N.20°20'11.78" E.84°50'52.008"
34			26	Daspalla	N.20°20'11.78" E.84°50'52.008"
35			27	Patharpunja	-
36			28	PurunaDaspalla	N.20°19'59.92" E.84°50'42.05"
37		7. Sakini		Sec. hqs (Pankua)	-
38			29	Sakini (Godibida)	20°14'16.81"N 84°48'25.97"E
39			30	Godibida	20°16'39.12"N 84°48'17.83"E
40			31	Pankua	-
41		8. Pokharigochha		Sec. hqs	20°15'27.50"N 84°44'50.97"E
42			32	Pokharigochha	20°15'27.50"N 84°44'50.97"E
43			33	Chinapanhara	No
44			34	Bhogabadi	20°19'33.30"N 84°45'20.85"E
45			35	Sirikibadi	-
46			36	Polara	20°17'11.56"N 84°42'2.43"E
47		9. Chadeyapalli		Sec. hqs (Hanumanta)	20°18'26.442"N 84°40'5.466"E
48			37	Chadeyapalli(Hanumanta)	20°18'26.442"N 84°40'5.466"E
49			38	Kalamba	-

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50			39	Nuagaon	20°13'35.8464"N 84°35'1.3884"E
51			40	Badasikharapanga	-
52		10. Takara		Sec. hqs	20°23'36.528"N 84°45'4.4784"E
53			41	Takara	20°23'36.528"N 84°45'4.4784"E
54			42	Tilabadi	20°23'8.6712"N 84°43'31.9584"E
55			43	Baijhari	-
56			44	Kurubari	20°20'57.4008"N 84°45'15.6276"E
57		11. Banigochha		Sec. hqs	N20° 24' 3" E.84° 35' 20"
58			45	Banigochha	N20° 24' 3" E.84° 35' 20"
59			46	Sirisira	-
60			47	Kujamendhi	N 20° 21' 45.3" E 84° 31' 05.9"
61			48	Kankanamendhi	-
62			49	Duda	-
63	Gania	12. Gania		Sec. hqs	20°24'0.9648"N 85°2'33.882"E
64			50	Gania	20°24'0.9648"N 85°2'33.882"E
65			51	Danikarisahi	20°26'33.6264"N 84°59'58.0812"E
66			52	Langalakanta	20°23'39.8292"N 85°03'16.3152"E
67			53	Adakata	20°21'39.6396"N 84°58'52.842"E
68		13. Madhyakhanda		Sec. hqs	20°21' 46.638"N 84° 51' 33.0625"E
69			54	Madhyakhanda	-
70			55	Nachhipur	20°21'46.638"N 84°51'33.0624"E
71			56	Ghugudipada	20°24'51.9768"N 84°51'38.9088"E
72	Khandapada	14. Khandapada		Sec hqs	N 20° 16' 09.40" E 85° 10' 28.60"
73			57	Khandapada Beat	N 20° 15' 30.40" E 85° 10' 43.00"
74			58	Khalisahi Beat	N 20° 17' 12.01" E 85° 10' 26.01"
75			59	Barapalli Beat	N 20° 14' 09.08" E 85° 09' 24.29"
76		15. Singhapada		Sec hqs	N 20° 18' 41.01" E 85° 08' 38.94"
77			60	Kiajhar Beat (Singapada)	N 20° 20' 46.30" E 85° 05' 35.30"
78			61	Nuapalli Beat	N 20° 17' 15.74" E 85° 05' 25.17"
79			62	Anlapata Beat	N 20° 21' 05.05" E 85° 03' 01.12"
80				Nahakahata Beat	N 20° 21' 06.30" E 85° 00' 01.00"
81		16. Kantilo		Sec hqs (Banapur)	N 20° 21' 41.62" E 85° 10' 07.47"
82			63	Akurabandha Beat	N 20° 23' 10.46" E 85° 05' 50.43"
83			64	Banapur Beat	N 20° 21' 41.62" E 85° 10' 07.47"

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84		17. Bhapur	65	Kumbharpada Beat	N 20° 21' 33.35" E 85° 01' 20.27"
85			66	Rakesia Beat	N 20° 20' 16.98" E 085° 08' 21.25"
86				Sec hqs	N 20° 17' 16.30" E 085° 17' 32.82"
87				Baigunia Beat	N 20° 15' 11.00" E 085° 13' 02.00"
88			67		
89			68	Gohiriapada Beat	N 20° 16' 49.87" E 085° 08' 13.25"
90			69	Marada Beat	N 20° 19' 48.72" E 085° 15' 04.67"
91			70	Fategarh Beat	N 20° 09' 13.00" E 085° 11' 23.79"
				Marichia Beat	N 20° 17' 14.70" E 085° 17' 32.11"
92			71	(Bhapur)	
93	Odagaon	18. Odagaon		Range Office	N-20° 01' 01.70" E-84° 58' 51.8"
94				Sec –hqs.	N-20° 01' 0.50" E-84° 58' 52.0"
95			72	Odagaon	N-20° 01' 01.70" E-84° 58' 49.9"
96			73	Banthapur	N-19° 56' 56.2" E-84° 59' 18.7"
97			74	Chemedi	N-19° 57' 29.3" E-84° 58' 19.1"
98			75	Sakeri	N-20° 03' 32.4" E-84° 59' 32.4"
99			76	Naukhala	N-19° 56' 48.1" E-84° 55' 19.6"
100			78	Kadamjhar	N-19° 58' 9.5" E-84° 55' 31.3"
101		19. Bahadajhola		Sec .Hqr.	N-20° 04' 34.9" E-84° 54' 53.9"
102			79	Bahadajhola	N-20° 04' 34.70" E-84° 54' 54.4"
103			80	Ambapada	N-20° 05' 32.2" E-84° 56' 45.9"
104			81	Makarapalli	N-20° 04' 6.7" E84° 49' 44.3"
105			82	Balisinsa	N-20° 02' 45.0" E-84° 52' 20.1"
106			83	Dholamaska	N-20° 03' 54.2" E-84° 56' 52.9"
107			84	Dahangi	N-20° 02' 53.4" E-84° 55' 9.0"
108		Panchirida		Sec Hq	N-20° 1' 58.5696" E-85° 4' 48.0576"
109			85	Panchirida	N-20° 1' 58.5696" E-85° 4' 48.0576"
110			86	Phasipalli	N-20° 03' 37.4" E-85° 02' 46.6"
111			87	Goudaput	N-19° 59' 28.5072" E-85° 1' 16.0788"
112			88	Kutuni	N-20° 0' 18.5832" E-85° 7' 32.6928"
113			89	Gochha	N-19° 57' 37.998" E-85° 6' 5.0616"
114		21. Godipada		Sec .Hqr. (Damasahi)	N-20° 2' 20.1192" E-85° 9' 46.26"
115			90	Godipada(Damasahi)	N-20° 2' 20.1192" E-85° 9' 46.26"
116			91	Tulubi	N-20° 2' 57.404" E-85° 11' 26.7972"
117		22. D.N.Pur		Sec .Hqr.	N-20° 4' 36.7536" E-85° 14' 1.5432"
118			92	D.N.Pur	N-20° 4' 36.7536" E-85° 14' 1.5432"
119			93	Biruda	N-20° 7' 48.2052" E-85° 11' 25.4364"

Abstract of Administrative Set up- (Range / Section & Beat)			
Sl No	Range	Section	Beat
1	Daspalla	6	24
2	Gania	2	7
3	Khandapada	4	16
4	Mahipur	3	16
5	Nayagarh	2	9
6	Odagaon	2	12
7	Panchrida	3	9
Div. Total	7	22	93

1.1.4 Building & Forest Road;

A) Buildings:

There are 145 numbers of buildings in the Division. All the Offices under Nayagarh Forest Division are having its own buildings. The list of Buildings is at **Annexure-I**

B) Forest Rest Houses:

There is one FRH (Forest Rest House) and one Rest Shed in the Division. The details is at **Annexure-II**

C) Forest Roads:

In order to facilitate Protection, Harvesting of Forest Produce and Management of Forests, there are 22 numbers of Forest Roads over a length of 222.40 Km. The range wise forest roads available and its present status is furnished at **Annexure- III.**

1.2 Configuration of the ground:

The area is a part of Eastern Ghats orogenic province. The joints, fractures, foliations form the prominent conduits for ground water movement. The structures generally trend in NW-SW direction with a dip of 700 to 800 towards east.

1.2.1 Topography:

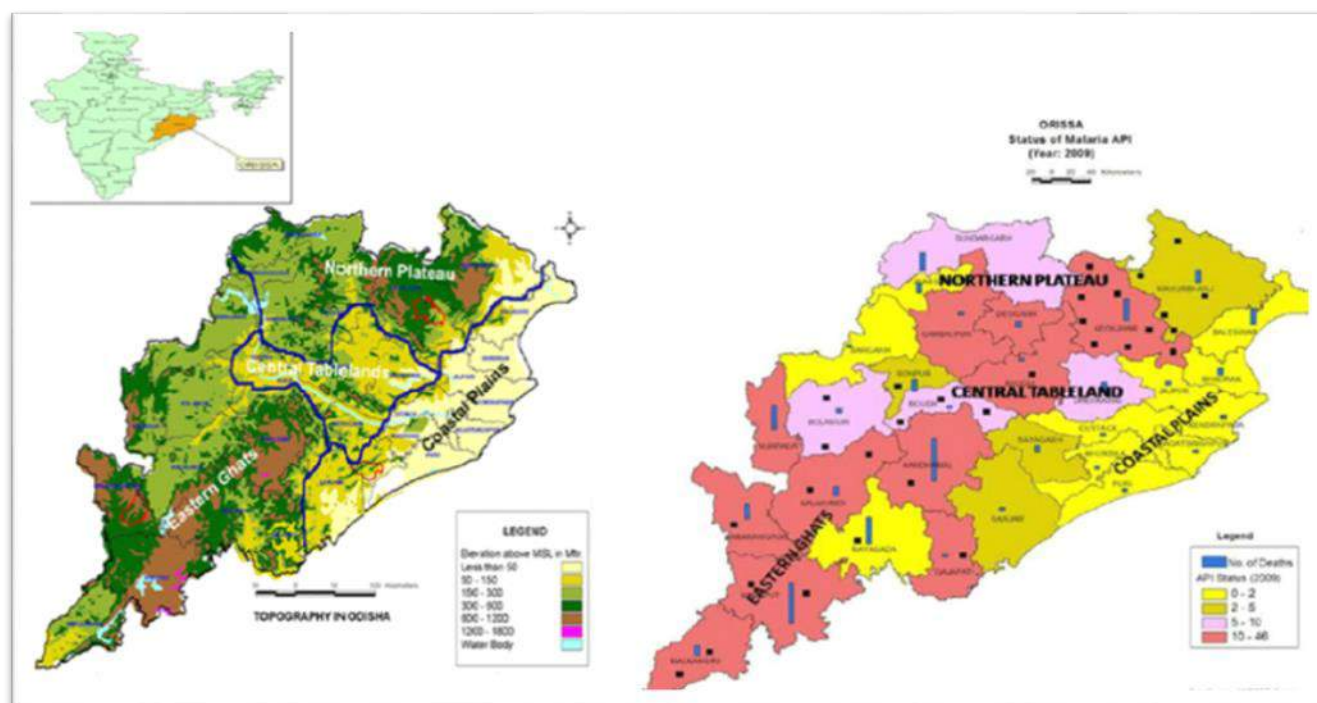
Physio-graphically the division exhibits a rugged and broken mountain system separated by a number of plains and valleys. It is a stable landmass of Indian peninsula but the rise and

fall of the hills are not in any systematic order. These hills and plains are criss-crossed by numerous nallas and rivers. Numbers of isolated and scattered hills are seen in the division.

1.2.2 Hills and Plateaus:

The mountain ranges are large extent continuous along the banks of the Mahanadi River along southwest side with the mountains and forests of Boudh, Phulbani and Mahanadi Wild Life Division. The hill range is continuous to some extent on the southern banks of the river Mahanadi starting from the confluence of the river Kuanria and Kusumi till it reaches the border of Boudh Forest Division, where it is cut by Brutanga River near Kadalibadi. Duanta and Sulia are also rivulets draining the water from these hills and mountains and connect to the river Mahanadi via Kusumi River. Small, but well cultivated fertile valleys intersected by hill streams with populace villages' stretch towards south-east. Present stability of topographical features is the result of continued erosion at some places and upliftment at other places. The western part of the division consists of hills covered with high forest and is made up of the blocks namely Central, Chadiapalli, Pokharigochha, Chadiapalli Extn., Nuagaon, Araniganda and Baliberena Blocks.

The Division is flanked on the south and east by high hill ranges of Gochha and Sukarmal. In the Central, Sulia, Hatimunda and Kural Blocks form a solid mass. Then in the north Palva, Panchupandav and Ragadimada groups of hills form prominent features in the topography. To the east, the most conspicuous feature is the Sapuamunda hill range. On the whole, the Division contains a confused and broken mountain system forming the extreme northern hills of the Eastern Ghats. The slopes are generally steep, the southern aspects being steeper than the northern aspects. Nayagarh town is surrounded by rocky hills namely Rukhi in south and Balaram in north, and Sukarmal hills on the eastern side broken at Kakalama, by a road passing towards Ranpur. The highest altitude in the division is 855 metres at Balimunda peak in the Central RF and the lowest is 47 metres along the bed of River Mahanadi.

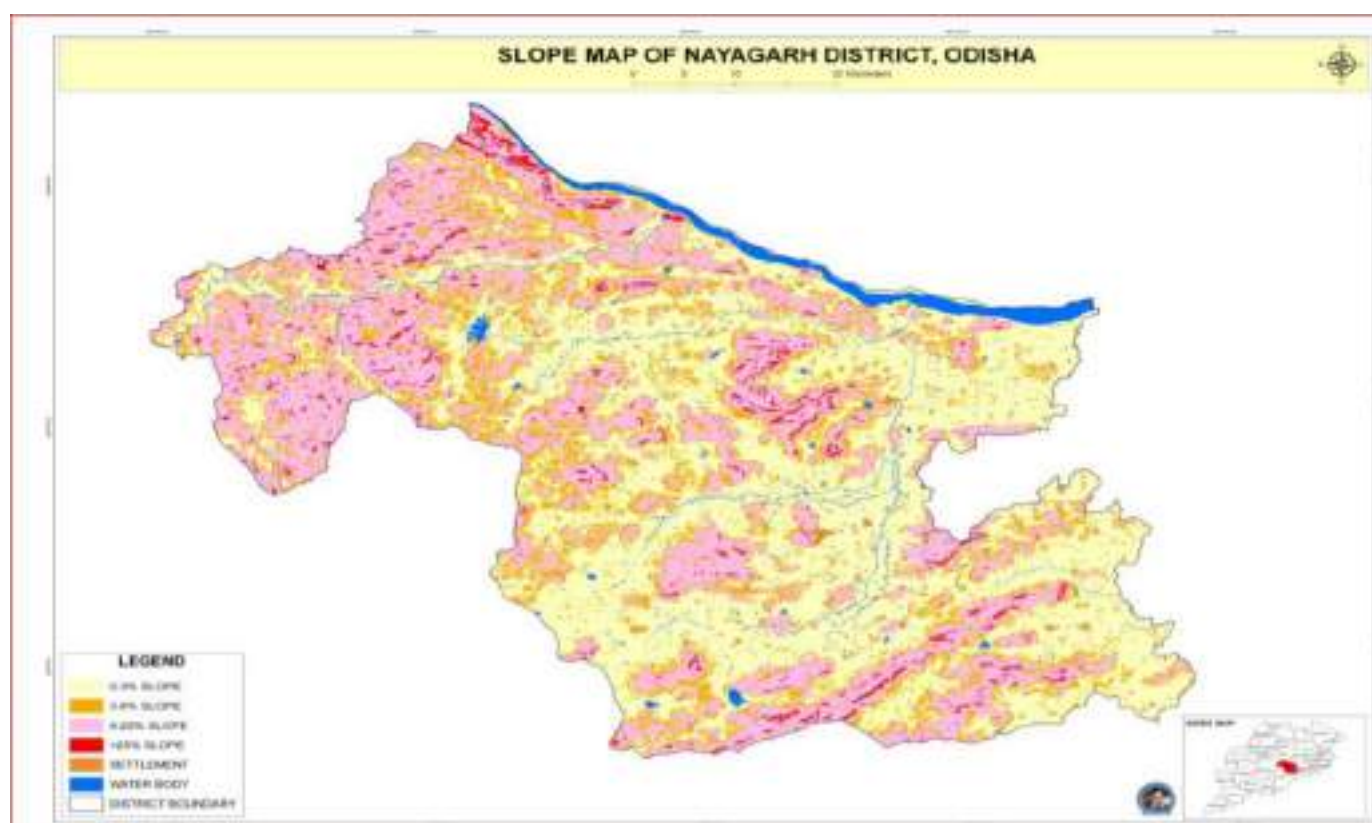
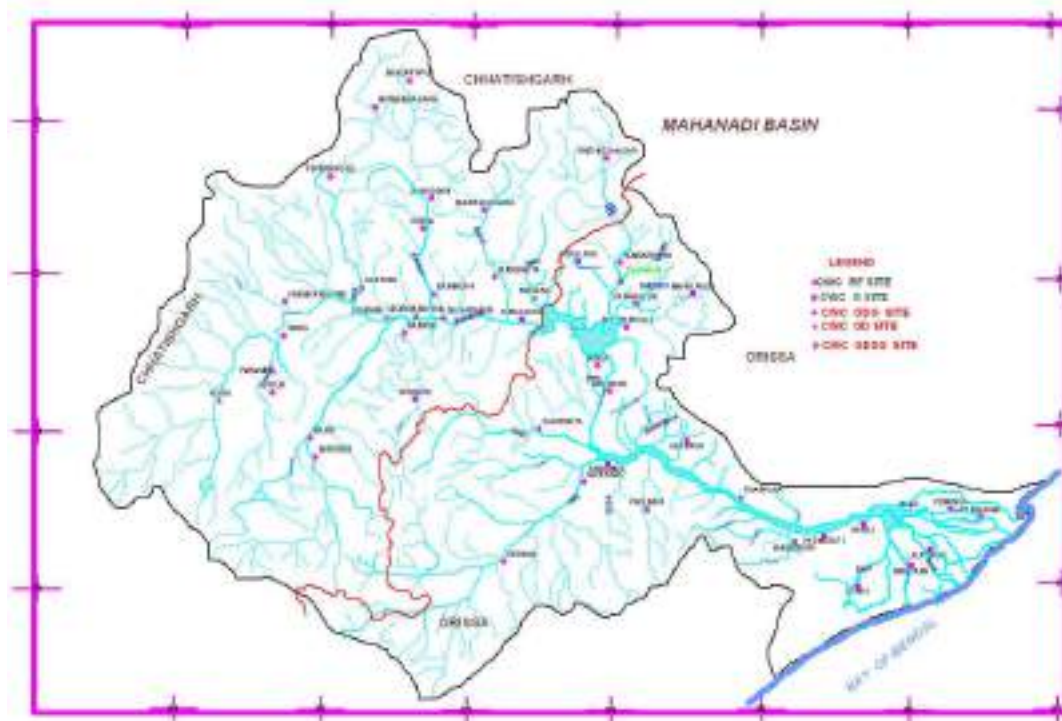


1.2.3 River system:

The Mahanadi, Burtanga, Kaunria, Kamai, Budha nadi constitute the major drainage system of the Division. The drainage is mainly dendritic, radial & centripetal in nature. Hot springs have been reported at Tarabalo near the village Nilakantha prasad. At Tarabalo, the patches of warm water (mud pool) in an elevated area cover about 1,500 Sq.m through which hot water oozes out. The temperature is about 57 degree centigrade and has a feebly sulphurous odour. The entire area drains to River Mahanadi which is on northern boundary of the district / Division.

Major portion of drainage water from the forests of this Division flows into the River Mahanadi. A small portion of forests of the Southern part of Chadiapalli Forest Block, a portion of South-West of Ragadimada Forests Block, Western portion of Bahadajhola Forest Block and South-West of Gochha Forest Block drain in to the Rushikulya River of Ganjam District. The forests are well drained by a large number of small rivers, streams and also nallahs. The most important river of this Division is Mahanadi. The other small rivers are Brutanga, Kuanria, Kusumi, Duanta, Dahuka, Khalakhala and Kaligiri Nallah, all of which are the tributaries of River Mahanadi. The River Mahanadi flows in the north of this Division forming the northern boundary beginning from the confluence of Brutanga and Mahanadi River for a length of about 27 Kms. in the east to Baideswar. The Brutanga River drains part of Central, Makarprasad, Matia, Bankamunda, Nasaghar, Ambalimba, Boni, Nephari,

Gumurkhol and Gochhabari Forest Blocks. The Kuanria River in the Central Block in the western part of the division flows east through mostly open and the populated part of the Division and joins the river Kusumi 6.4 Kms. south of Kantilo village. The Kusumi River rises in the vicinity of Gochha and Gayalasingh forest near the Ganjam border and flows north east through wide cultivated plains in the south of the Division. The Duanta River rises in the western end of Gochha Forest Block and flows almost parallel to River Kusumi about 2 Kms. south of Itamati village. The Dahuka Nallah rises in the Ragadimada Forest Block and flows east and joins the Kusumi River near Olamara village. Kaligiri Nallah rises in Khurda District and enters this Division near Parbatipur and forms a part of the eastern boundary of the Division and flows in to the River Mahanadi near Baideswar village. The rivers namely Brutanga, Kuanria, Kusumi, Duanta and Dahuka carry water till the end of February and the other streams dry up earlier. There is only one perennial stream namely Nagajhar in Gochha Block.



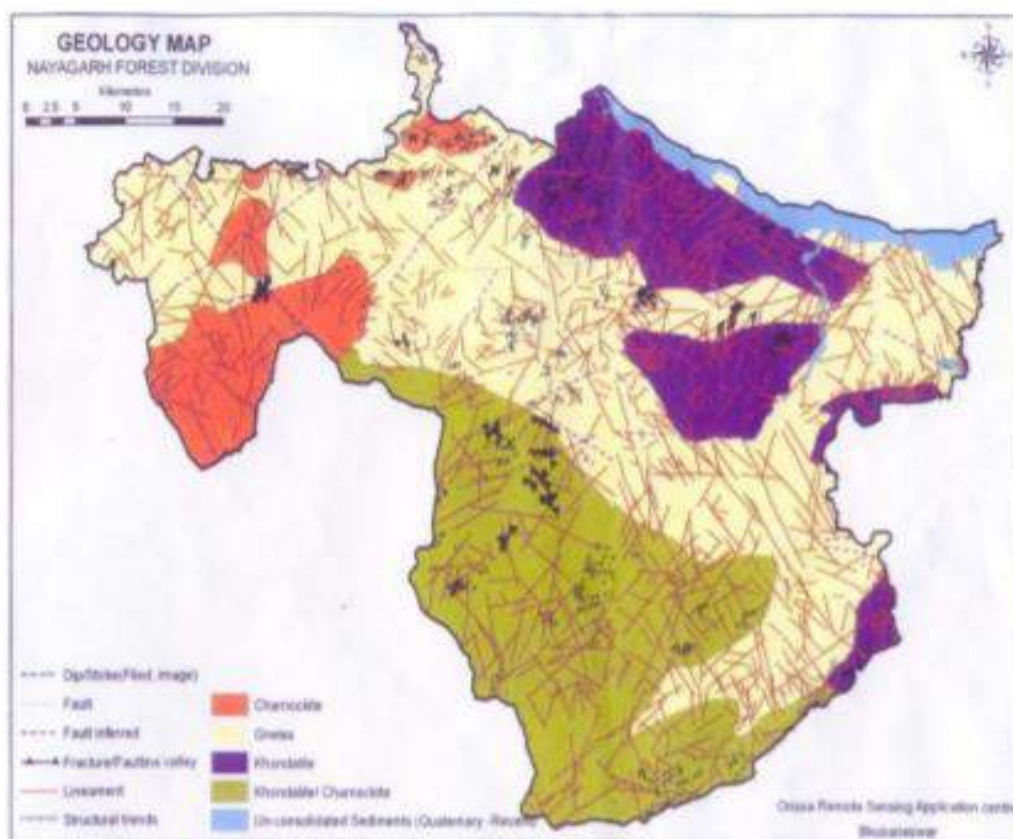
1.3 Geology, Rock and Soil:

1.3.1 Geology, Rock:

A) GEOLOGY:

In the district, the oldest rocks are represented by Eastern Ghat Supergroup of Archaean age. The Eastern Ghat Supergroup comprises of khondalites and charnockites (acid, intermediate and basic). Khondalites and charnockites occur as isolated residual hills throughout the district. Khondalite group of rocks comprise garnet-quartz-feldspargraphite schist, gneiss, granetiferous and sillimanite quartzite and leptynite. Granite gneiss and biotite granite of Archaean age represent major country rock of the district. In the eastern part of the district, residual soil is widespread, while laterite occurs as patches in the Southern part. A shear zone trending WNW-ESE, identified by the presence of mylonite and crushed zone stretches for 24 Km. along the southern bank of Mahanadi.

Geological Map of Nayagarh Forest Division



Source:ORSAC, Bhubaneswar

STRATIGRAPHY:

The geological succession in the district is as follows:

Age	Super Group	Group	Litho
Pleistocene to Recent			Residual Soil
Cainozoic			Laterite
			Granite Gneiss
			Biotite Granite
	Eastern ghat		Quartz Vein
		Charnovkite	Charnovkite (Acid & Intermediate)
Archaean			Charnovkite (Basic)
		Khandalite	Quartz- Garnet- Silimanite Gneiss / Schist
			Leptynite

Mineral Occurrences:

- i) **Graphite:** Graphite deposits are located around Sanaperi, Gochhabari (Dungiastaila), Gochhabari (Makastaila) and Sanasilinga, Takara and Narachipara area of the district. The Fixed Carbon in these graphite deposits ranges from 7.83% to 16.4%.
- ii) **Semiprecious stone:** Occurrences of semiprecious stone are reported around Dimiripat, Malaspadar and Sagarbhanga area of the district.
- iii) **Dimension and Decorative stone:** Occurrences of Decorative & Dimension stone around Chaupalli, Mardarajpur, Khunta bandh, Singhpada, Khandapada, Sunamundhi, Kantilo, Laxmiprasad, Bebartapur, Malisahi, Bhandarparbat, Damasahi, Kabti hill and Kailama etc. are note worthy.

A total resource of 2.2836 million cubic meters has been estimated in the district. Apart from this, Berhampur blue (Granetiferous granite gneiss) at Bhalumundia with recoverable reserve of 0.9 million cubic meter and multi colour granite (Granetiferous granite gneiss) at Bedangi with recoverable reserve of 0.108 million cubic meter has been reported in the district. Other than the above mentioned minerals, minor minerals such as river sand, Laterite slabs, building stone/black stone/road metals, morrum, brick earth etc. are also available in the district.

- iv) **Road Metals:** Total mineral reserve of road metal / building stone /black stone/ white stone is 9,57,196 cum which may increase after detail investigation.

B) Rocks:

The following rocks are observed in the district / Division.

Archaean Rocks: These are most ancient formations represented by Gneisses and schists belonging to peninsular gneissic complex, which are mostly present in the southern part of river Mahanadi. The conspicuous rock types are: - i) Khondalite ii) Charnockite iii) Prophyritic granite gneiss. iv) Pyroxene granulite v) Pegmatite veins/ Quartz veins

Khondalite: The term 'Khondalite' was first coined by Walker (1902) to collectively denote a rock suite comprising sillimanite- and garnet-bearing graphite), associated garnetiferous quartzite±siliceous schists/gneisses (and calc-silicate rocks. The name was given after the 'Khond' tribe of the Boudh-Kandhamal area of Orissa. These are oldest rocks made up of metamorphosed sediments. These are rich in quartz, sillimanite, feldspar, garnet and graphite. The general strike is North-East to South-West. Crystalline limestone and little Hornblende schist and gneiss are associates. These are commonly found in Southern part forests of the Mahanadi River i.e. in Gania and Daspalla Ranges. Panchupandav hills are also in these categories, along with Northern Sulia Parbat and Sukarmal hills in patches.

Basic Charnockite: These are a series of Granitoid rocks, occurring among the oldest Archaean gneiss and schist. Their content is high percentage of pyroxene (hypersthene) and dark ferro-magnesium minerals, which impart dark colour to the rocks. Their outcrops are seen in the forests to smaller extent in Khandapada and Odagaon range forest areas.

Pyroxene granulite: The rocks are generally fine to medium grained and dark coloured. Granulitic texture is displayed and contents are mainly pyroxenes and feldspar. Garnet varies in proportion as well as in shape and size. Mica is also seen, along with feldspars in local pegmatite veins. These are well exposed in areas near southern banks of river Kuanria and along the western limits of Panchupandav hills etc. Acid and intermediate charnockite: These rocks are medium to coarse grained and are greyish in colour. Several compositional types represent the orthopyroxene-bearing siliceous rocks (Quartz – garnet) of EGMB, viz., tonalitic± K-feldspar ± plagioclase ± orthopyroxene (enderbite), granodioritic (charno-enderbite), adamellite-granitic (charnockite), quartz-monzonitic-monzonitic (mangerite) and even syenitic-quartz-syenitic. Magnetite occurs as accessory in hilly portions near Darpanarayanpur of Panchirida range and nearly along the left side hills of Nayagarh-

Ranpur road near Kakalama. Laterite: Good exposures of laterite have been noticed in the entire hilly areas and also in plains of Daspalla, Mahipur, Nayagarh and Panchirida ranges.

Gondwana Rocks:

Upper Gondwana Rocks: Upper Gondwana rocks belonging to Mesozoic age (Upper Jurassic) and lower Gondwana rock belonging to Permian age are seen in the area. Quartzite pebbles are mixed with sand stones along hilly tracks of nallahs. Broken sand stones yielding coarse sandy soil are seen to small extents, which are infertile.

Alluvial: Recent deposits of alluvium are very much limited and the area is mainly confined to the banks of river and smaller watercourses. Small forest patches on alluvial land are seen in Daspalla, Mahipur, Khandapada and Gania ranges only in plain to semi plain tracts of land.

Soil- Soil is generally formed as the product of repeated weathering of different rock types, which are presented below.

Rock Type	Resultant Soil by normal weathering
Lime stone	Soil is generally calcific in nature with low to very low silica contents.
Shale	Basic soil, rich in iron (Fe), Aluminium (Al), Magnesium (Mg) and Calcium (Ca)
Quartzite	Hard rock generally does not form any soil, but when formed, soil have high silica contents
Granitic intrusives	Acidic soil with high silica contents, rich in aluminium (Al) and Iron (Fe)
Garnetiferous granite	Acidic soil with high silica content, rich in Aluminium (Al) and Iron (Fe)
Acidic / Inter charnockite suit of Rock	Acidic soil with high Iron (Fe), Aluminium (Al) and silica content
Khondalite	Acidic to basic soil, very suitable for prolific, luxuriant growth of plants.

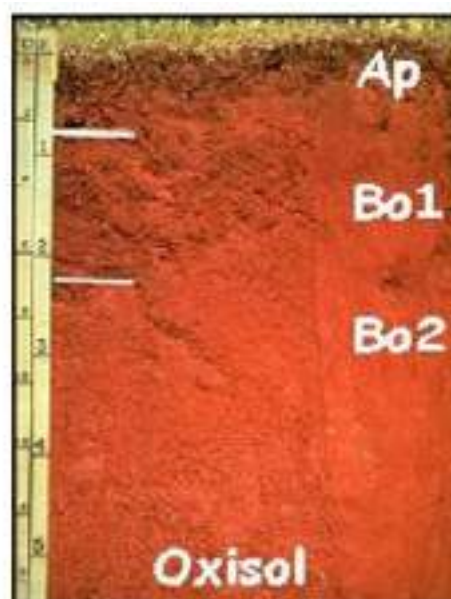
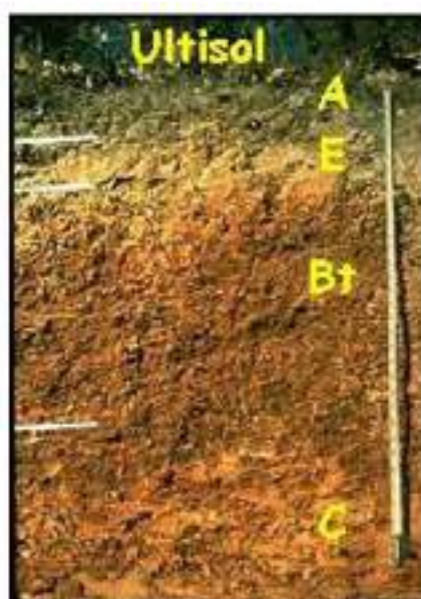
C) Soil:

There are two types of soil generally found in the district i.e. Alfisols and Ultisols. The characteristics of these soils are as follows.

Alfisols: It consists of a wide range of soils including mixed red and black soils, red earth, red loamy soils, red sandy soils, red gravelly soils and other alluvial soils. The red soils are light textured, usually devoid of lime concretions deficient in nitrogen, phosphate & organic matter. The PH of the soil varies from 6.5 to 7.3. These soils are suitable for cultivation of paddy and other crops.



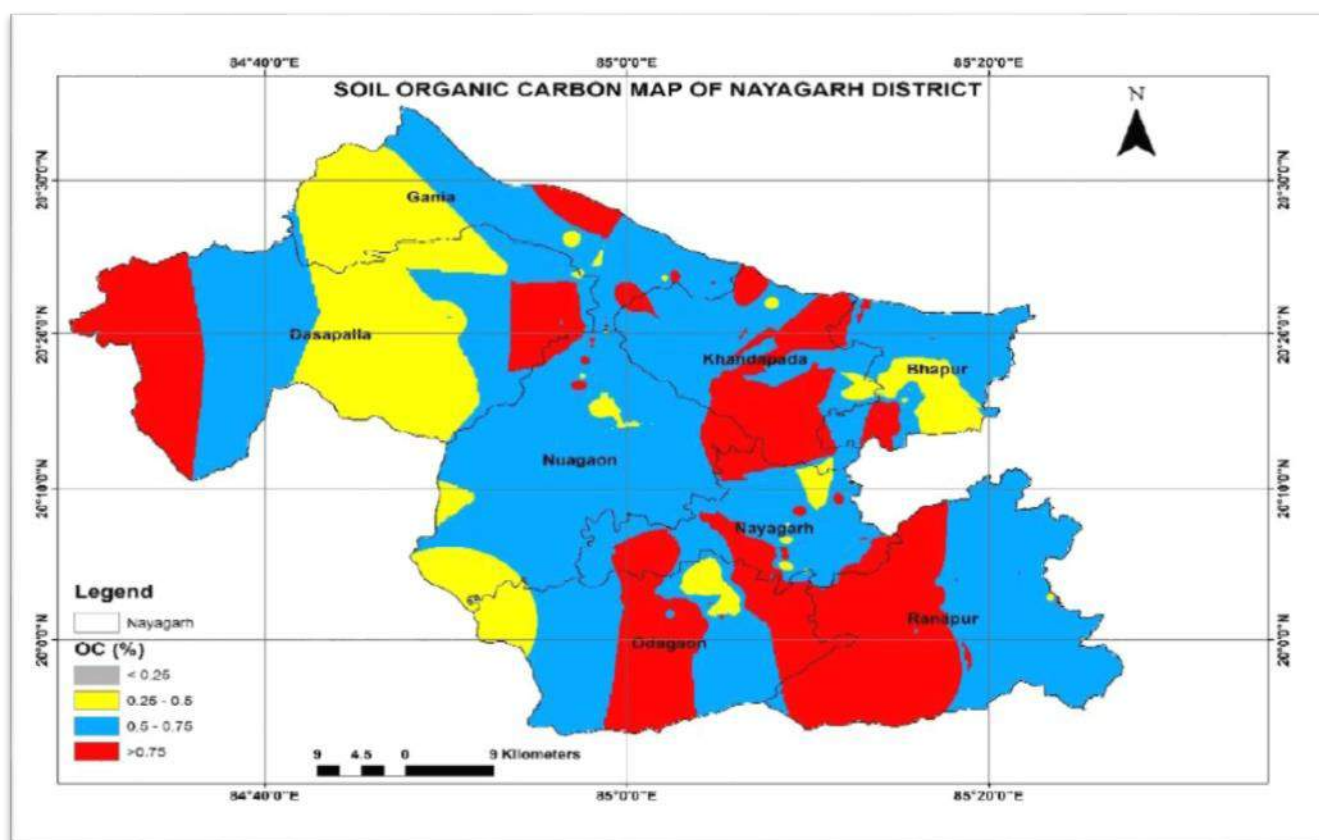
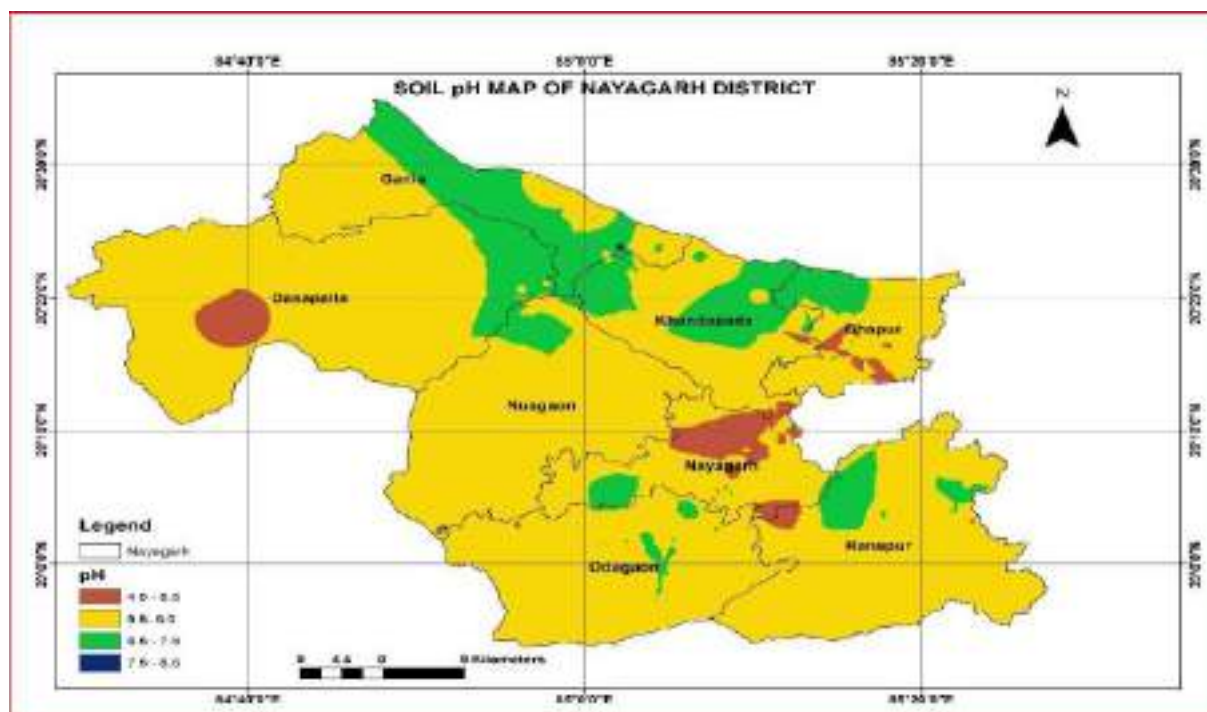
Ultisols: These include laterite & lateritic soil, red and yellow soils. They are characterized by low contents of Nitrogen, Phosphate, Potassium & Organic matter. The PH of the soils ranges from 4.5 to 6.0. Due to granular nature of these soils cultivation is possible immediately after heavy rains without the danger of any unsatisfactory physical state. This soil type is mainly encountered in the southern part of the district.



Department of Soil Science and Agricultural chemistry, OUAT, Bhubaneswar, Odisha has conducted extensive soil study for Nayagarh District. The findings are summarized below.

“The present investigation was carried out to study the available nutrient status and to prepare soil fertility maps which are important for nutrient management for higher and sustainable crop production. Five hundred two (502) numbers of soil samples were collected from different villages of all the eight blocks of Nayagarh District by using Global Positioning System (GPS) followed by analysis of physico-chemical properties and maps were prepared subsequently. The results revealed that the soils under investigation were acidic in reaction (pH 5.74 to 6.49), low in EC (0.08 to 0.14 dS m⁻¹) and organic carbon status (5.5 to 6.8 g kg⁻¹). The mean values of available nitrogen content varied from 124.8 to 186.2 kg ha⁻¹, available P from 6.3 to 13.78 kg ha⁻¹ and potassium status from 223.0 to 297.7 kg ha⁻¹. Thus, soils were found to be deficient in available N and P and medium in potassium status in Nayagarh district. The soil status of mean available Sulphur was high (14.98 to 24.22 mg kg⁻¹) except in Daspalla block. Hot water soluble boron content was above the critical limit (0.42 to 0.60 mg kg⁻¹) in most of the soils of Nayagarh district. Mostly four types of texture classes were observed in the district namely loamy sand, sandy loam, clay loam and sandy clay loam. Clay content was found to be positively correlated with all the parameters. Significantly positive correlation among different parameters was found except sand which showed negative correlation with all the parameters.

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1.4 Climatic Parameters

The **district** experiences tropical **climate**, with the summers being hot and the winter's cold. The maximum **temperature** that this **district** experiences is well above 40 deg C (during summers) and the minimum can be as low as 10 degree Celsius (during winters).

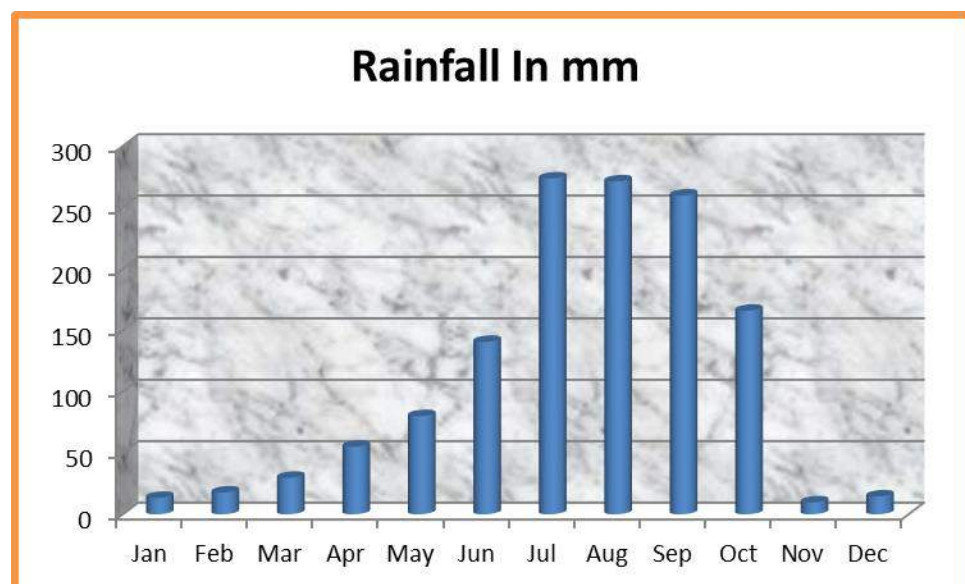
1.4.1 Rainfall:

The rainy Season usually starts from June- July and continues up to September. The South West monsoon brings rain to this tract. The average rainfall in this district is about 1330 mm. There are some pockets which receive high rainfall and results in Semi evergreen Forest to Moist Deciduous Forest in the division. Cyclonic depression in Bay of Bengal brings wide spread rainfall to the tract. It also experience Cyclonic Storm. The rainfall recorded during last six years (2015-2020) is furnished below.

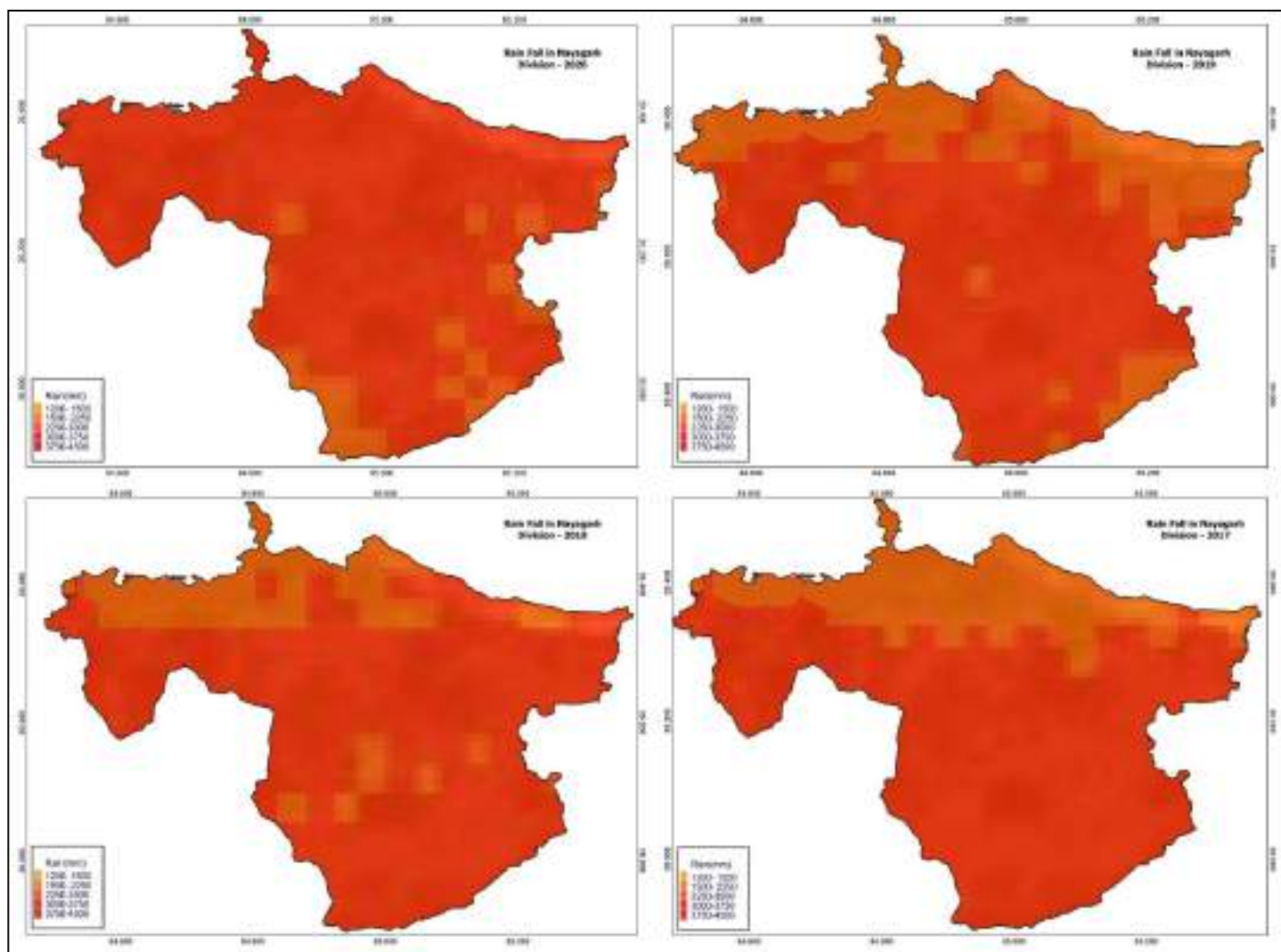
Table No - 1.5 Rainfall Data of Nayagarh District (Rainfall in mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2015	36.69	5.28	15.73	78.40	42.88	156.09	199.36	267.63	253.64	37.33	5.44	32.72	1131.19
2016	10.3	16.2	16.65	9.59	108.7	144.8	274.2	232.5	250.5	85.82	2.78	3.75	1155.82
2017	0.25	0	59.55	8.4	30.86	132.9	317.4	254.8	183.1	181.7	49.46	1.23	1219.66
2018	0	0	0	60.41	106.6	101.2	397.8	188.2	262.8	234.5	0	49.26	1400.77
2019	4.64	29.79	38.61	46.65	144.4	107.8	272.6	368.4	446.3	254.5	0	0	1713.57
2020	27.83	55.08	47.46	126.7	46.04	199.6	179.8	315.1	161.3	200.6	0	0	1359.36
Total	79.71	106.4	178	330.2	479.4	842.4	1641	1626	1558	994.4	57.68	86.96	7980.37
Avg	13.29	17.73	29.67	55.03	79.9	140.4	273.5	271.1	259.6	165.7	9.613	14.49	1330.06

(Source: Different Blocks of Nayagarh District)



Climatic Parameter (Map)



1.4.2 Temperature:

The maximum temperature raised up to 42⁰C during summer and minimum temperature goes down to 10⁰C during winter seasons.

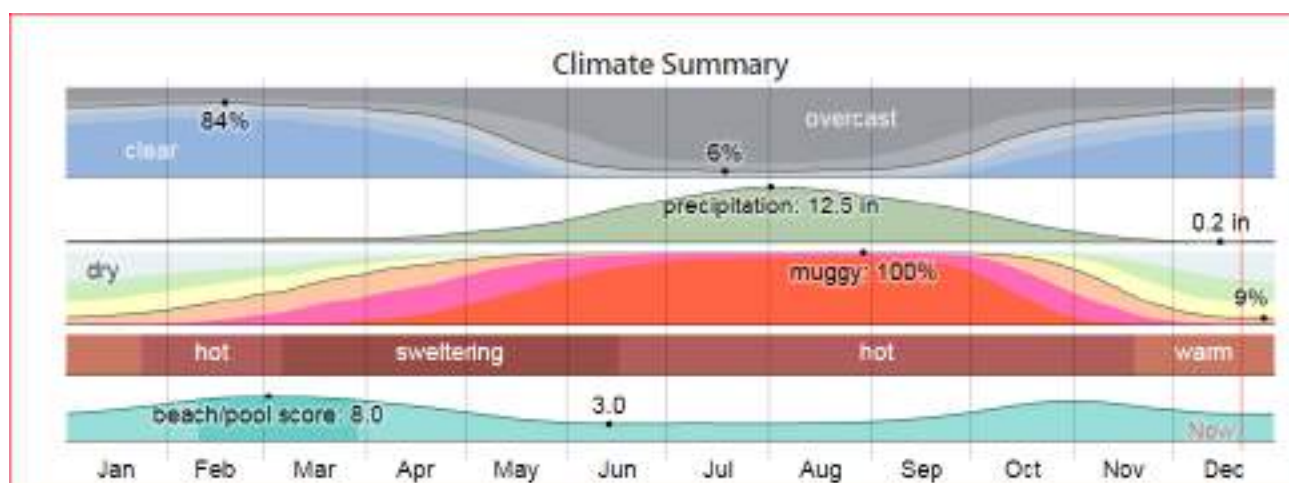
The temperature pattern recorded at various metrological stations are furnished below (Table No 1.6)

Table No 1.6 Temperature in ⁰ C								
Month	2015		2016		2017		Average	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Jan	31	13	35	14	32	12	33	13
Feb	37	15	40	22	36	17	38	18
March	38	20	41	21	38	21	39	21
April	40	21	45	25	41	20	42	22
May	45	24	43	24	42	24	43	24
June	44	25	39	25	43	24	42	25
July	36	24	35	25	34	23	35	24
Aug	35	25	34	25	34	25	34	25
Sept	35	25	35	24	35	24	35	24
Oct	34	22	33	21	34	21	34	21
Nov	32	18	32	16	32	15	32	16
Dec	32	14	32	14	30	12	31	13

1.4.3 Humidity:

The Humidity pattern recorded at various metrological stations are furnished below (Table No 1.7)

Table No 1.7 Humidity (in Percentage)								
Month	2015		2016		2017		Average	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Jan	98	29	100	22	98	22	99	24
Feb	98	21	98	24	100	21	99	22
March	97	18	98	17	98	15	98	17
April	100	36	96	24	100	22	99	27
May	96	30	100	23	98	29	98	27
June	98	34	100	51	100	41	99	42
July	100	50	100	63	100	66	100	60
Aug	100	52	100	66	100	63	100	60
Sept	100	57	100	62	100	63	100	61
Oct	100	43	100	33	100	53	100	43
Nov	98	37	100	33	100	37	99	36
Dec	96	28	96	27	100	33	97	29



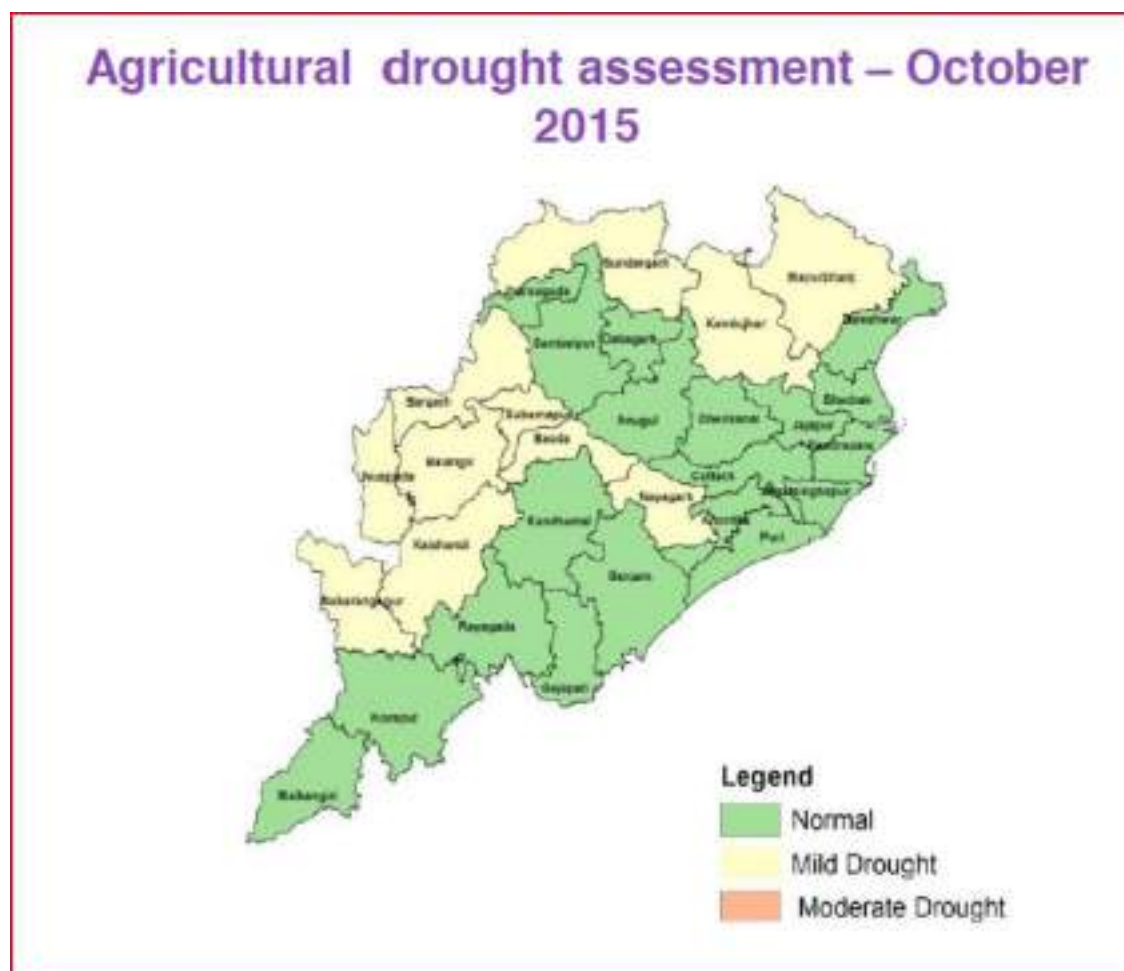
1.4.4 Wind:

The tract is about 150 Kms from Sea. It experience SW wind in Rainy Season, NE wind in Winter and erratic in other period. The normal wind speed is 5 km per hr to 6km per hr. During depression in bay of Bengal / cyclonic Stork the wind speed goes up to 125-130 km per hour.

1.4.5 Drought:

Nayagarh district experiences moderate drought condition when rainfall is reduced to 1100- 1200 mm. During 2015 and 2016, the district faced moderate drought.

Annual Rainfall	Drought Status	Remark
<1100 mm	Drought	The tract usually experience moderate drought in a 3- 4 year cycle.
>1100 mm but < 1200mm	Moderate drought	
<1200 mm	Normal	



1.4.6 Frost:

This tract does not experience frost in last decades. The division is also not prone to frost.

1.4.7 Cyclone / Storm:

Behind super cyclonic storms, extremely severe cyclonic storms, Fani is the second-highest classification on the India Meteorological Department (IMD)'s intensity scale. There have been 31 of them since reliable records began in 1960. The Cyclone that Odisha Coast had experienced are listed below.

Name	Dates (Tropical Cyclone)	Wind Speed	Pressure	Affected Area
Phailin	October 8 – 14, 2013	215 km/h (130 mph)	940 hPa (27.76 inHg)	Odisha
Hudhud	October 7 – 14, 2014	185 km/h (115 mph)	950 hPa (28.05 inHg)	Odisha
Fani	April 30 – May 3, 2019	215 km/h (130 mph)	932 hPa (27.52 inHg)	Odisha

These cyclones affected the Nayagarh District / Division.

Sporadic, wind fallen / uprooted trees, if any, shall also 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 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 shall be obtained from the Regional Office of MoEF&CC, Bhubaneswar. The volume extracted out of wind fallen/ uprooted trees shall be deducted out of the total volume of yield as calculated and permission for felling is allowed for balance volume.

1.4.8 Flood:

Odisha is one of the coastal states lying in the eastern margin of the Indian Peninsula that shares 480 km of coast line with the Bay of Bengal. Natural disasters are the frequent visitors in Odisha designating it as the land of disasters. Since last one decade or a little more period than that tells the devastating stories of extreme climatological events in the region. After the super cyclone in 1999, the state has suffered many times from the flood disasters. It has witnessed severe floods in the year 2003, 2008, 2011 and 2013 besides many small ones. The catastrophic nature of such floods in Odisha has brought immense sufferings for the inhabitants of Odisha particularly in the Mahanadi delta region. Moderate flood is experienced in every year. High flood is experienced in the district in a 4-5 year cycle.



CHAPTER-2

MAINTENANCE & INCREASE IN THE EXTENT OF FOREST AND TREE COVER:

2.1 Area of Forests under different legal Classes:

There are Reserved Forests, Proposed Reserved Forests, Protected Forests, Demarcated Protected Forests and Village Forests in Nayagarh Division. *The Division shall take steps for proper up keeping of all available maps.*

The details of Forest Block and area under different legal classes are as follows.

2.1.1 Reserved Forests:

There are 42 Reserved Forests covering an area of **90705.713ha**. The Range wise Forest blocks / area in ha is furnished at **Table No-2.1**

Table No 2.1 : List of Reserve Forests- Nayagarh Division						
Sl No	Range	Forest Block	No. of Compt.	Area in ha		Notification
				Notified	GIS Comptd.	
1	Daspalla	Pokharigochha	8	5154.89	4292.7596	No. 12F-42 m/2/58-9367 it. 14.3.1959
2		Central	13	10586.59	9686.1259	
3		Chadiapalli	10	5466.09	6061.2328	
4		Nuagaon	2	1165.5	1195.739	
5		Nasghar	4	1683.49	1857.3868	
6		Poibadi	1	777	1619.844	
7		Chhadesh	1	2169.12	1781.479	
8		Ambalimba	1	579.51	554.4190	Not available
Range Total			40	27582.19	27048.98610	
9	Mahipur	Hatimunda (Part)	12	4641.712	5567.8611	12-F-42(M)/ 58- 9369/ Dt. 14.3.1959
10		Ratadei	4	2848.99	2085.5737	
11		Palva	8	3795.55	3114.7524	
12		Maichheli Sampada	1	309.99	328.9887	
13		Sulia(Part)	2	1650	1149.8815	
14		Ragadimada	9	5196.17	4450.2393	
15		Panchupandav	2	832.03	863.866	
Range Total			39	19274.4420	17561.1627	
16	Odagaon	Gayalsingh	4	1353.27	1399.5858	
17		Gochha (part)	8.5	4948.67	4391.7993	
18		Bahadajhola	1	465.39	404.5449	

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19		Balisinsa – Badhulipur (2 Patch)	1	366.24	410.2294	
		Sulia(Part)	3	2050	2062.1089	
Range Total			17.5	9183.5700	8668.2683	
20	Nayagarh	Balaram	1	364.62	341.1061	Not available
		Hatimunda (Part)	8	3452.82	2537.8593	
21		Rukhi	1	259.81	220.8998	
		Sulia (Balance)	2	1810.229	828.5552	
22		Sapua (Part C-1 & 2		491.99	955.6531	
24		Patharakata	1	128.85	135.0238	
Range Total			13	6508.3190	5019.0973	
25	Gania	Matia (2 Patch)	1	1359.74	643.6100	12-F-42(M)/ 58- 9369/ Dt. 14.3.1959
26		Makarprasad	1	1003.62	1157.6710	
27		Bankamunda	4	1810.97	1859.8002	
28		Manibhadra (2 Patch)	1	518	527.9488	
29		Gania	1	453.25	342.8016	
Range Total			8	5145.58	4531.8316	
	Panchirida	Gocha (Balance)	9.5	7264.752	6108.9541	12-F-42(M)/ 58- 9369/ Dt. 14.3.1959
30		Patharaganda	4	1214.06	1282.8805	
		Sulia (Balance)	1	1021	2214.0274	
31		Khatia- Damasahi (5 Patch)	1	267.90	268.235	
Range Total			15.5	9767.7120	9874.0970	
32	Khandapada	Similibanka	1	186.96	216.9048	No. 11 F – 32/65- 15869 / CF / dt. 20.8.1965
33		Pathara	1	49.78	49.0167	
34		Barakhola	1	753.53	787.6532	
35		Pithakhai	1	331.84	365.66	
36		Bandra	1	222.58	216.6869	
37		Chadeibasa	1	97.12	92.1845	
		Sapua(Balance C-1 & 2) & Rest	13	7581.50	7145.464	
		Sikharpur	1	1138.01	1398.4830	
38		Guriabari (2 Patch)	1	576.27	608.4189	
39		Mainisibindha	1	603.79	637.3768	
40		Hanumantia	1	740.58	329.6100	
41		Patrabani-Jamubani	1	225.41	212.3944	
42		Dengabahada	2	736.53	772.2526	
Range Total			26	13243.9	12832.1058	
	7 Range	42 Block	159	90705.7130	85535.5488	

2.1.2 Proposed Reserved Forests (PRF):

There are 27 PRF in the Division with a total area of **11367.93ha** as detailed below **Table No 2.2.**

Table No 2.2 List of Proposed Reserved Forests in Nayagarh division.					
Name of the Range	Sl. No.	Name of PRF	Area in Ha.(Notified)	GIS Computed) Area in Ha	Notification No.
1	2	3	4		5
Daspalla	1	Pankalasahi	66.85	68.1276	S.R.O.309/70 dt. 30.4.1970
	2	Khaman	71.62	116.8569	S.R.O. 337/70 dt. 2.5.1970
	3	Baisipalli Ext-1	80.93	73.2720	S.R.O. 338/70 dt. 5.5.1970
	4	Nephari	67.66	253.7985	S.R.O.554/70dt. 25.6.1970
	5	Gochhabari	521.23	522.0140	S.R.O.555/70dt. 25.6.1970
	6	Gambhariganda	322.33	325.2898	S.R.O.556/70dt. 25.6.1970
	7	Boni	106.83	79.3134	S.R.O.547/70 dt. 2.7.1970
	8	Baliberena	22.98	44.5776	S.R.O.552/70 dt. 2.7.1970
	9	Dhundugadia	566.56	756.7991	S.R.O.548 / 70 dt. 3.7.1970
	10	Chadeypalli Ext	403.87	378.0971	S.R.O.551/70 dt. 3.7.1970
	11	Baisipalli Ext-II	129.49	110.4664	S.R.O.756/70 dt. 22.9.1970
	12	Baisipalli Ext- III	150.94	163.6354	S.R.O.558/70 dt. 25.6.1970
	13	Araniganda	26.91	102.1612	S.R.O. 972/70 dt. 17.9.1970
	14	Gumurakhola	258.99	270.9614	S.R.O. 988/70 dt. 17.12.1970
		Range Total	2797.19	3265.3704	
Gania	15	Phasi Ext.-I	30.35	23.4961	F.S. 33822/R dt. 17.5.1984
	16	Matia	27.84	54.8403	S.R.O. 591/70 dt. 2.7.1970
	17	Bankamunda Ext-I	191.01	205.6272	S.R.O. 760/70 dt. 14.9.1970
	18	Phasi Ext.- II	114.12	112.0323	F.S. 33836/R dt. 17.5.1984
	19	Phasi Ext.- III	56.65	58.8719	F.S. 33814/R dt. 17.5.1984
	20	Baisipalli Extn – IV	544.7	609.1446	.S.No.31/82 – 34126/R dated19.5.1984
Mahipur	21	Palva	76.48	59.8702	S.R.O. 549/70 dt. 3.7.1970
	22	Ragadimada	77.69	76.8970	S.R.O. 971/70 Dt. 17.11.1970
		Range Total	1118.84	1200.7796	
Odagaon	23	Makarapalli	1359.74	1126.2980	S.R.O. 553/70 dt 25.6.1970
		Range Total	1359.74	1126.2980	
Panchirida	24	Banijhari	2810.17	2756.6170	S.R.O. 550/70 dt. 2.7.1970
	25	Sukaramala	2533.33	2525.8950	S.R.O. 737/70 dt. 22.8.1970
	26	Ambamundia	323.74	297.7761	F.S. 80173/44251 / R dt. 12.7.1973
		Range Total	5667.24	5580.2881	

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Nayagarh	27	Barabanka	424.92	583.1289	S.R.O. 553/84 Dt. 19.5.1984
		Range Total	424.92	583.1289	
		Div. Total -27PRF	11367.93	11755.8650	

2.1.3 Demarcated Protected Forests:

There are 24 numbers of DPF in the Division. The lists of such forests are furnished below **Table No 2.3).**

Table No 2.3 List of DPF in Nayagarh Division				
Sl.No.	Name of the Range	Name of Forest Block	Notified Area in Ha.	GIS Area in Ha.
1	Daspalla	Ranga	278.60	305.9649
2		Baijhari	73.60	89.4322
3		Sirisabadi	968.20	934.9828
4		Kerabari	37.80	39.6854
5		Nandagadu	35.00	54.4770
6		Sikharpanga	61.50	87.6165
7		Kuradhinisa	587.50	505.1108
8		Kuradhinisa Ext.	2436.29	2615.4160
9		Nuagaon DPF	48.05	49.4514
Range Total			4526.54	4682.137
10	Gania	Bankamunda Ext-II	524.48	546.6233
11		Matia Ext .	601.83	546.1503
12		Ambaghati-I	81.48	1.1650
13		Ambaghati-II		11.8504
14		Ambaghati-III		1.9600
15		Ambaghati-IV		60.3667
16		Arakhataila DPF	247.00	253.3231
17		Makarprasad DPF	66.00	125.2948
Range Total			1520.79	1546.7336
18	Odagaon	Kurala	630.11	677.3515
19	Odagaon	Nariamba	699.31	774.0594
Range Total			1329.42	1451.4109
20	Panchrida	Netabandha	101.33	141.5044
21		Binjhagiri	257.14	250.2270
22		Dhadi	235.53	232.8733
23		Takarakhai	72.84	78.8052
Range Total			667.54	703.4099
24	Mahipur	Bhagabati	133.02	62.0763
Range Total			133.02	62.0763
Division Total			8176.61	8445.7677

2.1.4 Village Forest (As notified u/s 30 of OFA,1972):

There are 63 sites declared as Village Forest in the Division. The area under Village Forests is 579.45 ha

Table No 2.4 List of Village Forest in Nayagarh Forest Division.

Name of the Range	Sl No	Name of the village	Notification No.	Area in Ha.
Daspalla	1	Dalipadar	FFN.CIDA -24/90/19957 FFH Dt. 21.8.1990	5.00
	2	Dalipadar	-do-	3.00
	3	Nuasahi	-do-	8.97
	4	Pankua	-do-	25.00
	5	Poibadi	-do-	25.00
	6	Subalaya	-do-	4.00
Range Total		6 no		70.97
Gania	7	Adakata	AFFN-SIDA- 13/922/08F &E dt. 30.1.1992	10.05
	8	Andharakot	AFFN-SIDA-24/90/19957 FFH dt. 21.8.1990	7.00
	9	Dhipisahi	-do-	5.00
	10	Gholahandi	-do-	16.00
	11	Karadamada	FFN-CIDA-24/90/19957 FFH dt. 21.8.1990	15.00
	12	Karadapada	FFN-CIDA-13/92/2108 F & E dt. 30.1.1992	8.00
	13	Krishnapalli	-do-	30.00
	14	Nachipur	FFN-CIDA-24/90/19957 FFH dt. 21.8.1990	7.50
	15	Tamarijhola	-do-	3.00
	16	Tentuliapalli	-do-	5.00
Range Total		10 no		106.55
Khandapada	17	Antapada	FFN-CIDA- 13/92/2108 F & E Dt. 30.1.1992	3.90
	18	Badabanapur	-do-	8.00
	19	Badakhajuria	-do-	4.99
	20	Baraganda	-do-	14.86
	21	Barkhola	-do-	4.50
	22	Chaitanpur	-do-	2.40
	23	Dhanchangada	-do-	8.00

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	24	Kanasingh	-do-	7.00
	25	Khuntubandha	-do-	4.03
	26	Patharachakada	FFN-CIDA-13/92/30230 F & E dt. 19.12.1992	13.94
	27	Madhabereni	FFN-CIDA-13/92/2108 F & E dt.30.1.1992	4.94
	28	Natabarapur sasan	-do-	23.77
	29	Nihalprasad	-do-	0.85
	30	Sadhuapalli	FFN-CIDA-24/90/19957 FFH dt. 21.8.1990	5.16
Range Total		14 no		106.34
Mahipur	31	Badaberena	FFN-CIDA-24/90/19957 FFH dt. 21.8.1990	1.00
	32	Goudachancharapalli	-do-	1.30
	33	Jagannath Prasad	-do-	4.00
Range Total		3 no		6.30
Nayagarh	34	Kirialanji	-do-	10.17
	35	Kirialanji	-do-	20.28
	36	Machhipada	-do-	4.00
	37	Malisahi	-do-	5.62
	38	Nadiali Ostapada	-do-	10.97
	39	Radhanathpur	-do-	7.00
	40	Kanakata	-do-	4.52
	41	Balipatna	FFN-CIDA-13/92/2108 F & E dt. 30.1.1992	9.00
Range Total		8 no		71.56
Odagaon	42	Dholamaska	FFN-CIDA-24/90/19957 FFH dt. 21.8.1990	20.00
	43	Jambupatna	-do-	10.00
	44	Jambupatna	-do-	10.00
	45	Kumbhiapalli	-do-	5.00
	46	Madanpur	FFN-CIDA-13/92/2108 F & E dt. 30.1.1992	10.2
	47	Phasipalli	-do-	2.00
	48	Sabideipur	-do-	5.00
Range Total		7 no		62.20
Panchrida	49	Padiabhanga	-do-	6.99
	50	Baghera	FFN-CIDA-13/92/2108 F & E Dt. 30.1.1992	8.01

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	51	Baradihi	-do-	8.12
	52	Baradihi	-do-	10.00
	53	Binjhagiri	-do-	10.08
	54	Damasahi	-do-	8.09
	55	Darapada	-do-	29.21
	56	Godimada	-do-	0.62
	57	Kalyanpur	-do-	10.07
	58	Kusapanderi	FFN-CIDA- 24/90/19957 FFH dt. 21.8.1990	10.06
	59	Lunisahi	FFN-CIDA-13/92/30230 F & E dt.19.12.1992	17.00
	60	Manapur	-do-	2.28
	61	Notarapalli	-do-	10.00
	62	Talaribandh	-do-	5.00
	63	Talaribandha Damasahi Mouza	-do-	20.00
Range Total		15 no		155.53
	63	Division Total		579.45

2.1.5 Protected Forests:

There ten (10) Protected area in the Division. The Compensatoy afforestation Land has been declared as PF U/S 33 of the Odisha Forest Act,1972

Table No 2.5 List of Protected Forest in Nayagarh Forest Division.					
Sl No	Name of PF	Mouza	Notified Area		Notification No. / Date
			In Ac	In Ha	
Gania Range					
1	Arakhataila	Arakhataila	236.6	95.75	No. 10F(Cons)94/2018/1777/F&E, dt.25.01.2019
2	Bindhyagiri	Bindhyagiri	859.58	347.87	No. 10F(Cons)94/2018/1791/F&E, dt.25.01.2019
Range Total			1096.18	443.62	
Khandapada Range					
3	Kasia	Khandpada	795.61	321.98	No. 10F(Cons)94/2018/1798/F&E, dt.25.01.2019
Range Total			795.61	321.98	
Mahipur Range					

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4	Badadurupa	Badadurupa	159.59	64.58	No. 10F(Cons)94/2018/1749/F&E, dt.25.01.2019
5	Banuasahi	BanuaSahi	99.37	40.21	No. 10F(Cons)94/2018/1756/F&E, dt.25.01.2019
6	Bamuri	Bamuri	141.99	57.48	No. 10F(Cons)94/2018/1763/F&E, dt.25.01.2019
7	Turuturi	Turuturi	288.08	116.58	No. 10F(Cons)94/2018/1784/F&E, dt.25.01.2019
Range Total			689.03	278.85	
Odagaon Range					
8	KumbhiaPalli	KumbhiaPalli	153.8	62.24	No. 10F(Cons)94/2018/1742/F&E, dt.25.01.2019
Range Total			153.8	62.24	
Panchirida Range					
9	Bhandar	Bhandar	308.99	125.04	No. 10F(Cons)94/2018/1770/F&E, dt.25.01.2019
10	Chhanchunia	Chhanchunia	749.98	303.51	No. 10F(Cons)94/2018/1735/F&E, dt.25.01.2019
Range Total			1058.97	428.55	
Division Total- 10 block			3793.59	1535.24	

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

The detail copy of the PRF Notification will be compiled and a copy of each shall be kept with the DFO/ Working Plan Officer and CCF, Working Plan for reference.

2.1.6 Un Classed Forest:

The land under administrative control of the forest department but not governed by any notification under Odisha Forest Act,1972 is considered as Unclassed forests. The list of such forest is furnished at Table No 2.6.

Table No 2.6 List of Unclassed Forest in Nayagarh Forest Division.		
Range	Location	Area in ac.
Daspalla	New Forest Range Office Campus, Jagapur Road	0.74
Daspalla	Old Forest Range Office, Kunjabangada	0.25

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Daspalla	FRO Residence, Jagapur Road	0.76
Daspalla	Barrak at Medical Sqaure	
Daspalla	Daspalla Forester Quarter at Trinath Bazar, Daspalla	0.08
Daspalla	Daspalla Beat Quarter at Medical Squire near Barrak site	
Daspalla	Puruna Daspalla Beat Quarter at Infront of Daspalla High School. Old Range Office Campus	
Daspalla	Godibida Beat Quarter at Godibida	0.18
Daspalla	Sakini Beat Quarter at Sakini	2.22
Daspalla	Sakini Forester Quarter at Pankua	27.69
Daspalla	Pankua Beat Quarter at Pankua	
Daspalla	Pokharigochha Forester Quarter at Pokharigochha	0.4
Daspalla	Pokharigochha Beat Quarter at Pokharigochha	
Daspalla	Chadeyapalli Forester Quarter at Hanumanta	0.14
Daspalla	Chadeyapalli Beat Quarter at Hanumanta	
Daspalla	Nuagaon Beat quarter	0.2
Daspalla	Takara Forester Quarter at Takara	
Daspalla	Takara Beat Quarter at Takara	0.22
Daspalla	Tilabadi Beat Quarter at Mitukuli	0.45
Daspalla	Kurubari Beat Quarter at Sanakurubari	1.56
Daspalla	Banigochha Forester quarter at Banigochha	0.33
Daspalla	Banigochha CNG at Banigochha	0.5
Daspalla	Banigochha Beat quarter at Banigochha	
Daspalla	Kujamendhi Beat quarter at Bandhakhaman	15.5
	Total	51.22
Gania	Range office building	0.93
Gania	R.O's Residence	
Gania	Fr, quarter, Gania	
Gania	Fr, quarter, Gania (OLD_	
Gania	FRH	
Gania	FG, quarter, Gania	
Gania	Rest shed, Gania (old)	
Gania	Barrack	
Gania	FG. quarter Langalakanta	
Gania	FG. quarter, Dankarisahi	
Gania	FG. quarter Adakata	0.07
Gania	Fr, quarter Madhyakhanda	0.03
Gania	FG. quarter, Nachhiur	0.15
Gania	FG. Quarter Ghugudipada	0.02

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Gania	Permanent Nursery, Dhuamada	0.03
Gania	Protection Shed, Madhyakhanda	0.03
Gania	Nursery shed, Adakata	
	Range Total	1.26
Khandapada	Range Office, Khandapada	0.015
Khandapada	RO residence, Khandapada	0.41
Khandapada	FG. Quarter Khandapada	0.35
Khandapada	Anlapata Beat H/q, Barapalli	0.26
Khandapada	Khandapada Section Office H/q, Khandapada	
Khandapada	Singhapada Section Office H/q, Singhapada	0.53
Khandapada	Kantilo Section Office H/q, Banapur	0.06
Khandapada	Bhapur Section Office H/q, Bhapur	0.52
Khandapada	Khandapada Beat H/q, Khandapada	
Khandapada	Khalisahi Beat H/q, Khalisahi	
Khandapada	Nuapalli Beat H/q. Nuapalli	0.26
Khandapada	Anlapata Beat H/q, Analapata	0.3
Khandapada	Rakesia Beat H/q, Khandapada	0.07
Khandapada	Kumbharapada Beat H/q, Khandapada	0.14
Khandapada	Akurabandh Beat H/q, Akurabandh	0.29
Khandapada	Baigunia Beat H/q, Baigunia	0.23
Khandapada	Gohiriapada Beat H/q, Gohiriapada	0.2
Khandapada	Marada Beat H/q, Marada	0.07
Khandapada	Marada CNG, Marada	0.06
Khandapada	Fategarh Beat H/q, Fategarh	
Khandapada	VFW Qtr. at Bhapur Section H/q, Bhapur	
	Range Total	3.765
Mahipur	Range Office Building, Mahipur	0.41
Mahipur	Mahipur Forester Qtr , Mahipur	
Mahipur	F.G Qtr Mahipur	
Mahipur	R.O Residence Mahipur	
Mahipur	FG Qtr Banuasahi	0.06
Mahipur	FG Qtr Sampada	0.21
Mahipur	FG Qtr Gateri	0.06
Mahipur	Section Office –cum-Residence Mahitama	1
Mahipur	Seizureyard Mahitama Office Campus	
Mahipur	FG Qtr Jiginipada	0.22
Mahipur	FG Qtr Nuagaon	0.14
Mahipur	FG Qtr Korada	0.16
Mahipur	FG Qtr Krushnaprasad	0.1

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Mahipur	FG Qtr Khalamada	0.12
Mahipur	FG Qtr Kosalanga	
Mahipur	FG Qtr Kanigiri	0.19
Mahipur	FRH Barakola	6.05
Mahipur	FG Qtr Gumi inside FRH Campus	
Mahipur	FG Qtr Dimiria	
Mahipur	FG Qtr Senteri inside FRH Campus	
Mahipur	FG Qtr Kaptapalli	0.74
Mahipur	Forester Qtr Gumi	0.21
Mahipur	FG Qtr Gumi	0.03
	Range Total	9.7
Nayagarh	Division Office, Nayagarh	0.36
Nayagarh	DFO Residence at Ratnpur Road	0.46
Nayagarh	Driver Qtr at Ratnpur Road	
Nayagarh	Driver Qtr at Ratnpur Road	
Nayagarh	Clerk Qtr at Ratnpur Road	0.22
Nayagarh	Clerk Qtr at Ratnpur Road	
Nayagarh	Clerk Qtr at Ratnpur Road	
Nayagarh	Clerk Qtr at Ratnpur Road	
Nayagarh	Steno Qtr at Trinath Chakka	1.18
Nayagarh	Accountant Qtr at Trinath Chakka	
Nayagarh	Head Clerk Qtr at Trinath Chakka	
Nayagarh	Clerk Qtr Duplex Building at Trinath Chakka	
Nayagarh	Fr Qtr at Trinath Chakka	
Nayagarh	UD Clerk Qtr at Trinath Chakka	0.15
Nayagarh	ACF Qtr at college Road	0.22
Nayagarh	LIC Clerk Qtr at college Road	0.06
Nayagarh	LIC Clerk Qtr at college Road	0.06
Nayagarh	CNG Qtr 3 Nos at Check Gate	0.09
Nayagarh	Ara Beat	
Nayagarh	Fr Qtr Khedapda	0.4
Nayagarh	Khadagprasad Beat	0.01
Nayagarh	Koska Beat	0.29
Nayagarh	Jogiapalli Beat	0.35
Nayagarh	Chahali Beat	0.35
Nayagarh	Gochhabari Beat	
Nayagarh	Machhipada	
	Range Total	4.2
Odagaon	Forest Range Office	0.35

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Odagaon	Residence of Forest Range Officer	
Odagaon	Forester Qtr, Odagaon	
Odagaon	Forest Rest shed (Converted from Old Forest Range Office)	
Odagaon	Forest Guard Qtr, Odagaon	0.2
Odagaon	Forest Barrack Odagaon	
Odagaon	Forest Guard Qtr, Sakeri	0.04
Odagaon	Forest Guard Qtr, Naukhala	0.11
Odagaon	Forest Guard Qtr, Balisinsa	0.07
Odagaon	Forest Guard Qtr, Banthapur	0.1
Odagaon	Forest Guard Qtr, Phasipalli	0.48
Odagaon	Forest Guard Qtr, Chemedi	0.32
Odagaon	Forester Qtr, Bahadajhola	0.36
Odagaon	Forest Guard Qtr, Bahadajhola	
Odagaon	Seed Go-down, Bahadajhola	
Odagaon	Forest Guard Qtr, Dholamaska	0.13
Odagaon	Forest Guard Qtr, Kadamjhara	0.15
Odagaon	Central Nursery, Naukhal	15.85
	Range Total	18.16
Panchirida	Forest Range Office, Sarankul	1.00
Panchirida	Residence of Forest Range Officer	
Panchirida	Forester Qtr, Sarankul	
Panchirida	Staff Barrack, Sarankul	
Panchirida	Forest Guard Qtr, Sarankul	
Panchirida	Seizure Yard, Sarankul	
Panchirida	Seizure Yard, Sarankul	
Panchirida	Forest Guard Qtr, Biruda	0.100
Panchirida	Forest Guard Qtr, Tulubi	0.100
Panchirida	Staff Barrack, Malisahi	0.500
Panchirida	Forest Range Office, Sarankul	1.000
Panchirida	Forester Qtr, Darpanarayanpur	0.002
Panchirida	Forest Guard Qtr, Darpanarayanpur	0.001
Panchirida	Forest Guard Qtr, Gaudaput	0.030
Panchirida	Forest Guard Qtr, Godipada	0.070
Panchirida	Forest Guard Qtr, Kutuni	0.080
Panchirida	Forest Guard Qtr, Gochha	0.460
Panchirida	Permanent Nursery, Ghasadeipur	3.000
Panchirida	Forester Qtr, Badaput	0.190
	Range Total	6.533

Abstract			
Range	No of locations	Area in Acre	Area in ha
Daspalla	24	51.220	20.728
Gania	17	1.260	0.510
Khandapada	21	3.765	1.520
Mahipur	23	9.700	3.930
Nayagarh	26	4.200	1.700
Odagaon	18	18.160	7.350
Panchirida	19	6.533	2.644
Total	148	94.838	38.382

Any non-forestry work including construction of building shall not be taken in forest area and in case of bare necessity; necessary permission under F(C) Act, 1980 shall be obtained.

2.1.7 DLC Forest:

The DLC List as maintained at Division / Tahasil Office is furnished at Table No 2.7. The detail DLC List is furnished at Part-III of the Working Plan. The booklet on DLC Forest is enclosed as **Part-III** of the working plan.

Table No : 2.7 Tahasil Wise DLC Forest abstract.			
Name of Tahasil	No of Villages	Area in Ac	Area in ha
Nayagarh	270	106605.88	43142.81
Khandapada	150	9577.213	3875.845
Daspalla	120	17273.87	6990.64
Total	540	133456.963	54009.295

2.1.8 Total Forest area of the Division:

Table No 2.8 Total Forest Area of the Division

Range	RF		PRF		DPF		PF		VF		DLC		Total		% area
	No	Area	No	Area	No	Area	No	Area	No	Area	No	Area	No	Area	
Daspalla	8	27582.19	14	2797.19	9	4526.54	0	0	6	70.97	120	6990.64	157	41967.53	25.2
Gania	5	5145.58	6	964.67	5	1520.79	2	443.62	10	106.55			28	8181.21	4.9
Khandapada	11+2 (part)	13243.90	0	0	0	0	1	321.98	14	106.34	150	3875.845	178	18175.19	10.9
Mahipur	5+2 (part)	19274.4420	2	154.17	1	133.02	4	278.85	3	6.3			16	21649.6	13.0
Nayagarh	3+4 (part)	6508.3190	1	424.92	0	0			8	71.56	270	43142.81	282	44392.57	26.7
Odagaon	3+2 (part)	9183.5700	1	1359.74	4	1637.79	1	62.24	7	62.2			17	11838.1	7.1
Panchrida	3+2 (part)	9767.7120	3	5667.24	2	358.47	2	428.55	15	155.53			25	20305.17	12.2
Div. Total	42	90705.713	27	11367.93	21	8176.61	10	1535.24	63	579.45	540	54009.30	703	165794.793	100.0
%		54.56		6.83		4.91		0.92		0.35		32.44		100.00	

NB: Notified area has been taken in to consideration for computing the total forest area in the Division.

2.2 Forest Area under different Working Circle in Management Plan:

The outgoing Plan is by Sri Sudarsan Behera, OFS-I (SB), the then Divisional Forest Officer, Nayagarh Division was valid from 2007-08- 2016.

Working Circles of Outgoing Plan:

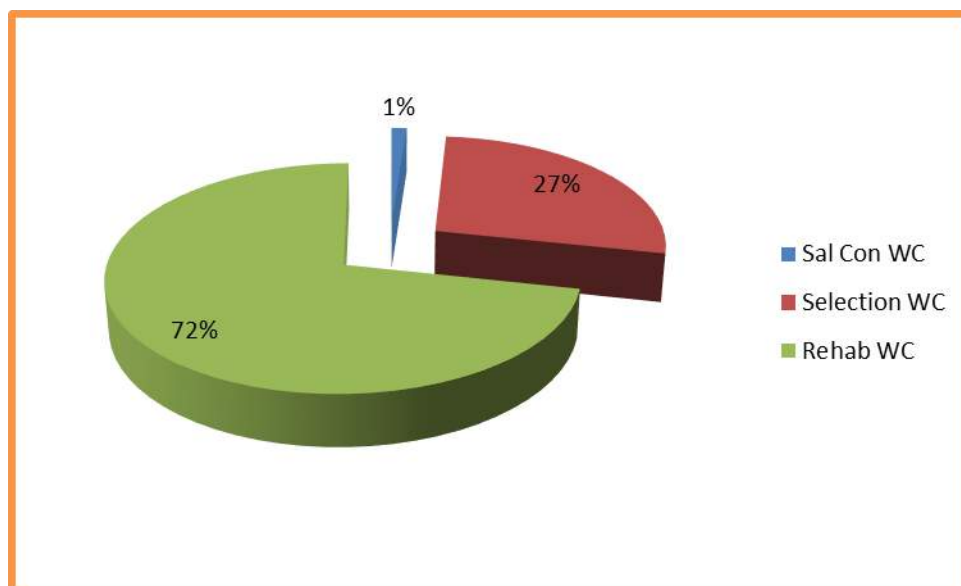
There are ten working Circles prescribed for management of Forest. Out of 10 Working Circle three working Circle were independent Working Circle (SI no 1,2 & 3) where as the rest are of Overlapping Working Circle. These are as follows.

1. The Sal Conversion Working Circle
2. The Selection Working Circle.
3. The Rehabilitation Working circle.
4. The Plantation (Overlapping) Working Circle.
5. The Forest protection (Overlapping) Working Circle.
6. The Bamboo (Overlapping) Working Circle.
7. The NTFP (Overlapping) Working Circle.
8. The Wild life (Overlapping) Working Circle.
9. The Joint Forest Management (Overlapping) Working Circle.
10. The Car Timber (Overlapping) Working Circle.

The area allotted to different Working Circle is furnished at Table No 2.9

Table No-2.9 Area allotted to different Working Circle

Sl. No	Working Circles	RANGES							
		Dasapalla	Mahipur	Panchirida	Odagaon	Khanapada	Gania	Nayagarh	TOTAL
1	Sal Con WC	0	1285.46	0	0	0	0	0	1285.46
2	Selection WC	24390.41	2609.36	0	1837.31	0	0	0	28837.08
3	Rehab WC	10677.05	12215.01	17117.73	6865.46	13073.49	8856.01	7389.36	76194.11
	Total	35067.46	16109.83	17117.73	8702.77	13073.49	8856.01	7389.36	106316.7
4	Plantation (O) WC	714.30	244.00	199.50	584.00	592.80	677.00	405.00	3416.60
5	Protection (O) WC	19460.99	9865.7	13621.66	8252.39	8488.51	3950.67	5078.33	68718.25
6	Bamboo (O) WC	27770.81	16084.11	5496.47	5791.38	6008.38	0	0	61151.15
7	NTPF (O) WC	35067.46	16109.83	17117.73	8702.77	13073.49	8856.01	7389.36	106316.65
8	WL (O) WC	28743.96	17710.38	9403.88	6254.42	12571.22	6550.52	5352.16	86586.54
9	JFM (O) WC	3680.97	4876.03	4475.53	4307.76	4731.59	1414.66	4581.01	28067.15
10	Car Timber (O) WC	19714.94	0	0	0	0	194.40	0	19909.34
	TOTAL	35067.46	16109.83	17117.73	8702.77	13073.49	8856.01	7389.36	106316.65



2.2.1 Sal Conversion Working Circle:[1285.46ha]

This working circle constitutes portions of Hatimunda, Palva, and Maichheli– Sampada RF Blocks. Since there was moratorium on green felling from 1987 in the Division, PB-I areas were not worked for most of the last plan period. But in certain areas under this working circle, the shelter wood and advance growth, which was retained, was removed illicitly and the quality of soil has also deteriorated in these areas. The total area allotted to this working circle is 1285.46 Hectares. An area of 340.19 ha was been allotted to PB-I and the rest of the area has not been allotted to any PB and has been kept in a floating Periodic Block.

2.2.2 The Selection Working Circle:[28837.08ha]

These forest blocks have forests with good growth and mature trees were available for harvest where in selection felling was prescribed. Majority of the blocks included under this circle are in the Daspalla, Mahipur and Odagaon Ranges.

The blocks included in the Selection Working Circle in the previous plan was reviewed and excepting Gochha, Hatimunda, Sulia, Ragadimada, Makarprasad, Matia, Bankamunda, Sapua and part of Gochha where the crop condition and analysis of the result of enumeration and satellite data did not warrant inclusion in the selection system of management, the other blocks were retained in this working circle. In addition, Ambalimba RF, which was placed in Rehabilitation Working Circle in the outgoing plan, has now been included in this working circle due to improved crop condition. The Selection Working Circle as constituted in outgoing plan comprises of 12 RFs, 8 PRFs blocks and 1 DPF blocks. The

total area allotted to this working circle was 28837.08 hectares, which is approximately 27 % of the total forest area covered in the outgoing plan.

2.2.3 The Rehabilitation Working Circle:[76194.11 ha]

This Working Circle comprises mainly degraded Sal and Mixed Deciduous Forests having adequate rooted waste, which can be improved by cultural operations supplemented with artificial regeneration. The Rehabilitation Working Circle as constituted in outgoing plan comprises of 37 RFs, 19 PRFs Blocks, 23 DPFs and 63 Village Forest Blocks. The total area allotted to this working circle is 76194.11 ha, which is approximately 72% of the total forest area covered in the plan.

2.2.4 The Plantation (Overlapping) Working Circle.[3416.60ha]

This Working Circle includes all the forest blocks, which have tree growth from plantation origin. These areas have been restocked through artificial regeneration method in the past. Repeated illicit felling in some plantations has rendered some of these plantations to be coppice growths of the planted species and re-growth of the original Sal and other species which has now overtopped the planted species. The total area allotted to this Working Circle was 3416.60 hectares, which is exclusively consisting of existing plantations.

2.2.5 The Forest protection (Overlapping) Working Circle:[68718.25 ha]

This circle includes all the forest areas, which are prone to human interferences like illicit felling, encroachment, mining, poaching and fire. In addition, ecologically fragile areas and those forest areas existing on steep precipitous hill slopes and in the catchments of rivers, nalas, precipitous hill slopes and ridges etc. which are required to be protected have also been included in this Working Circle. Special protection measures were prescribed to this Working Circle. The total area allotted to this working circle was 68718.25 ha.

2.2.6 The Bamboo (Overlapping) Working Circle:[61151.15ha]

This working circle covers the rich bamboo areas of the division. This Working Circle was an overlapping Working Circle. The Bamboo Overlapping Working Circle as constituted in outgoing plan covered 22 RF covering 56190.79 Ha, 05 PRF Blocks covering 1589.60ha and 03 DPF Blocks covering 3370.75 hectare. The total area allotted to this working circle was 61151.15 hectares.

2.2.7 The NTFP (Overlapping) Working Circle:[106316.65ha]

This working circle was also an Overlapping circle covering almost the entire plan area. The object of this working circle was to give suitable prescription for conservation, regulation

and value addition of all NTFPs available in the division. The total area allotted to this overlapping working circle was 106316.65 hectares

2.2.8 The Wild life (Overlapping) Working Circle:[86,586.54 ha]

This was also an overlapping circle covering almost the entire working plan area of the Division. Special management prescriptions were provided for some forest blocks, where there is adequate concentration of wild life. The total area covered under outgoing plan under this working circle is 86,586.54 ha which is more than 80% of the plan area.

2.2.9 The Joint Forest Management (Overlapping) Working Circle:[28067.15 ha]

This overlapping working circle overlaps with mainly the Rehabilitation Working Circle. All the forest blocks which have been allotted to the Vana Samarkashayna Samities for protection and management as per the JFM resolution 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 total area allotted to this overlapping circle is 28067.15 ha.

2.2.10 The Car Timber (Overlapping) Working Circle:[19909.34 Ha]

The holy Car Festival at Puri is celebrated every year in the month of “Asadha”. Extraction of specific dimensions and quantity of timber from the forests of Nayagarh Division starts from Saraswati Puja in the month of February and construction of the 3 Holy Chariots starts from Akshyaya Trutiya during the 1st week of May. The supply of timber is to be made as per rigid time schedule to the Temple Administrator, Lord Jagannath Temple of Puri. This working circle was also an overlapping Working Circle comprising forests allotted to Selection Working Circle. In outgoing working plan an overlapping working circle was constituted covering an area of 19909.34 Ha covering blocks like Chadepalli RF (part), Central RF (Part), Pokharigochha RF (Part) and Chadiapalli Extn. – I PRF, Araniganda PRF, Baliberena PRF, Gochhabari PRF, Gambhariganda PRF, Phasi extension I, II and III PRFs. The Car Timber (Overlapping) Working Circle as constituted in outgoing plan comprises of 06 RF, 06 PRF Blocks and 03 DPF Blocks. The total area allotted to this working circle was 19909.34 hectares of the total forest area covered in the plan.

2.3 Percentage of Forest with Secured Boundaries:

The forest block boundary has been surveyed and the present positions of Boundary / Boundary pillars are as follows.

Working Plan 2021-31 – Nayagarh Division.

Table No 2.10 Boundary Status (For Reserved Forests)

Sl. No.	Name of the RF Blocks	Length of boundary in km	Total pillars as notified	Status of Pillar		
				Good	Damaged	Missing
1.	Poibadi	29.734	315	20	95	200
2	Pokharigochha	83.83	721	35	145	541
3	Central	107.810	576	20	56	500
4	Chadiapalli	51.01	252	22	30	200
5	Nuagaon	18.05	121	21	10	90
6	Nasaghar	33.82	321	21	100	200
7	Chhadesh	34.59	402	30	72	300
8	Ambalimba	14.88	59	0	9	50
9	Hatimunda	114.12	450	60	170	220
10	Ratadei	46.67	208	0	155	53
11	Palva	67.10	295	23	173	99
12	Maichheli Sampada	12.68	99	13	42	44
13	Ragadimada	94.14	222	2	109	111
14	Panchupandav	18.42	81	17	23	41
15	Sulia	48.30	325	54	150	121
16	Gayalsing	21.26	125	62	23	40
17	Bahadajholla	27.54	237	30	114	93
18	Balisinsa-Badhulipur	23.71	189	20	119	50
19	Balaram	8.401	54	50	4	0
20	Rukhi	6.32	60	50	10	
21	Patharakata	6.41	68	56	12	
22	Matia	23.54	274	132	75	67
23	Makarprasad	18.78	316	120	56	140
24	Bankamunda	32.41	335	188	67	80
25	Manibhadra	13.05	92	70	17	5
26	Gania	10.54	64	50	11	3
27	Pathara	3.37	30	20	10	
28	Barkhola	15.98	107	47	60	
29	Pithakhai	9.10	53	24	29	
30	Sapua	61.18	425	95	330	
31	Bandra	9.01	82	52	30	
32	Chadeibasa	3.94	31	20	11	
33	Sikharpur	37.9	139	99	21	19
34	Guriabari	21.53	99	45	54	
35	Mainisibindha	16.73	160	10	150	
36	Hanumantia	18.29	117	66	51	
37	Jambani Patrabani	10.43	95	35	60	
38	Dengabahada	12.75	58	45	13	
39	Similibanka	9.51	85	47	38	
40	Patharaganda	24.31	145	48	57	40
41	Khatia Damasahi	23.02	291	45	63	183
42	Gochha	110.25	235	92	59	84
Total		1354.415	8413	1956	2883	3574

Table No 2.11 Boundary Status (For PRF)						
Sl. No	Name of the PRF block	Length of boundary in km	No. of pillars	Status of Pillar		
				Good	Damaged	Missing
1	Pankalasahi	3.340	33	0	0	33
2	Khamana	5.014	50	0	0	50
3	Baisipalli Ext-I	4.811	35	0	0	35
4	Nephari	6.981	71	0	71	0
5	Gochhabari	16.099	178	0	0	178
6	Gambhariganda	8.006	51	0	0	51
7	Boni	5.984	70	0	0	70
8	Baliberena	2.864	30	0	0	30
9	Dhundugadia	15.632	94	0	0	94
10	Chadiapalli Ext	9.358	112	0	0	112
11	Baisipalli Ext-II	5.163	165	0	0	165
12	Baisipalli Ext- III	6.102	119	0	0	119
13	Araniganda	4.353	46	4	42	0
14	Gumurakhola	11.880	19	0	0	0
15	Phasi Ext.-I	2.215	7	4	3	0
16	Matia	4.406	29	8	10	11
17	Bankamunda	5.489	50	30	5	15
18	Phasi Ext.- II	4.317	21	5	12	4
19	Phasi Ext.- III	3.155	20	8	3	9
20	Baisipalli Ext.-IV	10.528	70	0	70	0
21	Makarapalli	40.665	109	0	109	0
22	Banijhari	28.699	212	0	0	212
23	Sukaramala	42.128	346	0	0	346
24	Ambamundia	6.886	141	0	0	141
25	Palva	3.733	43	0	0	43
26	Ragadimada	4.016	43	0	0	43
27	Barabanka	16.672	191	180	11	0
TOTAL		278.496	2355	239	336	1780

Table No 2.12 (For DPF)

Sl. No	Name of the DPF block	Length of boundary in km	No. of pillars	Status of Pillar		
				Good	Damaged	Missing
1	Ranga	10.242	92	Not Surveyed		
2	Baijhari	4.025	62			
3	Sirisabadi	26.962	222			
4	Kerabadi	2.549	49			
5	Nandagadu	3.108	54			
6	Sikharpanga	5.326	219			
7	Kuradhinisa	13.427	167			
8	Kuradhinisa Ext.	34.734	274			
9	Nuagaon	4.212	50			
10	Bankamunda Ext – II	15.016	174			
11	Matia Ext	23.368	128			
12	Ambaghati	6.868	122			
13	Arakhataila	10.788	143			
14	Makarprasad	4.480	53			
15	Binjhagiri	10.428	162			
16	Netabandha	6.042	60			
17	Kural	16.578	57			
18	Dhadi	9.076	65			
19	Takarakhai	3.621	27			
20	Nariamba	20.074	293			
21	Bhagabati	3.878	48			
Total		234.802	2521			

2.3.1 Abstract of Pillar Position (Present Condition)

2.13 Abstract of Pillar Position					
Category of Forest	Boundary Length in Km	Total No of Pillars	Pillar Status		
			Good	Damaged	Missing
RF	1354.415	8413	1956	2883	3574
PRF	278.496	2355	239	336	1780
DPF	234.802	2521*			
VF	Not assessed				
Total	1857.693	10768	2195	3219	5354
Division Status			20.38	29.89	49.72

- Not assessed not included for calculation of Pillar status.

From the above field data it is observed that out of 13289 boundary pillars 2195- number of pillars are in good condition. This constitutes about 20.38 % of the pillar surveyed. Hence it is inferred that the boundary of forest blocks are not Secured. An effort is to be made to repair / construct pillars against Damaged / Missing pillars for a secured boundary. The boundary position of Village Forests is not assessed. These are in small patches. Its boundary is to be assessed within 2/3 years and maintained throughout the plan period.

2.3.2 Boundary Maintenance Cycle:

Boundary Pillars / Boundary maintenance are important operation in protecting the forest land against land grabbers / encroachers. To maintain the boundary / Pillars a maintenance cycle of 5 years will be followed. The year wise boundary maintenance is furnished below.

DGPS survey of forest boundaries shall be done and geo-referenced maps with important administrative and management details shall be prepared.

Steps will be taken to survey and demarcate the 21 DPFs as per the year wise schedule during the Working Plan period. The required fund for demarcation and pillar posting shall be made as per the schedule given above by making necessary budgetary provision in the corresponding year.

Table No 2.14 Boundary maintenance Cycle Nayagarh Division

Year of maintenance	Reserved Forest Blocks	PRF blocks	DPF Blocks
2021-22 & 2026-27	Poibadi, Nasaghar, Palva, Gayalsing, Patharakata, Gania, Bandra, Hanumantia, Khatia Damasahi	Pankalasahi, Gambhariganda, Baisipalli Ext-II, Matia, Makarapalli, Ragadimada	Ranga, Sikharpanga, Matia Ext, Netabandha, Bhagabati
2022-23 & 2027-28	Pokharigochha, Chhadesh, Maichheli Sampada, Bahadajholla, Matia, Pathara, Chadeibasa, Jambani Patrabani, Gochha	Khamana, Boni, Baisipalli Ext- III, Bankamunda, Banijhari, Barabanka	Baijhari, Kuradhinisa, Ambaghati, Kural
2023-24 & 2028-29	Central, Ambalimba, Ragadimada, Balisinsa-Badhulipur, Makarprasad, Barkhola, Sikharpur, Dengabahada	Baisipalli Ext-I, Baliberena, Araniganda, Phasi Ext.- II, Sukaramala	Sirisabadi, Kuradhinisa Ext., Arakhataila, Dhadi

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2024-25 2029-30	&	Similibanka, Guriabari, Pithakhai, Bankamunda, Balaram, Panchupandav, Hatimunda, Chadiapalli	Nephari, Dhundugadia, Gumurakhola, Phasi Ext.- III, Ambamundia	Kerabadi, Nuagaon, Makarprasad, Takarakhai
2025-26 2030-31	&	Nuagaon, Ratadei, Sulia, Rukhi, Manibhadra, Sapua, Mainisibindha, Patharaganda	Gochhabari, Chadiapalli Ext, Phasi Ext.-I, Baisipalli Ext.-IV, Palva	Nandagadu, Bankamunda Ext – II, Binjhagiri, Nariamba

Immediate action shall be taken for repairing old pillars. Prescriptions will 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.

2.4 Land Use, Land Use Change and Forestry (LULUCF):

The land use pattern of Nayagarh District has been published by the Forest Survey of India in its report 2019. The district forest cover / Land use pattern is as given below.

Table No 2.15 District Forest Cover/ Land use pattern(as per 2019 report)			
District	Geographical Area in Sq. Km	Land Use (as per 2019 Report)	Area in Sq. Km
Nayagarh	3890	Very Dense Forest	189.00
		Moderate Dense Forest	965.00
		Open Forest	559.75
		Misc Trees & Groves	60
		Permanent pasture	40
		Cultivable Waste	50
		Land put to Non Agricultural Use	250
		Barren & Un cultivable land	50
		Agricultural land	1350
		Mining	10
		Habitation / Transportation Etc	366.25
		Total	3890

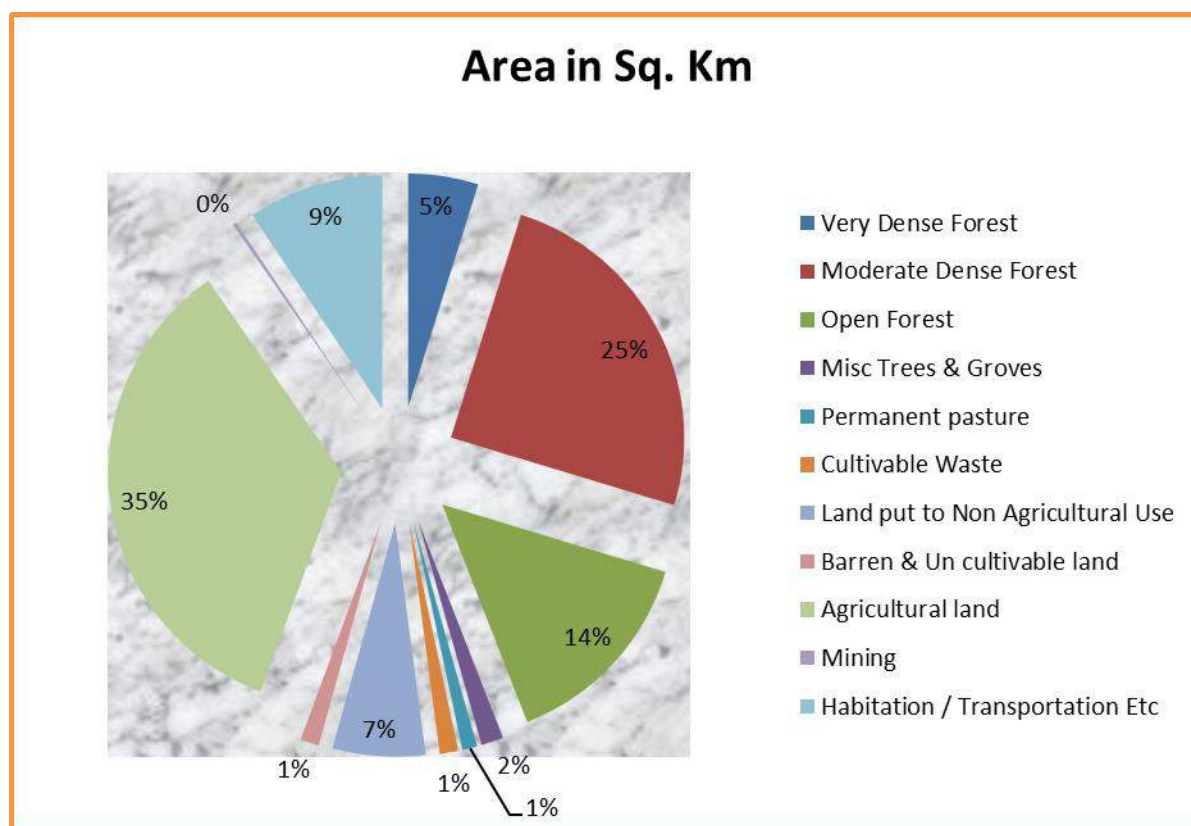
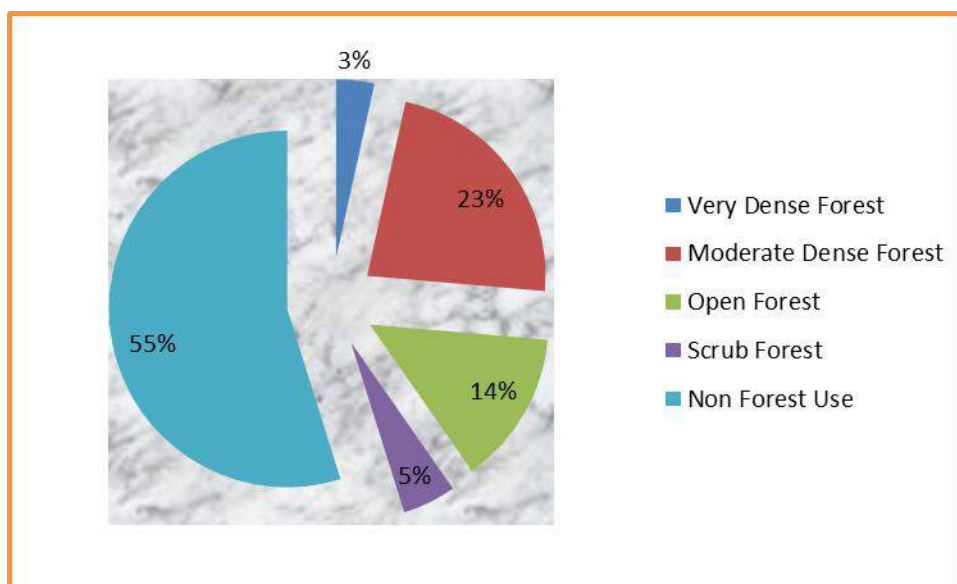


Table No 2.16 District Forest Cover/ Land use pattern(as per 2017 report)			
Division	Geographical Area in Sq. Km	Land Use (as per 2017 FSI Report)	Area in Sq. Km
Nayagarh	3067.28	Very Dense Forest	106.11
		Moderate Dense Forest	702.77
		Open Forest	427.27
		Scrub Forest	149.10
		Non Forest Use	1682.03
		Total	3067.28



The land use pattern indicates a better improved tree cover.

2.5 Threats to the Forest:

The forests of the division are subjected to treat from Natural Calamities as well as from Biotic Factors.

2.5.1 Threat from Natural Calamities:

The threats from Natural Calamities are from

i) Cyclonic Storm,

The Division is not a costal district but close to Bay of Bengal. Cyclonic Storm is always associated with this district / Division. Phailin (October 8 – 14, 2013) / Hudhud (October 7 – 14, 2014) and Fani (April 30 – May 3, 2019) have caused enormous damage to the forests as well as life& properties of the district

ii) Heavy Flood.

River Mahanadi is flowing on the northern boundary of the division. During low pressure in Bay of Bengal brings heavy rainfall which causes high flood in Mahanadi and its distributaries. Nayagarh division faces threat from high flood in River Mahanadi, Brutanga etc. it brings loss of Forest by soil erosion, River bank erosion.

iii) Drought.

The tract experiences moderate drought in a cycle of 3 to 4 years which affects the growth of plants / forests & plantations. No severe damage has been occurred within last plan period. The drought enhances the period of establishment of the regeneration of trees species, especially that of Sal. Bamboo forests loose vigour due to drought condition. The Semi Ever Green Forests is developing Plant Community of dryer tract.

2.5.2 Threat from Biotic Factors:

The forests are under very much pressure due to population rise and increase in demand for land, encroachment, Forest Produce, Grazing etc. The threats from biotic factors are

i. Population Explosion.

Exploding human population coupled with rapid urbanization and industrialization in and around this Division is the main cause of degradation of forest resources. Human beings are directly as well as indirectly responsible to a great extent for depletion and degradation of valuable forest of this Division. Illicit felling and removal, uncontrolled grazing, girdling and lopping, setting fire in forests with vested interest, encroachment of forest land are the notable causes of depletion. The demand for agricultural implements, fencing, small timbers for house hold requirements and firewood are increasing day-by-day. This is the major cause and danger to Forest & Forest land.

ii. Illegal collection of timber and firewood.

Forests are subjected to illegal removal of Forest Produce for Timber, Fuel Wood, Small poles etc. Though the magnitude is not alarming but hampers the growth & density of Forests. The supply of timber & firewood from legal sources is very low in comparison to demand of present population. Illicit felling is noticed in the forest blocks where there are few big Sal trees because of the demand of the townships for building materials. In some of the Forest blocks, the very character of the vegetation has been changed from Sal forests to miscellaneous mixed forests due to illicit removal of trees. Forests in the vicinity of the villages are also affected owing to collection for firewood and timber from forests. The selected matured trees of Bija, Kuruma, Sisoo and Sal have been targeted in these forest blocks by unscrupulous elements.

iii. Encroachment of forest.

Land grabbers near to many PRF / Village Forest, encroached upon the forest land. The Village forests created and notified during Social Forestry Project are mostly affected and in many cases, their existence is under threat. The encroachment in different forests as recorded is at Table No 2. 17

Table No 2.17 Encroachment in Nayagarh Forest Division				
Sl No	Name of the Range	Name of the Forest Block	Area encroached in ha	No. of Encroachers
1	Mahipur	Ratadei RF	10.27	19
2	Daspalla	Pokharigochha RF C/2	2.00	2
3	Khandapada	Guriabari RF	34.62	52
4	Khandapada	Patrabani-Jamubani RF	0.705	135
5	Odagaon	Gochha RF C/8	1.19	0
Total =			48.785	208

iv. Grazing.

Cattle, Goat and sheep use the forest land as a grazing ground. No area could be closed to grazing due to public pressures. Due to grazing compacting of soil, damage of plantations and spreading of contagious disease to wild animals have been observed. Lack of ground flora, invasion of weeds due to heavy grazing pressure affects the maturity of soil and plant succession expected in open / degraded soil where secondary plant succession could have been noticed. Lopping of fodder species for feeding goats mostly in forest has also left poles / saplings and trees branchless and seriously affects the growth and quality of forest.

v. Forest fire.

The dry season in the area extends from the month of January to June and experiences a very hot summer during April to June. Due to the prolonged hot weather, forest blocks are vulnerable from forest fire. The occurrence of repeated forest fire year after year prevents regeneration of many valuable tree species. As a result of this phenomenon, many fire hardy species found to replace the economically important species in the forests. Evergreen Forests are gradually replaced by fire hardy species. Annual repeated fires are causing a series of damages both directly and indirectly to the forests. It burns leaves and other residue lying on the forest floor and destroys the microbial population of the soil and

thus prevents the formation of humus. The humus is very vital for the soil fertility and its absence adversely affects the growing stock. Forest fire is also one of the main factors responsible for the mortality of seedlings, sapling even of pole size crop. It also causes desiccation and hardening of the soil which accelerate the process of soil erosion. Setting of forest fire is invariable intentional and rarely accidental. No crown fire is noticed in the division.

Causes of Forest Fire: Following are the major causes of fire, which are almost intentional.

- Burning of forest floor for good growth of grass or mushrooms in the next season,
- Hunting,
- Un-extinguished campfires by miscreants,
- Un-extinguished cigarettes or bidi butts being thrown in the forests coming on the passage / foot path.
- For collection of Minor Forest Produce particularly for collection Mohua flowers, local villagers sometimes set fire,
- To prevent movement of wild elephants people of adjoining villages set fire,
- Encroachers set fire to clean the encroached area of debris,
- Some cultivators set fire to get ashes into their cropland through runoff water.

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 in the Division. At present, mitigation measures are undertaken as per the SOP (Standard Operating Procedure) to tackle the forest fire in different forest blocks of the Division and adequate number of fire blowers have been provided to field staff along with specialized fire watchers, hired dedicated vehicles etc.

i. Insects & Borer:

The damage caused to the natural forest vegetation as well as the conditions by defoliators, borers and other insects is quite insignificant. The Sal heartwood borers (*Hoplocerambyx spinicornis*) only heartwood borers found in dead and deceased Sal trees and in unbarked logs. Green healthy trees are seldom attacked by this insect. There is no major damage due to insects / borers.

ii. Fungi:

The presence / abundance of fungi attack to dead trees / logs are seen in Sal Forests. In dry localities, heart rot disease caused due to fungi has been some times noticed.

2.6 Distribution of Different Forest Types:

2.6.1 Basis of Classification:

The forests can be classified into forest types on the basis of

- (i) **Physiognomy** - Physiognomy means the general appearance of a forest community and, therefore, forms an easy basis for rough differentiation of very broad classes. It is described by dominant growth-form (e. g., trees, shrubs, grasses, etc.), the seasonal changes (e. g., evergreen and deciduous habit) and such other features as may be associated with very dry or very wet sites.
- (ii) **Structure** - Structure of a forest is described by stratification (i.e., the way in which different species are aligned in different layers of the forest) and dimensions of trees including height and spacing. It is generally observed that more favorable the site to tree growth the greater is the number of strata and the less favourable the site, the lesser is the number of strata in which the forest is divided. Therefore, structural stratification gives good basis for classifying forest types.
- (iii) **Function**- Function refers to the most common morphological characters of the species such as leaf character, leaf size, stem and root characters, e.g., buttress formation development of stilt roots, etc., which form the basis of classification.
- (iv) **Floristic**--Floristic refers to the species present in a particular forest. While this forms an important basis, for delimiting a forest type, there is a great difference of opinion as to whether the frequency of the species should be used as a basis or not. However, this can be used to distinguish subtypes.
- (v) **Dynamics**—As a result of interaction between vegetation and the site, there is continual change between the two. This results in succession and development of climax communities. Though the general view favours Whittaker's theory of vegetation gradients, it is convenient for the time being to classify the relatively stable types as climax, those still developing as seral, the stable community resulting from the special soil peculiarities as edaphic climax and that resulting from the biotic interference as biotic climax.
- (vi) **Habitat**—Habitat refers to the effective environmental conditions in which a forest community exists. Thus, climate and edaphic factors often form the basis of classifying forest vegetation.
- (vii) **Physiography**—Physiography refers to the natural features of the earth surface. As it modifies the micro climate and results in different vegetation occurring in

the same climate on different aspects of the hill slope, it forms a good basis for classifying vegetation.

- (viii) **History-** History refers to past biotic influences on a site and its vegetation. Though these are very important in determining the present condition and future potentialities in vegetation communities, it is often difficult to assess these factors correctly.

2.6.2 Forest Types:

The forest types observed in this division as per **Revised Champian & Seth Classification** are as follows.

Table No 2.17 List of Forest Types					
Group	Sub Group	Forest Type	Sub Type	Variety	
2.Tropical Semi Evergreen Forests	2B.Northern Tropical Semi Evergreen Forests	2B/C ₃ Odisha Tropical Semi Evergreen Forest			
3.Tropical Moist Deciduous Forests	3C. North Indian Moist Deciduous Forests	3C/C ₁ Very Moist Sal Bearing Forests	3C/C _{1d} Peninsular (Coastal) Sal Forest		
		3C/C ₂ Moist Sal Bearing Forest	3C/C _{2e} Moist Peninsular Sal Forest	3C/C _{2e(ii)} Moist Peninsular low level Sal Forest	
5.Tropical Dry Deciduous Foress	5B. Northern Tropical Dry Deciduous Forests	5B/C ₁ Dry Sal bearing Forest.	5B/C _{1c} Dry Peninsular Sal		
		5B/C ₂ Northern dry mixed forest			
				5B/E ₁ <i>Anogeissus latifolia</i> forest	
				5B/E ₉ Dry Bamboo Break	

2.6.3 Description of Forest Type & Composition:

The description of forest type is furnished below.

2B/C₃ Odisha Tropical Semi Evergreen Forest:

This forest types are noticed in lower moist pockets of Daspalla, Mahidharpur Range of the division. These forests are generally found at an elevation of 500 to 600 Mtrs. As per recent study by NRSA this sub type is found in part of Gochha RF , Central RF, Chadiapalli RF, Sulia RF and Hatimunda RF *Artocarpus lakoocha*, *Michelia champaka*, *Celtis tentradra*, *Bridelia*

tomentosa, *Dillenia pentagyna*, *Mangifera indica* are observed. Cane is also seen near to nala / water course.

3C/C_{1d} Peninsular (Coastal) Sal Forest:

This sub type forests are found in Forests of Mahipur and Daspalla Range of the Division. Sal along with *Dillenia pentagyna*, *Terminalia tomentosa*, *Bridelia retusa* and *Haldina cordifolia* in top storey. In middle storey *Syzygium cumini*, *Pterocarpus serratum* with *Bambusa aurundinacea* and *Dentrocalamus strictus* are observed.

3C/C_{2e(iii)} Moist Peninsular low level Sal Forest:

This forest type is confined in few pockets in this Division on flat or nearly flat ground, valleys and lower slopes, where Sal is principal species. In favorable areas it is found in pure patches in part of Gochha, Chadiapalli, part of Pokharigochha, Araniganda, Panchupandav, part of Sulia, Ragadidmada, Dhundugadia PRF, Ratadei, Palva, Maichheli- Sampada and Bhagabati DPF Baisipalli Ext II & III PRF, Araniganda PRF, Panchupandav RF etc. The site quality of Sal varies from Q-III to Q-IV in major forest blocks. The top canopy is closed and attaining a height of up to 30 Mtr. The principal associates of Sal are *Terminalia tomentosa*, *Haldina cordifolia*, *Schleichera oleosa*, etc. There are other species found in top canopy are *Dalbergia latifolia*, *Pterocarpus marsupium*, *Bridelia retusa*. The middle story consist of *Mangifera indica*, *Terminalia belerica*, *Terminalia chebula*, *Anogeissus latifolia*, *Cassia fistula*, *Mitragyna perviflora*, *Malotus sp.* The scrubby undergrowth is generally found observed. In some tract it is dense. Sal regeneration is moderate to fair.

5B/C_{1c} Dry Peninsular Sal:

This sub-type of forest found extensively throughout forests of this Division. It is seen in almost all the Blocks and regressing towards Dry Mixed Deciduous Forests. This sub type is found in Maichheli-Sampada, Sulia, Gochha, Bandra, Sikharpur, Pokharigochha, Araniganda, Nasaghar, Baliberena, Central, Palava, Pankalsahi, Baliberena, Makarprasad, Kerabadi, Bandra, Matia, Sikharpur, Patharaganda, Bahadajholla, Balisinsa-Badhulipur etc. The main species in the top canopy are Sal, Piasal, Asan, Dhaura, and Sisoo. The middle story comprises of Bahada, Kusum, Chara, Mai, Rai, Kumbhi, Kendu, Karada, Amla and Bela. Fire and grazing is the common phenomenon in the above areas. Sal regeneration is quite high. But it is adversely affected by biotic pressure. Though the regeneration of Sal is sufficient, its establishment became difficult due to annual ground fire and grazing.

5B/C₂ Northern dry mixed forest.

This subtype is found in degraded forest blocks and miscellaneous species are replacing the Sal due to heavy biotic pressure and fire. The canopy height is about 15 to 20 Mtrs of uneven canopy. Sal contributes to 10-15 percent of the crop available. *Dendrocalamus strictus* is observed extensively. The top canopy consists of *Anogeissus latifolia*, *Terminalia tomentosa*, *Madhuca indica*, *Buchanania lanzan*, *Diospyros melanoxylon*, *Vridelia retusa*, *Cleistanthus collinus*, *Phyllanthus emblica*, *Lagerstroemia sp.* *Combretum decandrum*, *Smilax macrophylla*, *Butea* climbers are encountered during field visit. This type occurs in portions of Bankamunda, central, Chadiapalli, Gayalsingh, Gochha, Hatimunda, Makarprasad, Nashghar, Matia, Nuagaon, Palva, Panchupandav, Poibari, Pokharigochha, Ragadimada, Ratadei Sapua, Sulia, Rukhi, Balaram, Hanumantia, Barkhola, Chadeibasa, Mainsibindha, Kural, Banijhari,, Ranga, Sikharpanga, Sirisbadi, Baisipali Extn- I and II, Pithakhai etc. Regeneration of useful species is generally inadequate and adversely affected. Grazing and fire is common phenomena in major forest blocks.

5B/E₁ *Anogeissus latifolia* forest.

Anogeissus latifolia is a species of small to medium-sized tree found in pockets of dry deciduous forests of most of the ranges of the range.

It is one of the most useful trees in India. Its leaves contain large amounts of gallotannins, and are used for tanning and firewood. The tree is the source of Indian gum, also known as ghatti gum, which is used for calico printing among other uses. The leaves are also fed on by the *Antheraea paphia* moth which produces the tassar silk (Tussah), a form of wild silk of commercial importance.

This tree is also annually required for construction of Chariots for “Ratha Yatra” of Lord Jagannath.

5B/E₉ Dry Bamboo Break

This division is famous for Bamboo forests. It occurs in both dry and moist forests of this division. Mainly bamboo occurs as a part of second story in Northern Tropical Dry Mixed deciduous forests and in Dry Peninsular Sal forests, but bamboo constitute main crop with a few scattered trees on some of the very dry hill slopes and hill tops. In some of the blocks bamboo is found in a degraded condition, “*Dendrocalamus Strictus*” (Salia Bamboo) forms dense brakes. Annual fire is common in these forests. These bamboo brakes occur in distributed patches in portions of Pokharigochha Central, & Chadiapalli Blocks. Salia Bamboo

represents the lone species of this subtype. The ground flora is very dense with bamboo clumps and other tree species are usually absent in those patches. Along the bank of bigger nalahs *Bambusa arundinaceae* is observed in a few patches.

2.6.4 Forest Blocks & Forest Type.

The above described forest types are observed in various forest blocks of the division. The distribution is furnished below.

Table No 2.18 : Forest Blocks Distribution Forest Type wise	
Forest Type	Forest Blocks.
2B/C ₃ Odisha Tropical Semi Evergreen Forest	Gochha RF , Central RF, Chadiapalli RF, Sulia RF and Hatimunda RF
3C/C _{1d} Peninsular (Coastal) Sal Forest	Pankalasahi PRF, Gochhabari PRF, Baisipalli Ext-I , Baisipalli Ext-II, Baisipalli Ext- III, Boni PRF, Baliberena PRF, Phasi Ext.- II , Phasi Ext.- I, Phasi Ext.- III, Gumurakhola PRF, Dhundughatia PRF,
3C/C _{2e(ii)} Moist Peninsular low level Sal Forest.	Khamana PRF, Nephari PRF, Barabanka PRF, Gambhariganda PRF, Ambamundia PRF, Makarapalli PRF, Banijhari PRF, Sukaramala PRF, Ranga DPF, Baijhari DPF, Kerabadi DPF, Sirisabadi DPF
5B/C _{1c} Dry Peninsular Sal	Maichheli-Sampada, Bandra, Sikharpur, Pokharigochha, Araniganda, Nasaghar, Baliberena, Palava, Pankalsahi, Makarprasad, Kerabadi, Matia, Patharaganda, Bahadajholla, Balisinsa-Badhulipur etc
5B/C ₂ Northern dry mixed forest	Bankamunda, Gayalsingh, Nuagaon, Panchupandav, Poibari, Ragadimada, Ratadei, Sapua, Rukhi, Balaram, Hanumantia, Barkhola, Chadeibasa, Mainsibindha, Kural, Banijhari, Ranga, Sikharpanga, Sirisbadi, Baisipali Extn- I and II, Pithakhai
5B/E ₁ <i>Anogeissus latifolia</i> forest	Kuradhinisa Ext., Nuagaon, Bankamunda Ext – II, Matia Ext, Ambaghati, Arakhataila, Binjhagiri, Netabandha, Dhadi, Kural, Takarakhai, Nariamba, Bhagabati (All are DPF)
5B/E ₉ Dry Bamboo Break	Nandagadu, Sikharpanga, Kuradhinisa, Kuradhinisa Ext.Sukarmala DPF, Ambamundia DPF, Ragadimada DPF, Barabanka DPF

2.7 Tree Cover Outside Forest Area (TOF):

Besides the notified forest areas of the Division (RF, PRF, DPF and VF) there are many revenue forest areas, Avenue plantations, and fuel & Fodder plantations raised by department contribute to Tree outside the Forests (TOF). From Social Forestry Project period; Farm Forestry is being patronized by the Govt. by free distribution of seedlings.

The TOF are integrated contribution of

- Plantations taken up outside the conventional Forest area by Forest Department, Horticultural plantation and other department.
- Plantations raised by private individuals in their fellow land and back yard.
- Agro Forestry practices.
- Avenue Plantations.
- Institutional Plantations.

The plantations raised during last plan period are furnished below.

2.7.1 Avenue Plantations:

Table No 2. 19 List of Avenue Plantations Raised during last plan period(Nayagarh Division)

Sl No	Year	Name of the Road / Site	Length in RKM	No. of seedling planted
1	2009-10	Kaibalyapur - Sakeri	6	1500
2	2009-10	Damasahi - Badabhuin	4	1000
3	2009-10	Godipada - Dimisar	3	750
4	2010-11	Lekhanapur - Jagannath Temple	2.5	625
5	2010-11	Mini stadium	1	250
6	2010-11	Pankua - Nuagaon	8	2000
7	2010-11	NH 224 - Tumandi	3	750
8	2010-11	Dengakuruma - Daspalla	13	3250
9	2010-11	Adakata - Mahitama	2	500
10	2010-11	Gania - Rasanga	4	1000
11	2010-11	Barasahi - Asuridhipa	4	1000
12	2010-11	Panibhandara - Kajalaipalli	3	750
13	2010-11	Mandalabani Chaka - Adabandha	6	1500
14	2010-11	Kotaranga - Bayapalli	4	1000
15	2010-11	Odagaon PWD road - Godipalli	4	1000
16	2011-12	Bapujipalli Gunduribari	4	1000
17	2011-12	Goudaputa - Dhabalei	5	1250
18	2011-12	Golagaon - Bhaliadihi	4	1000
19	2011-12	Ladukesh Mahesh Temple	2	500

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20	2011-12	D.N.Pur - Kendupalli	4	1000
21	2011-12	Badaput - Arada	3	750
22	2011-12	Baigunia - Khuntupada	4	1000
23	2011-12	Sidhamula - Rajakiari	4	1000
24	2011-12	Chandibasta - DRDA Office	12	3000
25	2011-12	Bijipur - Nayagarh NH 224	16	4000
26	2011-12	Andharakote - Guriabari	10	2500
27	2011-12	Karadapada - Goudatumandi	4	1000
28	2011-12	Barapurikia - Nuapada	8	2000
29	2011-12	Dengakuruma - Daspalla (Extn.)	2	500
30	2011-12	Maicheli - Dengakuruma	25	6250
31	2011-12	Sikrida - Krushnaprasad	4	1000
32	2012-13	Chahali - Dhulipaunsa	2	500
33	2012-13	Mugupatana - Angisingi	4	1000
34	2012-13	Khuntupada - badabhuin	5	1250
35	2012-13	Rasanga - Dankarisahi	4	1000
36	2012-13	Barabati - Haripur	2	500
37	2012-13	Deulapalli - Ratanpur	2	500
38	2012-13	Umadevi Chaka - Gunthuni	6	1500
39	2012-13	Khuntupada - Olasa	6	1500
40	2012-13	Jagannathprasad - Krushnapalli	2	500
41	2012-13	Maicheli - Dengakuruma Extn.	5	1250
42	2012-13	Jamujhola - Kantabari	5	1250
43	2012-13	Kajalaipalli - Bhaliadihi	8	2000
44	2012-13	Shymaghanapur - Khairapati	10	2500
45	2013-14	Itamati - Dengeragodi	4	1000
46	2013-14	Baunsiapada - Ekantabasi Temple	2	500
47	2013-14	Nuagaon - Bahadajhola	8	2000
48	2013-14	Durgapur - Elopada	4	1000
49	2013-14	Gohiriapada - Kendupalli	12	3000
50	2013-14	Badabhuin - Golapokhari	8	2000
51	2013-14	Bahadajhola - Gumi	4	1000
52	2013-14	Godipalli - Kurala	7	1750
53	2013-14	Sunadei - Gochha	10	2500
54	2013-14	PWD road - Belapada	2.4	600
55	2013-14	Kendupalli - Brutanga	4	1000
56	2013-14	D.N.Pur - Godimada	10	2500
57	2013-14	Majhiakhanda - Dayanajhari	8	2000
58	2013-14	Itamati - Sanapandusar	5	1250

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59	2013-14	Pilipaju - Pokharigochha	3	750
60	2013-14	Mardarajpur - Bodasa	3.2	800
61	2013-14	Madhapur - Mahulaberana	3.4	850
62	2013-14	Durgapur - Marichia	3.4	850
63	2013-14	Ragadisahi - Kukudakhani dam	4.6	1150
64	2013-14	Krushnapalli - Jagannathprasad	1.4	350
65	2013-14	Bapujipalli - Gunduribari	6	1500
66	2014-15	Kaudia to Andharakhani	6	1500
67	2014-15	Jiginipada to Muduranga	8	2000
68	2014-15	Kuanria to Bhogabadi	16	4000
69	2014-15	Khamarisahi - Bhimara	4	1000
70	2014-15	Jagannathprasad to Gholahandi	4	1000
71	2014-15	Dankarisahi - Mahukhan	4	1000
72	2014-15	Jagannathprasad to Siarinal	2	500
73	2014-15	Mahukhana to Butubari	8	2000
74	2014-15	Mahulaberana to Kalatangi	8	2000
75	2014-15	Kuanria Bridge-Nrusinghaprasad	9	2250
76	2014-15	Nayagarh-Beguniapatna	12	3000
77	2014-15	Marichia-Kaligiri river	2	500
78	2014-15	Caubanga-Dholamara	5	1250
79	2014-15	Madhupur-Khairapankalsahi	5	1250
80	2014-15	Patulisahi-Beguniapatna	6	1500
81	2015-16	Gochha – Nuagaon PMGSY road	20	5000
82	2015-16	Kaithapalli PMGSY Road	3	750
83	2015-16	Nugadiasahi to patharakhanda PMGSY road	3	750
84	2015-16	Kunjabiharipursasan to Bandhadwara PMGSY road	5	1250
85	2015-16	Kalikaprasad to Badasahara PMGSY road	5	1250
86	2015-16	Durgapur - Marichia via Parbatipur	4	1000
87	2015-16	Lunisahi - Gopinathpur	14	3500
88	2015-16	Shyamaghanapur - Kautara	8	2000
89	2016-17	Katrajhari to Sabideipur	5	1250
90	2016-17	Dasipur to Routpada	5	1250
91	2016-17	Panderisahi to Paturia	3	750
92	2016-17	Janisahi Chaka to Canal Road	7	1750
93	2016-17	Jamusahi-Golapokhari RD road	10	2500
94	2016-17	Kendupalli-Gohiriapada PMGSY road	7	1750
95	2016-17	Pathapur-Karadapalli PMGSY road	4	1000
96	2016-17	Laxmiprasad-Bhogada PMGSY Road	6	1500

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97	2016-17	Gohiriapada-kalatangi RD road	5	1250
98	2016-17	Godipada to Jakeda	12	3000
99	2016-17	Raghunathpur to Padmadeipur	10	2500
100	2016-17	Saliajhari to Arada	14	3500
101	2016-17	Balugaon - Mahipur	16	4000
102	2016-17	Arasahi - Sajanapada - Palagunthuni	8	2000
103	2016-17	Itamati-Champatipur	6	1500
104	2016-17	Machipada-Raghunathpur	4	1000
105	2016-17	Machipada-Pallisasan	2	500
106	2016-17	Madanmohanpur - Godipatana	6	1500
107	2016-17	Sunamuhi- Balisinsa	4	1000
108	2016-17	Bahadajhola-Hatiasila	6	1500
109	2016-17	Krushnapallichaka to Kenduabida	8	2000
110	2016-17	Adakatasitulisahi to Dhuamunda	6	1500
111	2016-17	Tangiapalli to Gobardhanpur	6	1500
112	2016-17	Mahitama to Sikrida	10	2500
113	2016-17	Chadeimara to Naitaila	8	2000
114	2017-18	Ghugudipada to Makarprasad	13	3250
115	2017-18	Madhyakhanda to Munda	7	1750
116	2017-18	Viruda to Khuntubandha	5	1250
117	2017-18	Sampada - Kanigiri	12	3000
118	2017-18	Mega Nursery	4	1000
119	2017-18	RD road to Bam	3	750
120	2017-18	Hanadiha to Kutrasingh	24	6000
121	2017-18	NH-57 to Jatiapalli	2	500
122	2017-18	NH-57 to Saliagochha	8	2000
123	2017-18	Jakela to Balabhadraprasad	7	1750
124	2017-18	Bhapur to Baraput	8	2000
125	2017-18	Ramachandrapur to Analapata	3	750
126	2017-18	Gunduribari to Vorder	4	1000
127	2017-18	Magarabandha to Kendupalli	4	1000
128	2017-18	Magarabandha to Kusapanderi	6	1500
129	2017-18	Todibari to Jamusahi	6	1500
130	2017-18	Godimada to Dhakamara (Previous year approved)	10	2500
131	2017-18	Naukhala to Baghua Dam	6	1500
132	2017-18	Bhuinani to Magarabandha	6	1500
133	2017-18	Kurala to Hanumantia	4	1000
134	2017-18	Giridipalli to Kurala	4	1000

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135	2018-19	Padmabati - Marada	16	4000
136	2018-19	Bhapur - Maliberana	4	1000
137	2018-19	PWD Road to Ambapada	6	1500
138	2018-19	Giridipalli- Sunamuhin	6	1500
139	2018-19	Khangarapalli- Giridipalli	6	1500
140	2018-19	Korapitha to Ghuntasahi	6	1500
141	2018-19	Kushadhipi- Baunsagadia	6	1500
142	2018-19	Jatrabarapatana- Petapalli	3	750
143	2018-19	Baunsia- Gotisahi	10	2500
144	2018-19	PWD road to Jogijogiani	3	750
145	2018-19	Kandhamirigi - Mainsibindha	12	3000
146	2018-19	Sanapada - Ghagarabandha	4	1000
147	2019-20	Hari Omm Matha to Kachapalli	8	2000
148	2019-20	SH -21 to Bhagabatiprasad	8	2000
149	2019-20	Sunamuhin to Luni	6	1500
150	2019-20	Kaptapalli to Koragadu	10	2500
151	2019-20	Gadiahahi to Kadua	4	1000
152	2019-20	Gadia Sahi to Natabarpursasan	3	750
153	2019-20	Gap between Kandhamiri to Mainsibindha	2	500
154	2019-20	Sarapokhari to Koduanpalli	18	4500
155	2019-20	Badakutuni to Simili	10	2500
156	2019-20	Godipalli to Hariharpur	4	1000
157	2019-20	Khatia to Jagannathprasad (Podasahi)	8	2000
158	2019-20	Bahadajhola PWD road to Madanpur	6	1500
159	2019-20	Koragadu to Makarapalli	6	1500
160	2019-20	Nilamadhaha Temple at Kantilo	20	5000
161	2019-20	Narayani Temple at Patharachakada	10	2500
		Total	1042.90	260725

Table No 2.20 Abstract of Avenue Plantation (Nayagarh Division)

Year	Avenue Plantation in RKM	Year	Avenue Plantation in RKM
2009-10	13	2015-16	62
2010-11	54.5	2016-17	178
2011-12	111	2017-18	146
2012-13	61	2018-19	82
2013-14	113.4	2019-20	123
2014-15	99	Total	1042.90

2.7.2. Plantations outside the Forest area taken up by Forest Department:

Table No 2.21 List of Plantations Raised Outside the Forest Area.

Sl No.	Range	Name of the Planting site	Year of Plantation	Scheme	Area in Ha
1	Nayagarh	Ranipada Water shed	2010-11	CAMPA-APO-2009-10	20.0
2	Nayagarh	Patharkata Water shed	2010-11	CAMPA-APO-2009-10	20.0
3	Nayagarh	Khuntubandha Water shed	2010-11	CAMPA-APO-2009-10	25.0
4	Nayagarh	Bhatasahi Watershed	2010-11	CAMPA-APO-2009-10	10.0
5	Khandapada	Analapata Watershed	2010-11	CAMPA-APO-2009-10	13.5
6	Khandapada	Golapokhari Watershed	2010-11	CAMPA-APO-2009-10	5.0
7	Khandapada	Mituani Watershed	2010-11	CAMPA-APO-2009-10	40.0
8	Khandapada	Kanasingh Watershed	2010-11	CAMPA-APO-2009-10	19.5
9	Khandapada	Kumbharapada Watershed	2010-11	CAMPA-APO-2009-10	17.0
10	Khandapada	Baraput Watershed	2010-11	CAMPA-APO-2009-10	15.0
11	Mahipur	Dimiripadar Watershed	2010-11	CAMPA-APO-2009-10	20.0
12	Mahipur	Naitaila Watershed	2010-11	CAMPA-APO-2009-10	20.0
13	Mahipur	Kosalanga Watershed	2010-11	CAMPA-APO-2009-10	50.0
14	Mahipur	Maniakot Watershed	2010-11	CAMPA-APO-2009-10	20.0
15	Mahipur	Achupada Watershed	2010-11	CAMPA-APO-2009-10	30.0
16	Mahipur	Sikhargochha Watershed	2010-11	CAMPA-APO-2009-10	60.0
17	Gania	Subarnapur Watershed	2010-11	CAMPA-APO-2009-10	65.0
18	Gania	Suankhala Watershed	2010-11	CAMPA-APO-2009-10	75.0
19	Daspalla	Mahulia Watershed	2010-11	CAMPA-APO-2009-10	40.0
20	Daspalla	Karadamada Watershed	2010-11	CAMPA-APO-2009-10	50.0
21	Daspalla	Bulunda Watershed	2010-11	CAMPA-APO-2009-10	30.0
22	Daspalla	Khajuribania Watershed	2010-11	CAMPA-APO-2009-10	20.0
23	Odagaon	Nariamba Watershed	2010-11	CAMPA-APO-2009-10	90.0
24	Odagaon	Balisinsa Watershed	2010-11	CAMPA-APO-2009-10	25.0
25	Odagaon	Ambapada Watershed	2010-11	CAMPA-APO-2009-10	40.0
26	Odagaon	Tulubi Watershed	2010-11	CAMPA-APO-2009-10	25.0
27	Odagaon	KarsingWatershed	2010-11	CAMPA-APO-2009-10	30.0
28	Panchirida	Punipada Watershed	2010-11	CAMPA-APO-2009-10	35.0
29	Panchirida	Kurumuduli Watershed	2010-11	CAMPA-APO-2009-10	40.0
30	Panchirida	Jamusahi Watershed	2010-11	CAMPA-APO-2009-10	115.0
31	Panchirida	Nachipur Watershed	2010-11	CAMPA-APO-2009-10	145.0
32	Panchirida	Dengajgari Watershed	2010-11	CAMPA-APO-2009-10	30.0
33	Panchirida	Jakeda Watershed	2010-11	CAMPA-APO-2009-10	30.0

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34	Panchirida	Tulubi Watershed	2010-11	CAMPA-APO-2009-10	25.0
35	Panchirida	Kakalama Watershed	2010-11	CAMPA-APO-2009-10	20.0
36	Nayagarh	Jaada RL	2011-12	OWP Plantation	20.0
37	Mahipur	Chandijhari RL	2011-12	OWP Plantation	20.0
38	Nayagarh	Brundabanapur RL	2012-13	OWP Plantation	20.0
39	Odagaon	Beladwara RL	2012-13	OWP Plantation	20.0
40	Gania	Lembugochha RL	2013-14	OWP Plantation	10.0
41	Gania	Alapanga RL	2013-14	OWP Plantation	10.0
42	Panchirida	Lunisahi RL	2013-14	OWP Plantation	20.0
43	Khandapada	Sikharapur RL & Barapalli RL	2013-14	OWP Plantation	10.0
44	Khandapada	Jaharkot & Kismat Kendupalli RL	2013-14	OWP Plantation	10.0
45	Daspalla	Arasahi RL	2013-14	OWP Plantation	20.0
46	Nayagarh	Jaada R.L	2014-15	OWP Plantation	10.0
47	Khandapara	Mainsibindha R.L	2014-15	OWP Plantation	10.0
48	Khandapara	Kandhamirigi R.L	2014-15	OWP Plantation	10.0
49	Daspalla	Jatiapally R.L	2014-15	OWP Plantation	10.0
50	Gania	Gopiballavpur R.L	2014-15	OWP Plantation	17.0
51	Gania	Gholahandi R.L	2014-15	OWP Plantation	23.0
52	Odagaon	Sundhijhola R.L	2014-15	OWP Plantation	20.0
53	Khandapara	Laxmiprasad R.L	2014-15	Bald Hill Plantation	11.0
54	Panchirida	Solapata R.L	2014-15	Bald Hill Plantation	15.0
55	Panchirida	Kespania R.L	2014-15	Bald Hill Plantation	10.0
56	Khandapada	Patharachakada RL	2015-16	Bald Hill Plantation	10.0
57	Mahipur	Sudungi RL	2015-16	OWP Plantation	20.0
58	Daspalla	Nidhikiari RL	2015-16	OWP Plantation	25.0
59	Daspalla	Jatiapalli RL	2015-16	OWP Plantation	25.0
60	Gania	Nuapada RL	2015-16	OWP Plantation	40.0
61	Gania	Jhuntamara RL	2015-16	OWP Plantation	20.0
62	Odagaon	Chemedi RL	2015-16	OWP Plantation	40.0
63	Odagaon	Kaliamba RL	2015-16	OWP Plantation	15.0
64	Odagaon	Beladwara RL	2015-16	OWP Plantation	15.0
65	Gania	Kendubida RL	2015-16	JBP	10.0
66	Panchirida	Gochha RL	2015-16	JBP	10.0
67	Gania	Chadakamara RL	2016-17	Bald Hill Plantation	13.0
68	Gania	Khairapankalasahi RL	2016-17	Bald Hill Plantation	12.0
69	Gania	Gohirimada RL	2016-17	OWP Plantation	25.0
70	Gania	Kakudikhola RL	2016-17	OWP Plantation	25.0
71	Panchirida	Gochha RL	2016-17	JBP	25.0

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72	Mahipur	Sorada RL	2017-18	Bald Hill Plantation	20.0
73	Khandapada	Talararada RL near Hanumantia RF	2018-19	Green Mahanadi mission	44.0
74	Khandapada	Madhupur RL	2018-19	Green Mahanadi mission	10.0
		Total			2015.00

Besides plantations raised within the Forest area under department control, plantations have been raised elsewhere under different schemes. All total 2015.00 ha of plantations have been raised. The list of Plantation is at table No 2.21 below.

Year wise Abstract	
Year	Area under Plantation in Ha
2010-11	1315.00
2011-12	40.00
2012-13	40.00
2013-14	80.00
2014-15	136.00
2015-16	230.00
2016-17	100.00
2017-18	20.00
2018-29	54.00
Div. Total	2015.00

2.7.3. Distribution of seedlings.

Distribution of Seedlings under farm forestry to a tune of 79.957 lakh has been achieved. The year wise details are furnished at Table No 2.22

Table No: 2.22 Distributions of Seedlings under Farm Forestry.		
Year	seedlings distributed (in lakh)	Area of coverage in ha. @1600 plant per ha
2009-10	0	0
2010-11	3.15	196.875
2011-12	5	312.5
2012-13	5.3	331.25
2013-14	14.4	900
2014-15	14.4	900

2015-16	12.4	775
2016-17	10.2	637.5
2017-18	4.425	276.5625
2018-19	5.394	337.125
2019-20	5.288	330.5
Total	79.957	4997.313

2.8 Shifting Cultivation (Jhumming):

Shifting cultivation is a destructive cultivation practices observed in Forest areas. However it is not observed in Nayagarh Division.



CHAPTER-3

MAINTENANCE, CONSERVATION AND ENHANCEMENT OF BIODIVERSITY:

3.1 Forest Composition & Distribution:

Nayagarh Division is endowed with rich forest resources having variety of flora and fauna. In Nayagarh district forest area covers an extent of 1087.23 sq. km out of which 347.09 sq. km is reserved forest. The district has been the homeland of various tribal communities with their sub-tribes, who are found in different level of development depending upon their assimilation with the so called mainstream or modern communities. Due to availability of Moist Forests in this tract, Plant diversity is high in comparison to other parts of the costal district. Flora of the division has been described under Chapter 2 Para 2.6.3 of this Plan. A number of gymnosperms, bryophytes and pteridophytes are also found which needs documentation. Bamboo brakes are very common in the area.

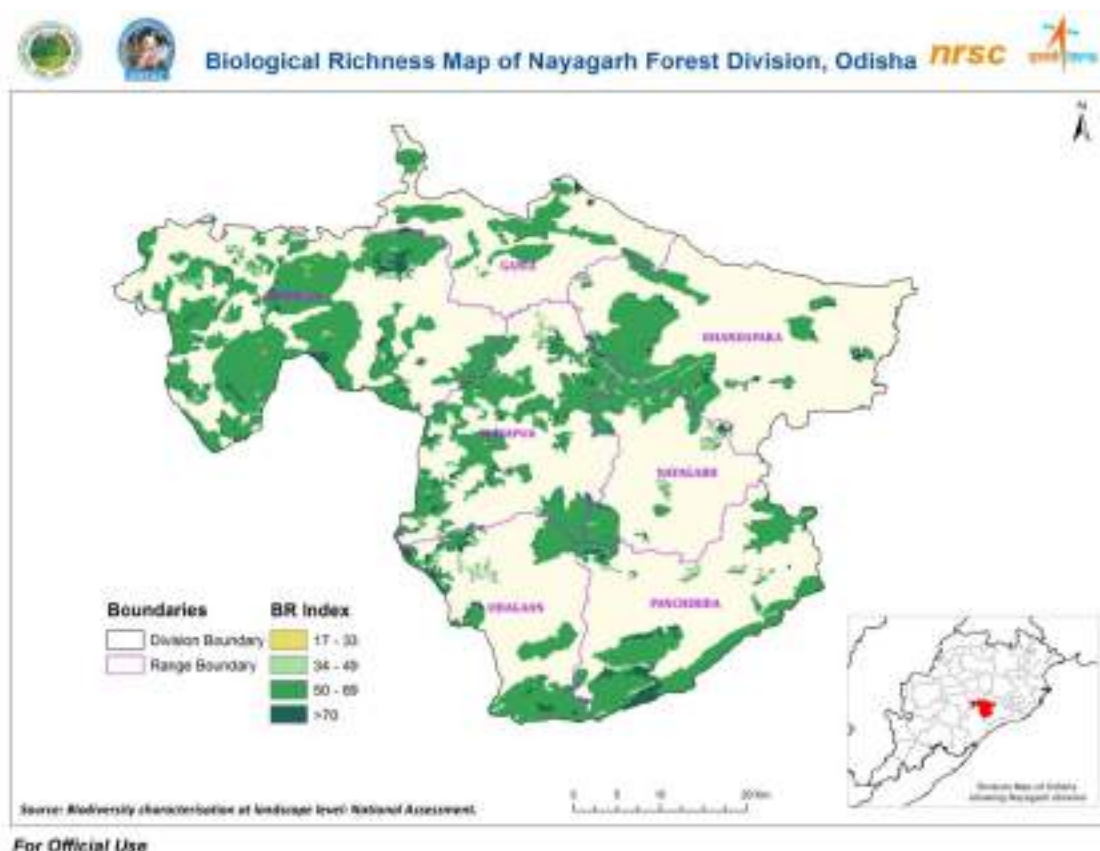
Thorough scrutiny of published literature, study of herbarium specimens and based on primary field data collected by the various authors, 17 vascular plant taxa belonging to 12 genera under 7 families are found to be endemic to Odisha. This includes 4 neo-endemic and 13 paleoendemic species of plants. Poaceae and Orchidaceae are the families having maximum number of endemic species, 7 and 4 species respectively. Notes on taxonomy and nomenclature of certain endemic plants of Odisha has been provided along with a complete list of 17 endemic taxa of Odisha with notes on their habit, habitat, distribution and conservation status of each of them. On critical study of the flora of the area, the following species of rare threatened and endangered species are recorded. These are at Table No 3.1

Table No 3.1 RET Species of Odisha (Flora)			
Species	Family	Habit	Conservation Status
Aspidopterys tomentosa	Malpighiaceae	Climber	
Cycas orixensis	Cadeaceae	Tree	
Cycas nayagarhensis	Cadeaceae	Tree	About 100 individuals are reported in two hills of Nayagarh Division
Dimeria mahendragiriensis	Poaceae	Herb	
Dimeria mooneyi	Poaceae	Herb	
Dimeria arissae	Poaceae	Herb	
Eria meghasaniensis	Orchidaceae	Epiphytic herb	
Eriolaena hooheriana	Sterculiaceae	Tree	
Flacourtia indica	Flacourtiaceae	Shrub	Ently Collected from Nayagarh District / Ranapur area
Homonoia intermedia	Phorbiaceae	Shrub	Mahanadi River bed of Tikarpada / Nayagarh
Habenaria panigrahiana	Orchidaceae	Herb	Bhanjanagar Area & near by Nayagarh District
Liparis udali	Orchidaceae	Herb	Sundargarh area
Themeda saxicola	Poaceae	Herb	
Themeda Odishae	Poaceae	Herb	Mahendragiri hills
Themeda mooneyi	Poaceae	Herb	Koraput
Tripogon mahendragiriensis	Poaceae	Herb	Mahendragiri hills
Zeuxine mooneyi	Orchidaceae	Herb	Rebena forest of Keonjhar.

Other species considered as endangered due to over exploitation are as detailed below.

3.2 Plant Species Diversity:

Nayagarh Division is rich in floral diversity due to moist forests, river systems, hills and table land. Species from drier tract to moist and Semi evergreen are noticed. The bio diversity richness map indicates a richer floral diversity also.



3.2.1 Principles of Biodiversity Index Calculation:

A **diversity index** (also called **phylogenetic** or **Simpson's Diversity Index**) is a quantitative measure that reflects how many different types (such as species) there are in a dataset (a community) and that can simultaneously take into account the phylogenetic relations among the individuals distributed among those types, such as *richness*, *divergence* or *evenness*. These indices are statistically representations of biodiversity in different aspects (richness, evenness and dominance).

Richness R simply quantifies how many different types the dataset of interest contains. For example, species richness (usually noted S) of a dataset is the number of different species in the corresponding species list. Richness is a simple measure, so it has been a popular diversity index in ecology, where abundance data are often not available for the datasets of interest. Because richness does not take the abundances of the types into account, it is not the same thing as diversity, which does take abundances into account. However, if true diversity is calculated with $q = 0$, the effective number of types (${}^0D$) equals the actual number of types (R).

3.2.2 Shannon Index:

The Shannon index has been a popular diversity index in the ecological literature, where it is also known as Shannon's diversity index, the Shannon–Wiener index, the Shannon–Weaver index and the Shannon entropy. The measure was originally proposed by Claude Shannon to quantify the entropy (uncertainty or information content) in strings of text. The idea is that the more different letters there are, and the more equal their proportional abundances in the string of interest, the more difficult it is to correctly predict which letter will be the next one in the string. The Shannon entropy quantifies the uncertainty (entropy or degree of surprise) associated with this prediction. It is most often calculated as follows:

$$H' = - \sum p_i \ln p_i$$

Where p_i is the proportion of characters belonging to the i^{th} type of letter in the string of interest. In ecology, p_i is often the proportion of individuals belonging to the i^{th} species in the dataset of interest. Then the Shannon entropy quantifies the uncertainty in predicting the species identity of an individual that is taken at random from the dataset.

Although the equation is here written with natural logarithms, the base of the logarithm used when calculating the Shannon entropy can be chosen freely. Shannon himself discussed logarithm bases 2, 10 and e , and these have since become the most popular bases in applications that use the Shannon entropy. Each log base corresponds to a different measurement unit, which have been called binary digits (bits), decimal digits (decits) and natural digits (nats) for the bases 2, 10 and e , respectively. Comparing Shannon entropy values that were originally calculated with different log bases requires converting them to the same log base: change from the base a to base b is obtained with multiplication by $\log_b a$.

It has been shown that the Shannon index is based on the weighted geometric mean of the proportional abundances of the types, and that it equals the logarithm of true diversity as calculated with $q = 1$:

$$H' = - \sum_{i=1}^R p_i \ln p_i = - \sum_{i=1}^R \ln p_i^{p_i}$$

This can also be written

$$H' = -(\ln p_1^{p_1} + \ln p_2^{p_2} + \ln p_3^{p_3} + \dots + \ln p_R^{p_R})$$

which equals

$$H' = -\ln p_1^{p_1} p_2^{p_2} p_3^{p_3} \dots p_R^{p_R} = \ln \left(\frac{1}{p_1^{p_1} p_2^{p_2} p_3^{p_3} \dots p_R^{p_R}} \right) = \ln \left(\frac{1}{\prod_{i=1}^R p_i^{p_i}} \right)$$

Since the sum of the p_i values equals unity by definition, the denominator equals the weighted geometric mean of the p_i values, with the p_i values themselves being used as the weights (exponents in the equation). The term within the parentheses hence equals true diversity ^1D , and H' equals $\ln(^1D)$.

When all types in the dataset of interest are equally common, all p_i values equal to $1 / R$, and the Shannon index hence takes the value $\ln(R)$. The more unequal the abundances of the types, the larger is the weighted geometric mean of the p_i values, and the smaller the corresponding Shannon entropy. If practically all abundance is concentrated to one type, and the other types are very rare (even if there are many of them), Shannon entropy approaches zero. When there is only one type in the dataset, Shannon entropy exactly equals zero (there is no uncertainty in predicting the type of the next randomly chosen entity).

3.2.3 Renyi entropy:

The Renyi entropy is a generalization of the Shannon entropy to other values of q than unity. It can be expressed:

$$^qH = \frac{1}{1-q} \ln \left(\sum_{i=1}^R p_i^q \right)$$

which equals

$$^qH = \ln \left(\frac{1}{\sqrt[q-1]{\sum_{i=1}^R p_i p_i^{q-1}}} \right) = \ln(^qD)$$

This means that taking the logarithm of true diversity based on any value of q gives the Rényi entropy corresponding to the same value of q .

3.2.4 Simpson Index:

The Simpson index was introduced in 1949 by Edward H. Simpson to measure the degree of concentration when individuals are classified into types. The same index was rediscovered by Orris C. Herfindahl in 1950. The square root of the index had already been introduced in 1945 by the economist Albert O. Hirschman. As a result, the same measure is usually known as the Simpson index in ecology, and as the Herfindahl index or the Herfindahl–Hirschman index (HHI) in economics.

The measure equals the probability that two entities taken at random from the dataset of interest represent the same type. It equals:

$$\lambda = \sum_{i=1}^R p_i^2,$$

Where R is the richness i.e. the total number of types in the dataset. This equation is also equal to the weighted arithmetic mean of the proportional abundances p_i of the types of interest, with the proportional abundances themselves being used as the weights. Proportional abundances are by definition constrained to values between zero and unity, but it is a weighted arithmetic mean, hence $\lambda \geq 1/R$, which is reached when all types are equally abundant.

By comparing the equation used to calculate λ with the equations used to calculate true diversity, it can be seen that $1/\lambda$ equals ${}^2D$, i.e. true diversity as calculated with $q = 2$. The original Simpson's index hence equals the corresponding basic sum.

The interpretation of λ as the probability that two entities taken at random from the dataset of interest represent the same type assumes that the first entity is replaced to the dataset before taking the second entity. If the dataset is very large, sampling without replacement gives approximately the same result, but in small datasets the difference can be substantial. If the dataset is small, and sampling without replacement is assumed, the probability of obtaining the same type with both random draws is:

$$\ell = \frac{\sum_{i=1}^R n_i(n_i - 1)}{N(N - 1)}$$

where n_i is the number of entities belonging to the i th type and N is the total number of entities in the dataset. This form of the Simpson index is also known as the Hunter–Gaston index in microbiology.

Since mean proportional abundance of the type's increases with decreasing number of types and increasing abundance of the most abundant type, λ obtains small values in datasets of high diversity and large values in datasets of low diversity. This is counterintuitive behavior for a diversity index, so often such transformations of λ that increase with increasing diversity have been used instead. The most popular of such indices have been the inverse Simpson index ($1/\lambda$) and the Gini–Simpson index ($1 - \lambda$).^[1] Both of these have also been called the Simpson index in the ecological literature, so care is needed to avoid accidentally comparing the different indices as if they were the same.

3.2.5 Inverse Simpson index

The inverse Simpson index equals:

$$\frac{1}{\lambda} = \frac{1}{\sum_{i=1}^R p_i^2} = {}^2D$$

This simply equals true diversity of order 2, i.e. the effective number of types that is obtained when the weighted arithmetic mean is used to quantify average proportional abundance of types in the dataset of interest.

The index is also as a measure of the effective number of parties.

3.2.6 Gini–Simpson index:

The original Simpson index λ equals the probability that two entities taken at random from the dataset of interest (with replacement) represent the same type. Its transformation $1 - \lambda$ therefore equals the probability that the two entities represent different types. This measure is also known in ecology as the probability of inter-specific encounter (*PIE*) and the Gini–Simpson index. It can be expressed as a transformation of true diversity of order 2:

The Gibbs–Martin index of sociology, psychology and management studies, which is also known as the Blau index, is the same measure as the Gini–Simpson index.

The quantity is also known as the expected heterozygosity in population genetics.

3.2.7 Berger- Parker Index:

The Berger–Parker index equals the maximum p_i value in the dataset, i.e. the proportional abundance of the most abundant type. This corresponds to the weighted generalized mean of the p_i values when q approaches infinity, and hence equals the inverse of true diversity of order infinity ($1/{}^\infty D$).

3.2.8 Effective number of Species or Hill numbers:

When diversity indices are used in ecology, the types of interest are usually species, but they can also be other categories, such as genera, families, functional types or haplotypes. The entities of interest are usually individual plants or animals, and the measure of abundance can be, for example, number of individuals, biomass or coverage. In demography, the entities of interest can be people, and the types of interest various demographic groups. In information science, the entities can be characters and the types the different letters of the alphabet. The most commonly used diversity indices are simple transformations of the effective number of types (also known as 'true diversity'), but each diversity index can also be interpreted in its own right as a measure corresponding to some real phenomenon (but a different one for each diversity index).

Many indices only account for categorical diversity between subjects or entities. Such indices however do not account for the total variation (diversity) that can be held between subjects or entities which occurs only when both categorical and qualitative diversity are calculated.

True diversity, or the effective number of types, refers to the number of equally abundant types needed for the average proportional abundance of the types to equal that observed in the dataset of interest (where all types may not be equally abundant). The true diversity in a dataset is calculated by first taking the weighted generalized mean M_{q-1} of the proportional abundances of the types in the dataset, and then taking the reciprocal of this. The equation is:

$${}^q D = \frac{1}{M_{q-1}} = \frac{1}{\sqrt[q-1]{\sum_{i=1}^R p_i p_i^{q-1}}} = \left(\sum_{i=1}^R p_i^q \right)^{1/(1-q)}$$

The denominator M_{q-1} equals the average proportional abundance of the types in the dataset as calculated with the weighted generalized mean with exponent $q-1$. In the equation, R is richness (the total number of types in the dataset), and the proportional abundance of the i th type is p_i . The proportional abundances themselves are used as thenominal weights. The numbers are called Hill numbers of order q or effective number of species.

When $q = 1$, the above equation is undefined. However, the mathematical limit as q approaches 1 is well defined and the corresponding diversity is calculated with the following equation:

$$^1D = \frac{1}{\prod_{i=1}^R p_i^{p_i}} = \exp\left(-\sum_{i=1}^R p_i \ln(p_i)\right)$$

Which is the exponential of the Shannon entropy calculated with natural logarithms (see above). In other domains, this statistic is also known as the *perplexity*.

The value of q is often referred to as the order of the diversity. It defines the sensitivity of the diversity value to rare vs. abundant species by modifying how the weighted mean of the species proportional abundances is calculated. With some values of the parameter q , the value of M_{q-1} assumes familiar kinds of weighted mean as special cases. In particular, $q = 0$ corresponds to the weighted harmonic mean, $q = 1$ to the weighted geometric mean and $q = 2$ to the weighted arithmetic mean. As q approaches infinity, the weighted generalized mean with exponent $q-1$ approaches the maximum p_i value, which is the proportional abundance of the most abundant species in the dataset. Generally, increasing the value of q increases the effective weight given to the most abundant species. This leads to obtaining a larger M_{q-1} value and a smaller true diversity (^qD) value with increasing q .

When $q = 1$, the weighted geometric mean of the p_i values is used, and each species is exactly weighted by its proportional abundance (in the weighted geometric mean, the weights are the exponents). When $q > 1$, the weight given to abundant species is exaggerated, and when $q < 1$, the weight is given to rare species. At $q = 0$, the species weights exactly cancel out the species proportional abundances, such that the weighted mean of the p_i values equals $1 / R$ even when all species are not equally abundant. At $q = 0$, the effective number of species, ^0D , hence equals the actual number of species R . In the context of diversity, q is generally limited to non-negative values. This is because negative

values of q would give rare species so much more weight than abundant ones that ${}^qD$ would exceed R .

The general equation of diversity is often written in the form

$${}^qD = \left(\sum_{i=1}^R p_i^q \right)^{1/(1-q)}$$

3.2.9 Methods adopted to calculate Bio diversity:

There are four Ranges in the division. Each Range is taken as strata. There are 264 Sample plots of 0.1 ha (31.62 m Sq) in each range. Three Sample plot of Binka Range, Six points from Sonapur Range, five points from Ullunda Range and three points from Birmaharajpur Range (total -17 sample point) data have been analyzed for Bio Diversity index) to find out Shannon-Weiner Species Diversity Index, Evenness Index, Index of Dominance using the formula furnished below.

A) Shannon-Weiner Species Diversity Index has been calculated as per the following expression:

$$\bar{H} = -\sum \frac{n}{N} \log_e \frac{n}{N}$$

where,

$\bar{H}$ = Shannon-Weiner Species Diversity Index

n = No. of individuals per species

N = Total number of individuals of all species

B) Evenness Index has been calculated by the following expression:

$$e = \frac{\bar{H}}{\log_e S}$$

where,

e = Evenness Index

$\bar{H}$ = Shannon Weiner Species Diversity Index

S = No. of species

C) Index of Dominance has been calculated by the following expression

$$c = \sum \left(\frac{n}{N} \right)^2$$

where

c = Index of Dominance

n = No. of individuals per species

N = Total number of individuals of all species

Table No 3.3 Bio Diversity Index for different Sample points.

Name of Range	Sample Point no	Name of Forest Block	Shannon-Weiner SDI	Evenness Index	Index of Dominance	Simpson index	Inverse Simpson index
Daspalla	NY693	Purunadaspalla RF	1.33	0.24	0.280	0.28	6.67
Daspalla	NY246	Chadeypali RF	2.36	0.87	0.137	0.137	7.30
Daspalla	NY1	Ambalimba RF	2.12	0.72	0.15	0.15	6.82
Daspalla	NY22	Baisipalli Ext-II, PRF	2.077	0.90	0.154	0.154	6.48
Daspalla	NY91	Central RF	2.344	0.83	0.114	0.114	8.77
Gania	NY13	Arakhatalia DPF	2.15	0.90	0.150	0.150	6.67
Gania	NY26	Baisipali Ext IV PRF	1.38	1.00	0.254	0.254	3.94
Gania	NY57	Makaraprasad RF	2.32	0.80	0.105	0.105	9.52
Gania	NY71	Bankamund Extn 1 PRF	2.40	0.94	0.102	0.102	9.80
Gania	NY314	Gania RF	1.91	0.80	0.237	0.237	4.22
Naygarh	NY35	Balaram RF C-1	1.99	0.91	0.16	0.160	6.25
Naygarh	NY77	Barbank PRF C-1	1.04	0.40	0.38	0.380	2.63
Naygarh	NY454	Hatimunda RF C-10	0.37	0.21	0.865	0.865	1.16
Naygarh	NY894	Bhatasahi RF	2.34	0.94	0.117	0.117	8.53
Naygarh	NY899	Sulia RF C-4(P)	1.43	0.60	0.434	0.434	2.30
Odagaon	NY16	Bahadajhola RF	0.34	0.25	0.864	0.864	1.16

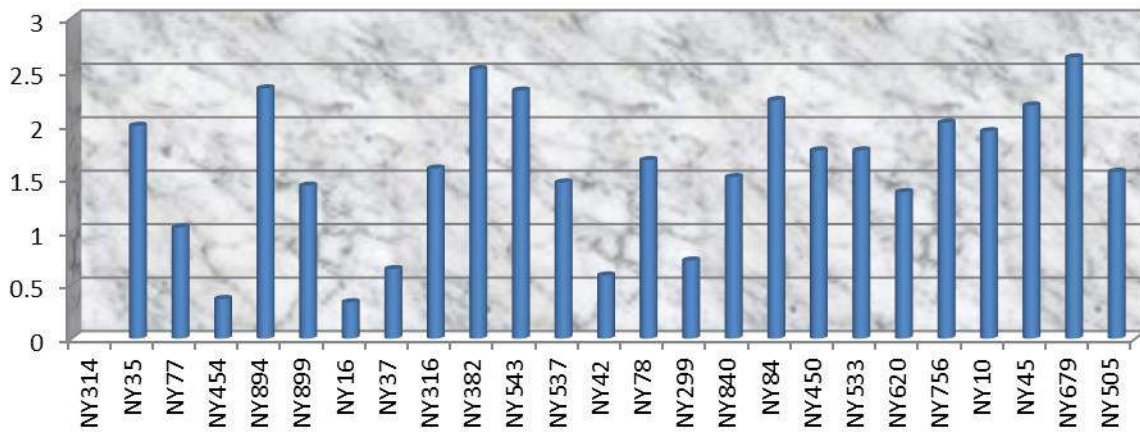
Table No 3.3 Bio Diversity Index for different Sample points.

Name of Range	Sample Point no	Name of Forest Block	Shannon-Weiner SDI	Evenness Index	Index of Dominance	Simpson index	Inverse Simpson index
Odagaon	NY37	Balisinsa-Badhulipur RF	0.65	0.30	0.713	0.713	1.40
Odagaon	NY316	Gayalsingh C-1	1.59	0.99	0.208	0.208	4.81
Odagaon	NY382	Gocha RF , C-18	2.52	0.93	0.092	0.092	10.87
Odagaon	NY543	Makarapali PRF	2.32	0.88	0.128	0.128	7.81
Khandapada	NY537	Mainsibindha RF	1.46	0.91	0.241	0.241	4.15
Khandapada	NY42	Bandra RF	0.59	0.43	0.690	0.69	1.45
Khandapada	NY78	Barakhola RF	1.67	0.93	0.219	0.219	4.57
Khandapada	NY299	Dengabahada RF, C/2	0.73	0.53	0.640	0.64	1.56
Khandapada	NY840	Sapua RF, C/7	1.51	0.84	0.266	0.266	3.76
Mahipur	NY84	Bhagabti DPF	2.23	0.87	0.146	0.146	6.85
Mahipur	NY450	Hatimunda RF	1.76	0.69	0.315	0.315	3.17
Mahipur	NY533	Maichheli-Sampada RF, C/2	1.76	0.69	0.322	0.322	3.11
Mahipur	NY620	Palva RF, C/3	1.37	0.76	0.325	0.325	3.08
Mahipur	NY756	Ragadimada RF, C/5	2.02	0.97	0.140	0.14	7.14
Panchirida	NY10	Ambamundia PRF	1.94	0.88	0.180	0.18	5.56
Panchirida	NY45	Banijhari PRF (Near Village Guanda)	2.18	0.91	0.148	0.148	6.76
Panchirida	NY679	Darpanarayanpur (Status RF, C/4)	2.63	0.93	0.085	0.085	11.76
Panchirida	NY505	Khatia Damasahi RF-1	1.56	0.97	0.219	0.219	4.57

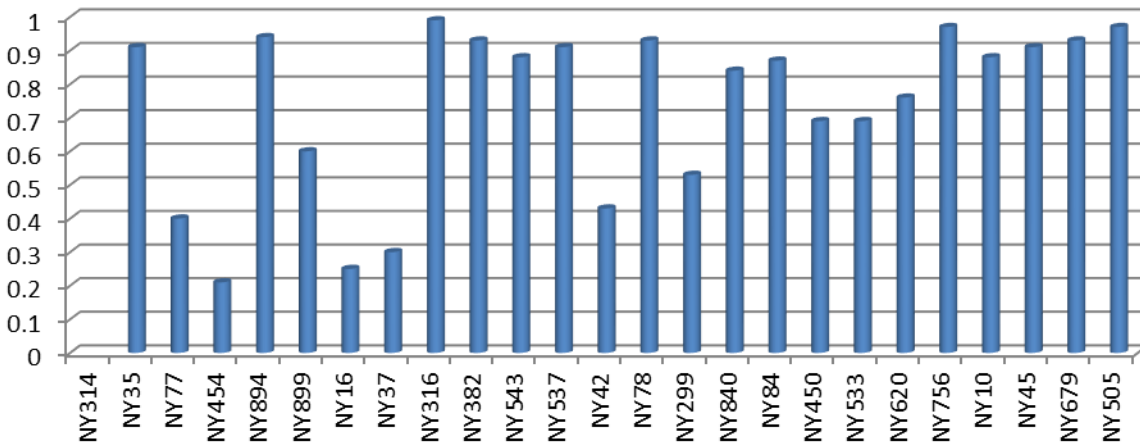
The sample Point enumeration information is at **Annexure-IV** for reference.

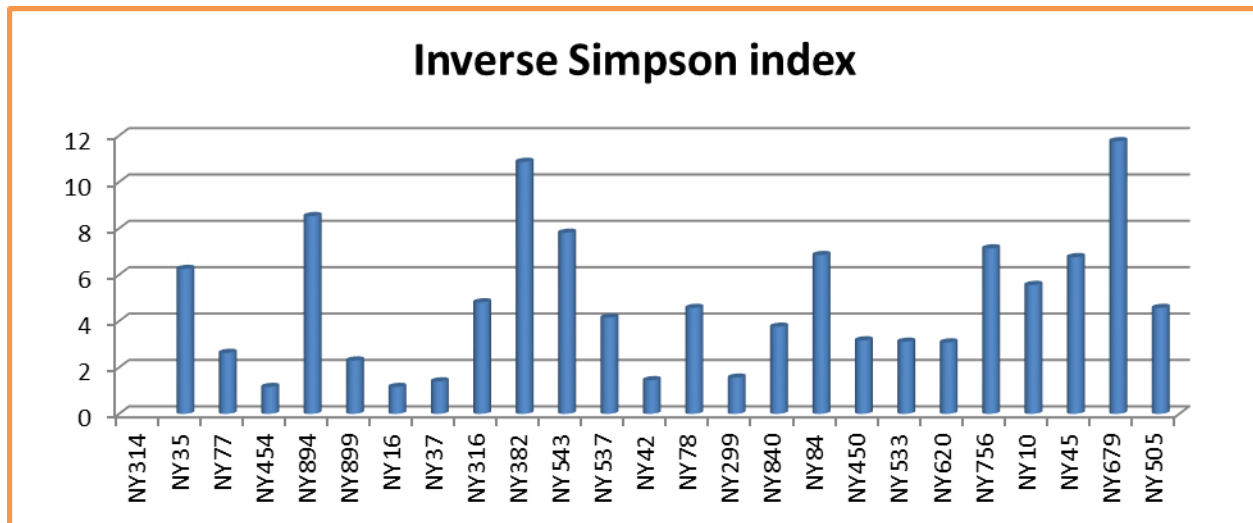
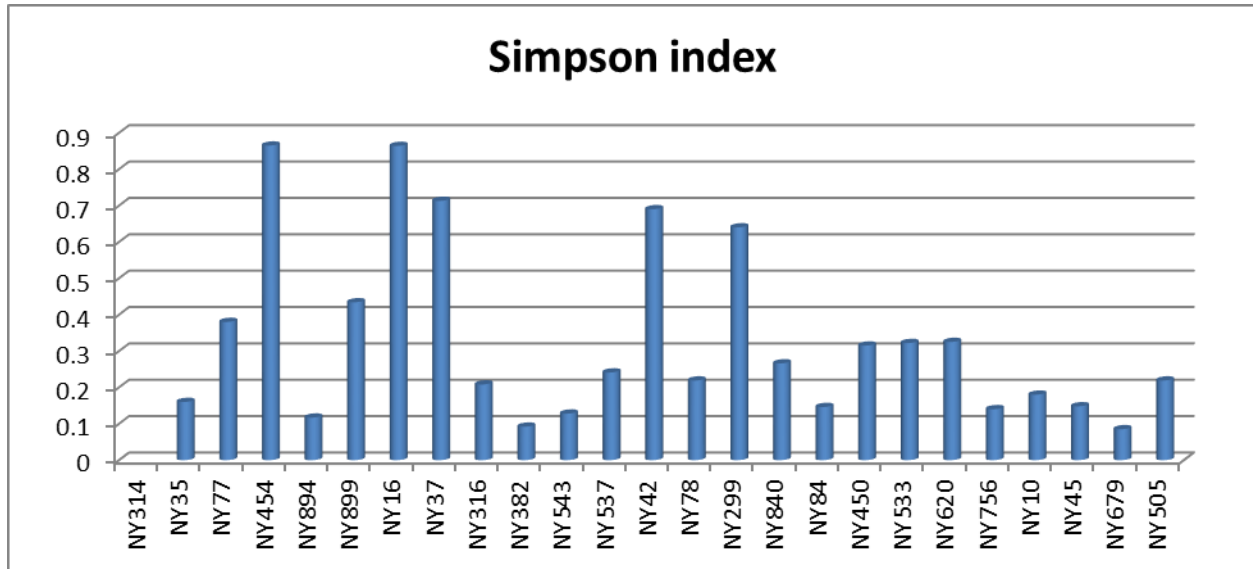


Shannon-Weiner SDI

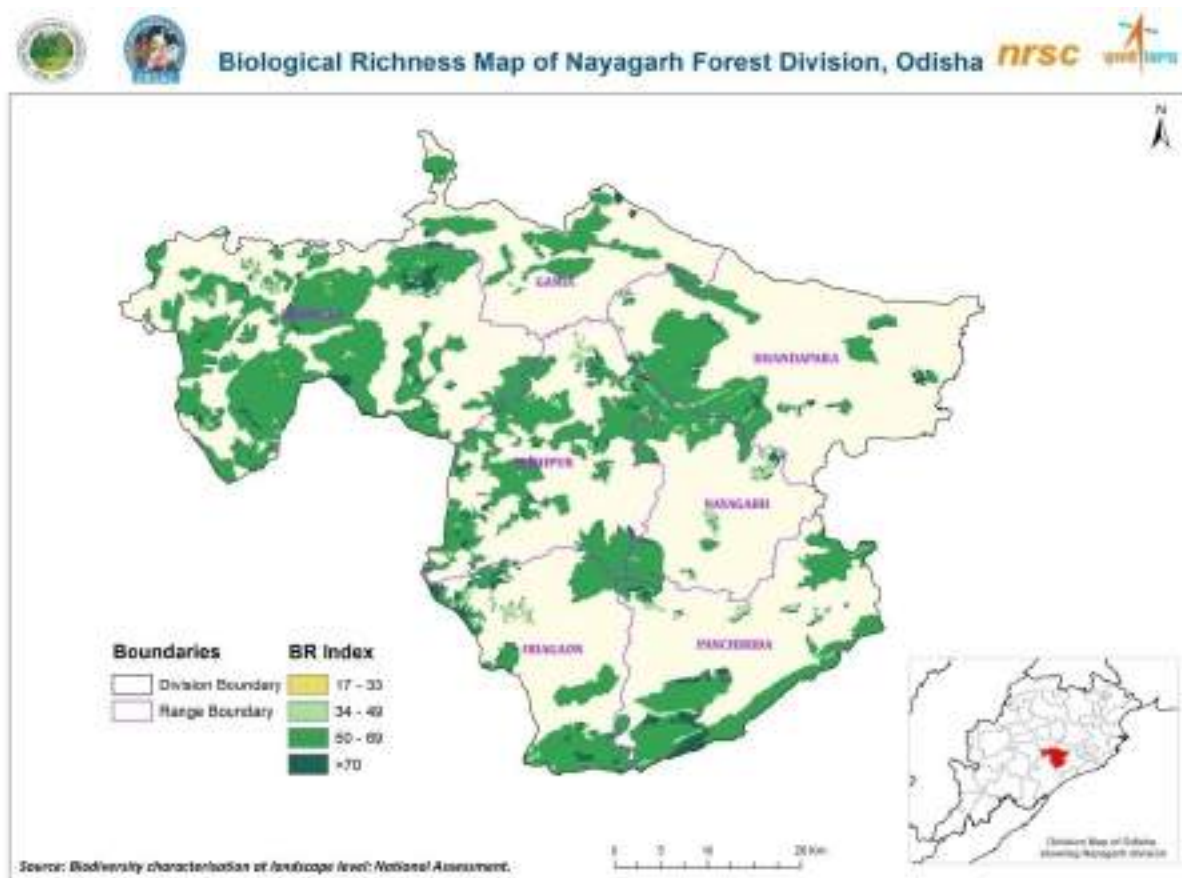


Evenness Index





Bio Diversity Rich map is given below.



3.3 Status of Biodiversity Conservation in Forests:

At present Biodiversity Conservation has been initiated in the division. As per the instructions of the Biodiversity Board People's Biodiversity Register is being prepared and Biodiversity Committee in various panchayat and panchayat samities are being constituted. At present there is no Reservation Plot / Conservation Plot within any forest area.

3.4 Status of Species prone to over exploitation:

Sal is the Principal Species of the division followed by Asan. Piasal, Kuruma are the major furniture wood available in the forest. These species are over exploited and day by day the forest is transferring from Sal forests to mixed forests. The species subjected to over exploitation in the past are Piasal, Pahadi Sisoo, Kuruma. At present the species facing over exploitation are Sal, Dhaura, Asan and Kendu. It is now time to take steps to check over exploitation of these species and try to regenerate already over exploited species.

3.4.1 Timber supply for Car Festival:

As per the Puri Rathayatra code, the Divisional Forest officer, Nayagarh Forest Division is to supply the required quantity of timbers of different species to the Temple Administrator, Shree Jagannath Temple, Puri and the Executive Officer, Lord Lingaraj Temple, Bhubaneswar for the purpose of the Annual Car Festival. According to the requirement 862 number of timber of Phasi, Asan and Dhaura are being supplied from this division. These species have been over exploited and required timber is also difficult to arrange. The size of timber required is furnished below. (Table No 3.4)

Table No 3.4 Timber requirement for Chariot for Car Festival(Ratha Yatra)			
Species	Purpose	Dimension (L x G in feet)	Qty. In nos.
Phasi	Tumba	9 x 6	22 Nos.
Phasi	Pahi	12 x 6	50 Nos.
Dhaura	Danda and Akha	40 x 3	50 Nos.
Dhaura	Aramundi	12 x 3.17	428 Nos.
Asan	Gayala	40 x 3	312 Nos.
		TOTAL	862 Nos.

Similarly timbers of following species are required to be supplied to the Executive Officer, Lord Lingaraj Temple, Bhubaneswar for the Car Festival at Bhubaneswar (for Rukuna Ratha).

Table No 3.5 Timber requirement for car festival (Lord Lingaraj) Bhubaneswar.			
Species	Dimensions (ft.)	Quantity (Nos.)	Remarks
Mai	15 x 5	5	The quantity and sizes of required timbers have been differs from year to year.
Semul	15 x 5	5	
Sal (Poles)	18 x 2.5	3	
Sal	15 x 14	2	
Sal	10 x 5	8	
Kumbhi	15x5	5	
	TOTAL	28 Nos.	

Over exploitation of Cane: cane is available in moist forests of this division. There Cane artisans in and around Nayagarh Town ship. To keep their livelihood with sustained income Cane has been over exploited in the past and now in verge of extinction.

3.5 Conservation of Genetic Resources:

Recent years have seen an increasing global concern over the loss of genetic resources of crop plants. Future progress in crop improvement and our food security depends, to a great extent, on immediate conservation of the rapidly vanishing crop / trees / MAP gene resources and their effective utilization by plant breeders. In this context, a great deal has been accomplished in the last decade to safeguard the plant genetic wealth which constitutes the natural heritage. However, much still remains to be done in improving the conservation strategies and upgrading the collections, which encompass a wide range of diversity comprising wild relatives, primitive cultivars and landraces, weedy forms, unimproved and modern cultivars, and genetic testers.

The fundamental objective of **genetic resources conservation** is the maintenance of broad based **genetic** diversity within each of the species (i.e., intra-specific **genetic** diversity) with a known or potential value in order to ensure availability for exploitation by present and future generations.

There are broadly speaking two basic approaches to genetic resources conservation, namely, ***in-situ* and *ex-situ* conservation**. *In-situ* means the setting aside of natural reserves, where the species are allowed to remain in their ecosystems within a natural or properly managed ecological continuum. The natural biosphere reserve is a useful solution for species that are endangered and nearly on the point of extinction. However, for species more widely distributed, the conservation of total genetic diversity of (that) species *in-situ* is difficult. Although species conserved in their natural habitats have the potential for continued evolution of a particular trait within the species and are subject to natural selection, there are indeed many problems in establishing this type of reserve, for example, cost, size and maintenance aspects, political and social issues and the danger of genetic wipe out as a result of natural disasters, fire, etc. In particular, this method of conservation is of significance to the wild relatives of crop plants and a number of other crops, especially tree crops and forest species where there are limitations on the effectiveness of *ex-situ* methods of conservation. The crops of immediate interest for *in-situ* conservation are the perennials that are vegetatively propagated and those with seeds that cannot survive cold storage. Wild species maintain their original characteristics best in the habitat to which they are adapted, which necessitates the formation of nature reserves in appropriate climatic, altitudinal and latitudinal zones.

The *ex-situ* form of conservation includes, in a broad sense, the botanic gardens and storage of seed or vegetative material in gene banks. The field gene banks where clonal materials are maintained as living collections in a field/orchard or plantation also represent *ex-situ* form of conservation. However, field gene banks have the potential risk of germplasm being lost due to disease, stress or disaster, and large amount of space and labour are required to maintain a small proportion of diversity. Cryogenic preservation of vegetative material is another mode of *ex-situ* conservation and it holds promise, especially for base collections.

Efforts to conserve genetic resources *ex-situ* in seed genebanks have accelerated in the past decade. In the genebank, the aim is to provide ideal storage conditions so that the mean viability period of the seeds is greatly extended by reducing the life processes to a low level. Successful seed storage depends on effective control of several factors including temperature, seed moisture content, storage atmosphere, etc. in response to storage conditions. Seeds within heterogeneous germplasm accessions frequently deteriorate at different rates thereby causing selection within the samples to favour genotypes more amenable to given storage conditions. The selection within the germplasm accession during seed conservation and subsequent regeneration has a strong influence on the genetic composition of an accession. This is one aspect of *ex-situ* conservation in genebanks that makes it desirable to ensure indefinite maintenance of some wild populations of most crops *in-situ*. *In-situ* conservation involves its own set of risks and difficulties but can function as an evolutionary insurance for long-term germplasm availability.

The choice of *in-situ* and *ex-situ* conservation is sometimes seen in terms of exclusive alternate strategies but the two alternatives may be more constructively viewed as mutually complementary activities and each can play an important part in safeguarding particular plant populations. It would be an ideal situation where both may be used to best advantage to ensure both long-term species survival and an adequate supply of germplasm for improvement of related crops.

Ex-situ conservation

Conservation of seed propagated plants is relatively easy for seeds with orthodox type of storage behaviour, i.e., the viability can be maintained by drying the seeds and storing these at low temperature. For orthodox or desiccation tolerant seeds, lower seed moisture content is associated with an increase in storage life of a sample within certain limits. Most

agri-horticultural crop plants have seeds that can tolerate desiccation. Many crops like cacao and rubber, most tropical fruits and many timber species have seeds with recalcitrant behaviour. These are desiccation sensitive and are generally killed if dried below a critical moisture content value, usually between 12 and 35 percent moisture. Research on physiology of desiccation sensitive seeds is very limited and many problems remain to be solved, especially on the effects of desiccation on the cell and the cause of damage and deterioration. The critical level of desiccation sensitivity in these recalcitrant seeds is also unclear and the effect of partial desiccation on seed viability may be worth consideration for storage. Recalcitrant seeds are relatively short lived (few weeks to months) even under high moisture conditions and require different storage techniques (Stanwood, 1985). *In-vitro* cultures and cryogenic preservation offer promising avenues to overcome the recalcitrant characteristics. However, the genetic stability of *in-vitro* cultures has yet to be fully ascertained before an entire collection is committed to this storage technique.

Concept of base and active collections

Currently, two main types of collections are held at most genetic resources conservation centers.

Base collection: It is held under conditions which retain viability for long periods of time. This component of the system has the sole purpose of acting as a conservation measure. This is not drawn upon except for viability testing and subsequent regeneration, is normally restricted in distribution, and acts as a back-up to an active collection. The IBPGR Seed Storage Committee established requirements for long-term storage in base collections as follows:

- i) Temperature of -10 to -20° C, generally -18° C has been specified arbitrarily as preferred standard because this storage environment is technically achievable at reasonable cost, whilst providing good storage conditions in which the loss in viability for all orthodox seeds occur extremely slowly.
- ii) Seed moisture content of 5 ± 1 percent (wb).
- iii) Hermetically sealed airtight containers.

Active collection: Accessions are stored for short to medium periods of time (generally up to 30 years) as is often the case for breeder's collections, for regeneration, evaluation, research and distribution to end users. Active collections are generally held at temperatures between 0 and 10° C. Storage conditions for active collections are often less stringent than for base collections for economic and practical reasons.

Under the same conditions of storage, the seeds of different species will have different periods of longevity. Thus, it is difficult to define precisely the period envisaged for active collections. The base and active collections are defined based on their functions of collections rather than on storage conditions. Centres may maintain both active and base collections, while others may be concerned exclusively with one type. The processing of germplasm accessions for active and base collections could be done in a similar manner. However, the type of storage containers in the two categories would be generally different. Also, the sample size of accessions in active collections is bigger than for base collections. At centers which maintain both types of collection, the two are linked by its documentation system.

Conservation needs: Physiological and allied requirements

Good quality seeds, i.e., high viability accessions of species with good storage characteristics, such as the cereals, forage legumes and low oil content grain legumes store satisfactorily for many years, if they are dried to about 5 percent moisture content and hermetically sealed and stored between 10 and -20° C. In addition to inherent seed-to-seed variation in any constant storage environment, the actual longevity can be affected by the genotype, various environmental factors that affect seed quality before storage (e.g. ripening, harvesting, drying and processing) and the conditions under which the seeds are stored. The genotype and pre-storage environment affect storage potential, and the storage conditions modify that potential. Within a species, difference in longevity among accessions, which may result from genotype and/or maternal and post-harvest environment, affect the relationship between storage period and percentage viability through their effect on initial quality. These effects on initial quality affect the absolute longevity of accessions but not the relative effects of temperature and moisture content on longevity.

Seed moisture content and storage temperature are the two primary factors that can be practically controlled. Relationship among seed moisture and longevity is logarithmic and varies significantly among species. The major difference in the sensitivity of different species to moisture content appears to be correlated with seed oil content.

Different approaches are required to control seed deterioration and reduce routine maintenance process, such as monitoring and re-growing of deteriorated samples. The absolute storage life for each seed lot under genebank conditions will depend on its initial viability when the seeds are placed in genebank. To retain the viability at high levels, the

seed samples should be dried in the field itself, even though this may often be impractical and difficult. In addition to drying it quickly, it is important to reduce the moisture content to a reasonably low level as small difference in moisture content can have large effects on longevity. The collections should be regularly despatched to less damaging conditions, such as controlled environment drying facility currently recommended by IBPGR. If too much time is spent between harvest and receipt at the seed bank, then loss of viability in the seed lot can be expected. In warm humid tropics, significant losses of viability can be expected relatively early. The increasing period between maturity and harvest will necessarily result in a greater accumulation of damage prior to harvest. Harvesting grain before it is ripe also reduces its longevity. The reduction in the initial viability will then be reflected in a reduced lifespan under constant storage conditions. Maximum longevity is achieved by harvesting as soon as possible after physiological maturity. Even minute drop in viability can have large effect on potential longevity. Seeds should be placed as soon as possible in a cool low humidity environment in order to further arrest viability loss till they are processed for final storage in genebank. The collector/potential donor must care for the following guidelines while sending the material to the genebank for storage:

- a) Cleaned seeds are preferred over inflorescences or unthreshed material still covered with floral structures like hull or glumes.
- b) Accessions should contain at least 4000 seeds for long-term storage but ideally 12,000 seeds are required, especially for heterogeneous materials, to fully represent the variation in the original sample and to allow sufficient seeds for viability monitoring during storage and subsequent regeneration. Norms/standards on seed numbers for wild species need to be established.
- c) Seed/inflorescence after harvest should be dried (not using heated air driers) to around 10-12 percent moisture content and then packed for transport to genebank.
- d) Material is not to be treated with chemicals.
- e) A duplicate set of accessions, well documented, must be provided to an alternate centre.
- f) The passport and characterization data must accompany each accession.

Drying, which is beneficial to the maintenance of viability, involves forced ventilation of seed lots with air at low temperature. Optimally, these conditions should be 15° C and 15 percent relative humidity. Use of 15° C and 15 percent RH is a compromise between cost of operating, drying facility, rate of drying and loss in viability. The drying method used and the environmental conditions prevailing during desiccation affect seed longevity even in

orthodox species, and the effect is critical in species with desiccation sensitive seeds. Below the critical moisture content, the loss of viability is more fully understood, being an integration of moisture content, temperature and time according to the viability equations of Roberts.

Genebank managers should set regeneration standards for each crop species. Essentially, the level of viability chosen will be a compromise between the risk of valuable gene loss and the effect of ageing on the physiological performance of surviving seeds against the high cost and difficulties of regeneration. Potential genetic shift through environment, pest and disease pressures during regrowth have been known to result in a change of the original gene content. Preliminary findings stress that it is the integrity of the genetic complement of an accession that should be conserved rather than its component genes. In view of the value and importance of the material held in genebank, a standard of 85 percent viability for regeneration level for all species has been recommended to encourage good quality seeds. However, it is noted that a number of wild species, forestry and vegetable species, e.g., lettuce, cucumber, fenugreek, bottlegourd and others have characteristically low viability. Setting an 85 percent regeneration standard may appear highly optimistic for these species. In general, the regeneration standard should be set on a crop to crop basis and according to the characters of a particular species, and should be as high as practicable.

There is a need for establishing better procedures for monitoring the viability of the material in store and for appropriate regeneration methods, especially for wild species and other difficult materials for maintenance of allelic frequencies and genetic integrity during multiplication. Recent research has indicated that sequential germination tests are as reliable as fixed sample size test, while at the same time requiring considerably fewer seeds to determine when seed regeneration should take place.

There is increasing global awareness of the need for conserving genetic resources of plants for their current use and for posterity. This has led to the development of a network of plant genetic resources centers. In India, these activities are coordinated by the genebank at the National Bureau of Plant Genetic Resources. In the light of above developments, the principles and procedures of *ex-situ* conservation of orthodox seeds as active and base collections in the genebank are discussed. Emphasis is laid on genebank management to regulate and coordinate the activities involved in conservation of germplasm resources and dissemination of this information for the user scientists.

3.6 Fauna and their habitats:

Nayagarh Division due to its proximity to River Mahanadi and Baisipali Sanctuary is rich in Fauna both terrestrial, Avifauna and fish fauna. At present Tiger, Leopard, Striped hyena, Wild dog, Indian Wolf, Fox, Sloth bear, Sambar, Civet Cat, Fishing cat, Leopard cat, Chousingha, Chital, Flying Squirrel, Wild boar, Gaur migratory population of Elephants, Gharial and Mugger crocodile in the Mahanadi River, monitor lizard, tortoises, king cobra, pythons and other snakes, hornbills, Hill mynas, Brahamany ducks and different varieties of both resident and migratory birds are observed.

3.6.1 Important Habitats of Nayagarh Division:

A) Mahanadi Elephant Reserve:

Elephant (*Elephas maximus*) being the largest terrestrial mammal requires large areas, and hence, is usually one of the first species to suffer the consequences of habitat fragmentation and destruction. The Elephant Reserves offers hope to rejuvenate some of the fragmented habitats. In the state of Odisha, where many forest habitats are shared by the tiger and elephant, the establishments of ERs have raised the hope to unify fragmented tiger habitats as well.

Three Elephant Reserves (ERs) namely, Mayurbhanj ER, Mahanadi ER and Sambalpur ER, have been notified by the State of Odisha to conserve prime elephant habitats and launch various management interventions. The extent of notified and proposed forest blocks in these three reserves is 4129 sq. km, and the geographical area covered by these three reserves is 8509 sq. km. with an objectives

- (a) To include most of the remaining important elephant habitats within ERs,
- (b) To redress the problem of rising number of cases of elephant depredation and
- (c) To reverse the trend of habitat fragmentation and degradation, it is proposed to expand the area of Mahanadi and Sambalpur ERs, and constitute two new ERs called the Brahmani-Baitarani ER and the South Odisha ER

Mahanadi Elephant Reserve (Constituted: June, 2002)

Location

Districts	: Angul, Cuttack, Nayagarh, Kondhmal, Dhenkanal
Forest Division	: Portions of Angul, Athagarh, Cuttack, Nayagarh, Boudh and Dhenkanal, and entire Satkosia Wildlife Division, Mahanadi Wildlife Division and Athamallik

	Forest Division.
Latitude North	: 20° 10' to 21° 5'
Longitude East	: 84° 15' to 85° 58'
Area	: 1038.30 sq km

Nayagarh Division partly comes within Mahanadi Elephant Reserve. Elephant Reserve notification is at **Annexure- V**.

B) Eco Sensitive Zone of Satkosia Tiger Reserve:

Satkosia spreads along the magnificent gorge over the mighty river Mahanadi in Odisha. Established in 1976 as a wildlife sanctuary, Satkosia is a paradise of immense scenic charm. It is one of the best ecosystems in the country, representing a diverse floral and faunal extravaganza. The name Satkosia originates from two words; sat meaning seven and kos meaning two miles, indicating the length of the gorge as 14 miles or 22 km. The area was declared as Satkosia Tiger Reserve in 2007, comprising two adjoining wildlife sanctuaries; the Satkosia Gorge sanctuary and Baisipalli sanctuary. The Reserve is spread over 4 districts like; Angul, Cuttack, **Nayagarh** and Boudh. The reserve has an area of 963.87sq km with 523.61sq km as core area. The area is also a part of the Mahanadi elephant reserve. Satkosia is the meeting point of two bio-geographic regions of India; the Deccan Peninsula and the Eastern Ghats, contributing immense biodiversity. About 530.00 Sq.kms. area of the Satkosia Tiger Reserve comes under Satkosia Wildlife Division and rest of the area comes under Mahanadi Wildlife Division. The Eco sensitive zone has not been declared specifically. As per standered practice area coming within 10 km radius from the periphery of the sanctuary is considered as ESZ on default.

Flora

The magnificent Hinjala, Dhauranja, Kochila , Arjuna and Phasi forests on the banks of river Mahanadi are typical elements of riverine forests. The floral diversity comprises mainly Shorea robusta, Dillenia pentagyna, Bridelia squamosa, Terminalia alata, Terminalia arjuna, Syzygium cuminii, Adina cordifolia (Haldinia cordifolia), Mitragyna parviflora, Lagerstroemia parviflora, Mangifera indica, Bursera serrata, Pterocarpus marsupium, Terminalia bellerica, Anthocephalus cadamba, Bombax ceiba, Gmelina arborea, Garuga piñnata. Suzygium cuminii, Miliusa velutina, Polyalthia cerasioides, Lannea coromandelica, Pterospermum xylocarpum, Macaranga peltata, Diospyrus Montana, Derris indica, Mallotus philippensis, Careya arborea, Glochidion lanceolarium. Bamboo brakes consisting of two species of

bamboo, namely Bambusa arundinaceae and Dendrocalamus strictus are common to this Tiger reserve.

Fauna

The fauna includes Elephant, Tiger, Wild Dog, Sambar, Spotted Deer, Chousingha, Barking Deer, Mouse deer, Sloth bear, Indian gaur, Leopard, Jackal, Giant Squirrel, Indian porcupine, Indian hare, Ratel etc. The Gorge also has turtles, terrapins, carps, molluscs besides other aquatic life forms and amphibians. 332 species of birds have been documented inside the Tiger Reserve. The avifauna is rich and varied with both resident and migratory birds. The resident birds include the Malabar Pied Hornbills, Pea fowls, Kingfishers, Egrets, Cormorants, River terns, Owls, Pigeons, Hill myna, Parakeets, Drongo, Doves, Wood pecker, Golden oriole, Babblers, Barbets, Minivets, Sun birds, Eagle, Crow pheasants, Shaheen Falcon, Yellow legged bottom quail, Malabar trogon, Great stone plover, Black-bellied tern, River lapwing, blue tail bee-eater etc. The migratory birds include Brahminy ducks, Bar-headed geese, Pintails, Indian skimmer etc. 136 species of rare and endangered birds including butter flies are very common. The Satkosia Gorge of River Mahanadi inside the Tiger Reserve harbours a large population of varied fishes and aquatic fauna contributing housing of 4 species of endangered Turtles. Tiger Reserve Notification is at **Annexure-VI**.

The Eco Sensitive Zone of Tiger Reserve / Sanctuary has not yet been declared. On default, area coming within 10 km radius from the boundary of Sanctuary / Tiger Reserve is considered as Eco Sensitive Zone. Though the Sanctuary / Tiger Reserve is outside the Division but its ESZ area is within the Division. The ESZ area comes within Nayagarh Division

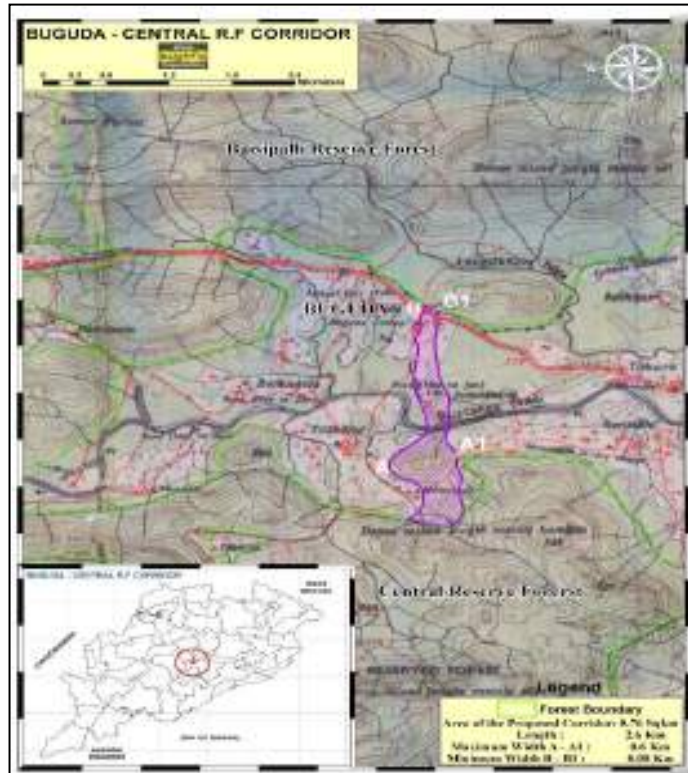
C) Elephant Corridor:

There is one Elephant Corridor namely Buguda-Central Reserve Forest Corridor. This has been identified by ORSAC and has been accepted though it has not yet been notified by the State Government.

Sl.No.	Name of the Corridor	Extends over Districts	Name of the Divisions	Length of corridor(km)	Width of corridor(km)	Total area (Sq.km)
9	Buguda-Central RF of Nayagarh Divn	Nayagarh	Nayagarh	2.6	0.8 - 0.6	0.76

This corridor connects Baisipali WLS with North Ghumsar Forest Division through Central Reserve Forest of Nayagarh Forest Division. The corridor comprises of teak plantation,

revenue lands, private lands, river, National Highway-57, college and human settlements. Existence of Buguda Colony, college and highway passing through the corridor are threats to the elephant movement through the corridor. Soil erosion further leads to fragmentation of the corridor.



Threats to this corridor:

1. **National Highway:** National highway-57 connecting Nayagarh to Boudh district bisects the corridor near Buguda colony. Vehicular traffic on the road remains round the clock.
2. **College:** A private collage (Maninaga Bahumukhi College) has been established since 1994. Due to the establishment of college, subsequent expansion of shops, hotels and other structures spreading along the highway and obstructing the corridor has affected elephant movement.
3. **Human settlements:** Human settlements and agriculture fields are present within the corridor.
4. **Solar fencing:** In order to mitigate human-wildlife conflict and to provide safe passage to elephants, Forest Department has erected solar fence. The solar fencing has become a barrier to elephants using the corridor rather than providing safe passage.

5. **Soil erosion** Rain water flowing from the Baisipali WLS has eroded soil forming deep pit of more than 15 ft along the highway in the corridor hindering elephant movement.
6. **Brutanga Irrigation Project** on the Brutanga River (a tributary of river the Mahanadi) has been approved and irrigation canal will pass through the corridor. Construction of irrigation canal through the corridor will affect corridor usage.
7. **Khurdha – Balangir New BG Rail Line:** Khurdha – Balangir New BG Line is under consideration and partly commission from both the end.

Socio – economic details

There are five villages in and around the corridor. Of the five villages, Buguda colony comprising around 41 families comes very close to the corridor and situated on the south of the National Highway. Most of the villagers of the five villages are farmers and depend upon the forest patches for their daily need.

Corridor dependent villages:

Buguda Colony (41 Family), Buguda (67 family), Jhintikabari (40 family), Mitukuli (45 family), Tilabadi (60 family)

D) Kuaria Deer Park:

There is a deer Park at Kuanria. The land on which this Deer Park is situated belongs to Nayagarh Division but the management of Deer Park is vested with Divisional Forest Officer, Mahanadi Wildlife Division.

3.6.2 Elephant Census Result:

Elephant Census has been carried out during 2012, 2015 and 2017. The Elephant Population recorded in Nayagarh Division is furnished at Table No 3.6.

Table No 3.6 Elephant Census in Nayagarh Division						
Name of Division	Male	Female	Unknown	Young	Total	Male : Female
Nayagarh						
2012	2	2	0	1	5	1:01
2015	2	11	1	3	17	01:05.5
2017	2	6	0	6	14	1:03

3.6.3 Tiger Census:

Tiger census has been carried out during 2016. As per the census data there are Leopards / RBT in the forests as follows.

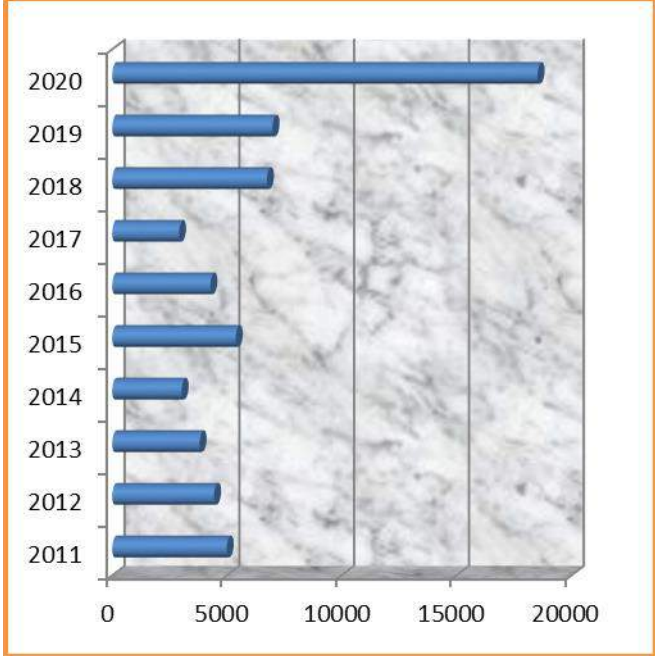
Table No 3.7 Tiger Census data					
Name of Division	RBT	Leopard			
		Male	Female	Calf	Total
Nayagarh	0	1	0	0	0

3.6.4 Winter Birds Census:

The winter birds Census is being carried out in 2nd week or January in the State / Division every year. The objectives of Winter Birds Census are as follows.

- To study distribution, numbers and habitats of winter birds,
- To study their population changes during the winter, between successive years and in the long term
- The factors responsible for fluctuations in annual occurrences, winter mortality and long term population changes.

Birds Census data for different years is given at **Table No-3.8.**

Table No 3.8 Estimated / Census of Animals			
Year	Name of Species enumerated	Estimated Population	
2011	Birds Census	4984	
2012		4434	
2013		3803	
2014		3023	
2015		5379	
2016		4275	
2017		2910	
2018		6737	
2019		6980	
2020		18527	

The winter birds Census for the year 2020 in detail is at **Annexure-VII**. It may be seen that the birds' population / congregation is very much fluctuating.

3.6.5 Elephant Movement Path

Besides the Elephant Corridor as stated above, Elephant Movement is experienced in many routes. These have been named as **"Hati Chala Patha"**. The routes identified by field staff is furnished at **Table No 3.9** below.

Table No:3.9 Elephant movement.			
Movement Path No	Passage (movement & Direction)	Frequency of Movement	Remark (Probable Herd Size)
DSAPALLA RANGE			
Path - 1	Ghumusara (N) Dvn Ambajhari RF C/17 18– Chadeyapalli C/4 - Central RF – C/12, C/11, C/10, C/4, C/7- Langalakhola – Baisipalli RF Mahanadi (WL) Dvn	Frequent	07-08
Path - 2	Gunduribadi RF – Pokharigochha RF C/1- Central RF C/13, C/11, C/10, C/8, C/4, C/5, C/7 - Langalakhola – Baisipalli RF Mahanadi (WL) Dvn	Frequent	07-08
Path - 3	Gunduribadi RF – Pokharigochha RF C/2, C/4, C/5, C/ 6, C/7, - Kuanria Dam (Occasionally)	Occasional	06-05
Path - 4	Ragadimada RF – Takuda – Dugudi , Bateni – Poibadi RF	Frequent	07-08
Path - 5	Mahitama- Baunsia – Patangi – Puruna Daspalla	Frequent	07-08
Path -6	Ghogada RF - Pokharigochha RF C/2, Ganja - Pokharigochha RF C/4, C/5, C/ 6, C/7, - Kuanria Dam	Occasional	06-05
MAHIPUR RANGE			
Path – 7	Palva RF – Ranigadia – Peteichandi – Sulia RF	Occasional	05-04
Path – 8	Palva RF – Luni Village – Badibari Village – Ghogada RF	Frequent	06-07
Path – 9	Palva RF – Luni Village – KandhaKhalamada	Frequent	06-07
Path - 10	Palva RF – Hiradei Sacred grove – Bhagabati DPF – Ragadimada RF – Durungi – Badibari – Ghogada RF	Frequent	06-07

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Path - 11	Gayaganda – Kusumagadia – Kaliamba – Muthagadia – Durungi – Badibari – Ghogada	Occasional	05-04
Path – 12	Gayaganda – Kusumagadia – Dahisahi – Salapadiha Road (Crosses)	Occasional	05-04
ODAGAON RANGE			
Path - 13	Jagannath RF – Dhaditaila – Odakapa – Kendubania – Makarapalli	Frequent	06-07
Path – 14	Lundurupadara – Kantiamba – Naragadu – Badatamunadu (Mahipur) – Makarapalli	Frequent	06-07
Path - 15	Kiriamba RF – Gochha c/3 – c/1 – c/2 – c/18 – c/6 – c/7 – c/8 Rajini RF (KhordhaDvn.)	Occasional	05-06
PANCHIRIDA RANGE			
Path -15	Mala RF – Gochha C/8, C/9 – Banijhari PRF – Gochha C/13, C/14	Occasional	04-05
Path -16	Mala RF – Gochha C/9, C/10, C/11, C/14	Occasional	04-05
Path -17	Mala RF – Gochha C/15, Patharaganda RF C/2	Occasional	04-05
GANIA RANGE			
Path -18	Baisipalli RF – Chorakhola – Kusanga Range	Occasional	13-14
Path -19	Baisipalli RF – Chorakhola – Chhamundia Range	Occasional	13-14

3.6.5.1 Old plantations found in Elephant corridor-

Old plantations found in Elephant Corridor of Nayagarh Division

SI No	Year of Plantation	Scheme of Plantation	Area in Ha.	Plantation Module
1	2013-14	Fodder Plantation	10.0	Block Plantation
2	2014-15	Fodder Plantation	5.0	Block Plantation
3	2015-16	Economic Plantation	20.0	Block Plantation
4	2015-16	NAP-FDA	100.0	ANR with Gap Plantation

Description of Flagship wild species:

3.6.6 Other Fauna observed:

i) Bear:

It is a medium size animal with long coarse hairs. Limbs have 5 clawed digits; tail short and it can climb trees. Bear is partly carnivorous; also feed on fruits, honey and insects. Mahua flower is liked by Bear. It can walk upright on hind legs and can be tamed. It is found in maximum number of forest blocks included in the present revision. It is a peace loving animal but become violent when hungry or under attack.

ii) Spotted Deer:

The chital (spotted deer) is the most beautiful of all deer. Its coat is bright rufous-fawn profusely spotted with white at all ages and in all seasons. Old bucks are brownish in colour and darker. It is seen in herds of 10 to 30 numbers or even more which may contain 2 or 3 stags, found in valley & plains preferably in meadows along the perennial nalahs flowing in this tract. It attains a height of about 1 mt. Only male has branchy horns. Their number is gradually decreasing. Some times seen in Dechuan RF, Saraidamak- Budharaja RF

iii) Rabbit:

This animal is about 40 cm in length & 1 kg in weight and is found in almost all peripheral forests in this zone. Its body is covered with fur & hairs. It varies in colour like pure white, black or mixed. Having hind limbs longer makes it powerful for running & jumping. It has a pair of large movable pinnate ears & a short bushy tail. It feeds mainly on grass. Found in all forest blocks, bushy forests and grass land nearby.

iv) Monkey / Languor's:

The common monkey found in this area has a black face with silvery grey colour of the body. Two types of monkeys are seen in this area, the hanuman languor and the red faced monkey (macaque). Hind limbs are longer than fore limbs. Females live in herd headed by one strong male. The red faced monkey is of smaller size with short tail. Males & females irrespective in number live in herds. Some time a strong single male has seen along. They are plenty seen at various places of worship and important public places.

v) **Fishing Cat:**

It is a fierce beast smaller than a Leopard but capable of mauling one in a fight. They live in forests adjacent to riverbanks and water bodies & hunt fish, crab, frog, birds, insects & some time others infant mammals. Its specialty is to get on to rocks overhanging water & sweep at fish with its paw as they swim by.

vi) **Civet Cat:**

It is a nocturnal cat like animal of forests having a long tail. A small flesh eating animal valued for its fatty substances with strong scent from its pouches close to the tail. It is used in making several kinds of perfumes.

vii) **Jungle Cat:**

The **jungle cat** (*Felis chaus*), also called **reed cat** and **swamp cat**, is a medium-sized cat native to all forests of this division. It inhabits foremost wetlands like swamps, littoral and riparian areas with dense vegetation. It is listed as Least Concern on the IUCN Red List, and is mainly threatened by destruction of wetlands, trapping and poisoning.

The jungle cat has a uniformly sandy, reddish-brown or grey fur without spots; melanistic and albino individuals are also known. It is solitary in nature, except during the mating season and mother-kitten families. Adults maintain territories by urine spraying and scent marking. Its preferred prey is small mammals and birds. It hunts by stalking its prey, followed by a sprint or a leap; the ears help in pinpointing the location of prey. Both sexes become sexually mature by the time they are one year old; females enter oestrus from January to March. Mating behaviour is similar to that in the domestic cat: the male pursues the female in oestrus, seizes her by the nape of her neck and mounts her. Gestation lasts nearly two months. Births take place between December and June, though this might vary geographically. Kittens begin to catch their own prey at around six months and leave the mother after eight or nine months.

viii) **Jackal -**

Jackals are medium-sized omnivorous mammals of the genus *Canis*, which also includes wolves, coyotes and the domestic dog. While the word "jackal" has historically been used for many small canids, in modern use it most commonly refers to three species: the closely related black-backed jackal and side-striped jackal of sub-Saharan Africa, and the golden jackal of south-central Eurasia, which is more closely related to other members of the genus *Canis*.

Jackals are opportunistic omnivores, predators of small to medium-sized animals and proficient scavengers. Their long legs and curved canine teeth are adapted for hunting small mammals, birds, and reptiles, and their large feet and fused leg bones give them a physique well-suited for long-distance running, capable of maintaining speeds of 16 km/h (9.9 mph) for extended periods of time. Jackals are crepuscular, most active at dawn and dusk.

Their most common social unit is a monogamous pair, which defends its territory from other pairs by vigorously chasing intruding rivals and marking landmarks around the territory with their urine and feces. The territory may be large enough to hold some young adults, which stay with their parents until they establish their own territories. Jackals may occasionally assemble in small packs, for example, to scavenge a carcass, but they normally hunt either alone or in pairs.

ix) Fox:

Foxes are small-to-medium-sized, omnivorous mammals belonging to several genera of the family Canidae. Foxes have a flattened skull, upright triangular ears, a pointed, slightly upturned snout, and a long bushy tail (or *brush*). By far the most common and widespread species of fox is the red fox (*Vulpes vulpes*) with about 47 recognized subspecies. The global distribution of foxes, together with their widespread reputation for cunning, has contributed to their prominence in popular culture and folklore in many societies around the world.

x) Hyena:

Hyenas or **hyaenas** are any feliform carnivoran mammals of the family **Hyaenidae**. With only four extant species (in three genera), it is the fifth-smallest biological family in the Carnivora, and one of the smallest in the class Mammalia. Despite their low diversity, hyenas are unique and vital components of fauna and found in most of the forests. Although phylogenetically they are closer to felines and viverrids, and belong to the feliform category, hyenas are behaviourally and morphologically similar to canines in several elements of convergent evolution; both hyenas and canines are non-arboreal, cursorial hunters that catch prey with their teeth rather than claws. Both eat food quickly and may store it, and their calloused feet with large, blunt, nonretractable claws are adapted for running and making sharp turns. However, the hyenas' grooming, scent marking, defecating habits, mating and parental behaviour are consistent with the behaviour of other feliforms.

xi) **Sambar:**

The **sambar** (*Rusa unicolor*) is a large deer native to the Indian subcontinent is listed as Vulnerable on the IUCN Red List since 2008. Populations have declined substantially due to severe hunting, insurgency, and industrial exploitation of habitat. The appearance and the size of sambar vary widely across their range. They attain a height of 102 to 160 cm (40 to 63") at the shoulder and may weigh as much as 100 to 350 kg. Head and body length varies from 1.62 to 2.7 m (5.3 to 8.9 ft). Females are smaller than males. The shaggy coat can be from yellowish brown to dark grey in colour, and while it is usually uniform in colour, some subspecies have chestnut marks on the rump and underparts. Sambar also has a small but dense mane, which tends to be more prominent in males. The tail is relatively long for deer, and is generally black above with a whitish underside.

xii) **Barking Deer:**

The **Indian muntjac** (*Muntiacus muntjak*), also called **barking deer**, is a deer species native to forests of this division. This muntjac has soft, short, brownish or greyish hair, sometimes with creamy markings. It is among the smallest deer species. It is an omnivore and eats grass, fruit, shoots, seeds, bird eggs and small animals, and occasionally scavenges on carrion. Its calls sound like barking, often when frightened by a predator and hence the common name "barking deer". Males have canines, short antlers that usually branch just once near the base, and a large postorbital scent gland used to mark territories. The Indian muntjac has a short but very soft, thick, dense coat that is denser in cooler regions. The face of the muntjac is darker and the limbs are dark to reddish brown and the coat color seasonally varies from darker brown to yellowish and grayish brown and is white ventally. Their ears have much less hair but otherwise are the same color as the rest of the head. Male muntjacs have short antlers, about 10 cm (3-4 inches) long that protrude from long body hair-covered pedicels above the eyes. Females have tufts of fur and small bony knobs instead of antlers. Males also have elongated (2 – 4 cm), slightly curved, upper canines. These canines can be used in male-male conflicts and inflict serious injury. The body length of muntjacs varies from 89–135 cm and height ranges from 40 – 65 cm. The muntjacs, unique among the deer, have large, obvious facial (pre-orbital, in front of the eyes) scent glands used to mark territories or females. Males have larger glands than females.

xiii) Wild Boar:

The **wild boar** (*Sus scrofa*) is a suid native to all forests mostly moist one. Human intervention has spread its distribution further, making the species one of the widest-ranging mammals in the world. Its wide range, high numbers, and adaptability mean that it is classed as least concern by the IUCN and it has become an invasive species in part of its introduced range. The wild boar is a bulky, massively built suid with short and relatively thin legs. The trunk is short and massive, while the hindquarters are comparatively underdeveloped. The region behind the shoulder blades rises into a hump, and the neck is short and thick, to the point of being nearly immobile. The animal's head is very large, taking up to one third of the body's entire length. The wild boar inhabits a diverse array of habitats. The main habitats favored by boars in India are deciduous and mixed forests. Wild boar damages paddy field.

xiv) Squirrel:

It has elongated body covered with fur and has 5 long stripes of dark colour on its back. Its tail is long & bushy. The eyes and ears are large. It is an arboreal, active climber & nests on trees. It feeds on fruits, seeds & nuts.

xv) Rat :

Rats are found in forest areas nearer to villages. They are prolific breeders. They can give birth about 10 to 15 young ones at a time. They are burrowing animals & omnivorous. They have consistently growing teeth for which they bite wood, concrete & rocky soil. They can survive without water for a longer period.

xvi) Mongoose:

Its body is elongated and covered with yellowish gray fur. The head is long with pointed snout eyes, small pinnate ears and a long tail. Limbs have 5 digits with claws. It can fight and kill the snakes and feeds on their blood. It is believed that it is an auspicious creature as per Hindu mythology.

xvii) Pangolin:

They are noticed in dense forests. They are about 5 ft long and their head, body and tail are covered with round horny scales. Its head is small with short pointed snout, eyes and small pinnate ears. Its limbs are strong with 5-clawed digits to dig anthills. It is a tree climber and can roll into ball on feeling danger for self-defense.

xviii) **Bat:**

Bats live in clusters of hundreds. Its body is covered with soft fur. It has short snout, large pinnate ears and small eyes with poor vision and concealed tail. In fore limbs, only toe is clawed and hind limbs have 5-clawed digits. They produce ultra-sonic sound wave for flight.

xix) **Otter:**

It is seen near water bodies and forest streams & nalahs. Its body is slender, neck short, tail flattened, small pinnate ears, and claws non-retractile. It is semi-aquatic with short and dense oily furs and webbed digits in both limbs for which it moves faster inside water. It feeds on fish, crabs and frogs.

3.6.7 Birds:

i. Terrestrial Birds:

The terrestrial birds found in the Division can be broadly grouped into three groups, such as High, Medium & Low, depending on their numbers. The following birds named as Common myna, Jungle fowl, Hornbill, Sparrow, Raven myna, Cuckoo, Black drongo, Crow, Hornbill, Red crow, King fisher, Owl, Pigeon, Parrot, Dove, Nightingale & Heron are seen in maximum number in this locality. These birds are included in High group.

The following birds such as Weaverbird, Falcon, Kite, Sandpiper, Chat, and Woodpecker & Hawk are seen in medium numbers in this area. These birds are included in Medium group.

The following birds such as Blue jay, Black bee, Swiftly, Grey crane, Golden oriole, Gander and Brahmin kite are seen in very few numbers in this locality. These birds are included in Lower group.

ii. Aquatic Birds:

The following aquatic birds such as Little cormorant, Graylag goose and Water fowl are seen in this area. Due to Kuaniria Project, Mahanadi River migratory birds also visit the division.

3.6.8 Fish Fauna:

On fish fauna of River Mahanadi was carried out on “Fish diversity of Mahanadi River (Odisha Part), threats and conservation measures, P.G. Department of Zoology, Utkal University, Bhubaneswar, Odisha, Central Institute of Freshwater Aquaculture, Indian Council of Agricultural Research, Kausalyaganga, Bhubaneswar, Odisha. Their observation is reproduced below.

The stretch of the Mahanadi River under the present study was divided into seven study regions for the purpose of sample collection to assess the fish diversity. The sampling sites on the stretch of the Mahanadi River were between upstream in Sambalpur and downstream in Jagatsinghpur in the State of Odisha. Site selections were based on the locality where the fishers’ community are residing and actively participating in the fishing activity. Standard procedure and methods were followed during sampling and data collection and data analysis. The study recorded 57 fish species belonging to 36 genera, 19 families and 7 orders from the seven regions along the stretch of the Mahanadi River. The analysis of compilation of the samples in the study further revealed that Cyprinidae was the most abundant family contributing 35% of the total species belonging to different families recorded from study region. It is observed from the pattern of distribution of species that the higher species richness is found in the regions where water dams, barrages or reservoirs are formed. Fish species like *Parambassis lala* (Ham.), *Parambassis ranga* (Ham.), *Chanda nama* (Ham.), *Amblypharyngodon mola* (Ham.), *Danio devario* (HamBuch.), *Osteobrama cotio* (Ham.), *Puntius sophore* (Ham.), *Puntius ticto* (Ham.), *Rasbora daniconius* (Ham.), *Glossogobius giuris* (Ham.) and *Notopterus notopterus* (Pallas) etc. documented good abundance in the study regions. The threat status of these species suggested that at least 26 % of fish fauna is threatened either being by Vulnerable or Near Threatened. There is a need to adopt requisite biodiversity conservation measures to protect the fish diversity of the Mahanadi river in order to conserve the nature’s creation.

3.6.9 Worms & Insects:

The common worms and insects noticed in this Division are Cockroach, White ant, Dragon fly, Mole cricket, Tree ant, Back bee, Beetle, Glow worm, Grasshopper, Spider, Wasp, Honey bee, Slug etc.

3.6.10 Probability of Sighting animals:

Table No 3. 10 Important Forest Blocks & probability of Sighting of animals						
SI No	Animals / Birds	Forest Block.	Probability of Sighting / Abundance			
			<20%	20% to <40%	40% to <60%	60% and above
Nayagarh Range						
1	Barking Deer, Sambar	Sulia RF	-	-	Barking Deer, Wild Boar	-
2	-	Rukhi RF	-	-	Barking Deer, Wild Boar	-
3	Wild Boar	Balaram RF	-	-	Barking Deer, Wild Boar	-
4	Barking Deer, Wild Boar	Patharkata RF	-	-	Barking Deer, Wild Boar	-
Daspalla Range						
5	Barking Deer, Sloth Deer, Wild Boar, Spotted Deer, Leopard	Pokharigochha RF	Leopard, Spotted Deer	Sloth Bear	Barking Deer	-
6	Leopard, Jungle Cat, Spotted Deer, Barking Deer, Mouse	Central RF	Leopard, Spotted Deer	-	Barking Deer	Jungle Cat, Mouse
7	Elephant, Leopard, Hyana, Deer, Bison, Barking Deer	Chadiapalli RF	Elephant (Migratory), Leopard	Hyna, Deer, Bison	Barking Deer	-
8	Leopard, Hyana, Deer, Barking Deer, Wild Boar, Spotted Deer	Nuagaon RF	Leopard, Spotted Deer	Hyana	Barking Deer, Wild Boar	Deer
9	Leopard, Hyana, Deer, Barking Deer, Wild Boar	Nasaghar RF	Leopard	Hyana	Barking Deer, Wild Boar	Deer
10	Leopard, Hyana, Deer, Barking Deer, Wild Boar	Ambalimba RF	Leopard	Hyana	Deer	Barking Deer

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11	Rabbit, Monkey, Jackle, Wild Boar	Khaman P.R.F		Jackle	Monkey, Wild Boar	Rabbit
12	Rabbit, Monkey, Langoor, Wild Boar	Baisipalli Extn. I, II, III. P.R.F.	Langoor	Wild Boar	Monkey	Rabbit
13	Monkey, Jackle, Wild Boar, Spotted Deer, Hyana	Sirisabadi D.P.F.	-	Jackle, Spotted Deer, Hyana	Wild Boar	Monkey
14	Barking Deer, Wild Boar, Leopard	Sikharapanga D.P.F.	Leopard	Sambar	Barking Deer, Wild Boar	-
Mahipur Range						
15	Elephant (Migratory), Bear, Wild Boar, Spotted Deer, Barking Deer, Peacock, Hyana	Hatimunda RF	Peacock, Mongoose	Spotted Deer	Wild Boar, Barking Deer	-
16	Peacock, Mongoose, Wild Boar, Spotted Deer, Barking Deer	Ratadei RF	Elephant (Migratory), Bear, Peacock	Spotted Deer, Barking Deer	Hyana, Wild Bear	-
17	Elephant (Migratory), Spotted Deer, Barking Deer, Bear, Peacock, Wild Boar	Palva RF	Elephant (Migratory), Peacock	Spotted Deer, Barking Deer	Bear	Wild Boar
19	Barking Deer, Hyana, Wild Boar, Spotted Deer, Porcupine	Ragadimada RF	Percupine	Barking Deer, Hyana, Spotted Deer	Wild Boar	-
20	Jackal, Rabbit, Mongoose, Wild Boar	Bhagabati D.P.F.		Jackal, Mongoose	Rabbit, Wild Boar	-
Odagaon Range						
21	Elephant (Migratory), Bear, Spotted Deer, Barking Deer, Sambar, Bison, Rabbit, Peacock	Gochha RF	Elephant (Migratory), Sambar, Bison	Bear, Spotted Deer, Barking Deer	Rabbit, Wild Boar	Parcupine

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22	Fox, Mongoose, Jungle Fowl, Wild Boar, Spotted Deer	Gayalsingh RF	Jungle Fowl	Wild Boar	Spotted Deer	Fox, Mongoose
23	Gendalia (Stork), Spotted Deer, Black Buck, Peacock, Fox, Langoor	Balisinsa-Badhulipur RF	Black Buck	Peacock, Langoor	Spotted Deer	Stork
24	Monkey, Rabbit, Wild Boar, Black Buck, Peacock	Makarapalli P.R.F	-	-	Black Buck, Peacock	Monkey, Rabbit
Gania Range						
25	Mongoose, Rabbit, Hyena, Wild Boar, Barking Deer	Bankamunda RF	Hyena	Rabbit	Wild Boar, Barking Deer	Mongoose
26	Spotted Deer, Deer, Python, King Cobra, Wild Boar	Manibhadra RF	Python, King Cobra	Spotted Deer	Deer	Wild Boar
27	Barking Deer, Wild Boar, Bear, Hyna	Sapua RF	Hyena	Barking Deer, Bear	Wild Boar	-
28	Barking Deer, Wild Boar, Bear, Cobra, Jackle	Dengabahada RF	Hyena Cobra	Barking Deer, Bear	Jackle	Wild Boar
Panchirida Range						
29	Wild Boar, Langoor, Jackle, Fox, Mongoose, Rabbit	Patharganda RF	Rabbit	Langoor	Wild Bora, Jackle, Fox	-
30	Rabbit, Wild Boar, Fox, Monkey	Sukarmala P.R.F.	Rabbit	-	Fox, Monkey	Wild Boar
31	Barking Deer, Leopard, Hyna, Wild boar, Deer	Ambamundia P.R.F.	Leopard	Hyna Wild Boar	Deer	Barking Deer

3.7 Threats and Challenges to wildlife:

The wildlife is facing greater challenge due to

- (i) Fragmentation of Habitat due to construction / widening of Roads, Transmission lines.
- (ii) Depletion of tree cover / Forest crop density.
- (iii) Scarcity of Water in interior & high altitude Forests in summer.
- (iv) Depletion of Food stock and deterioration of quality Food / Fodder.
- (v) Depletion of Prey base / herbivorous.
- (vi) Annual Fire and loss of Ground Flora.
- (vii) Heavy biotic interference and intrusion by domestic animals (Cattle/ Goat/ Sheep)
- (viii) Illegal hunting by putting nets, electric live wire, etc.

3.7.1 Fragmentation of Habitat due to construction / widening of Roads, Transmission lines.

According to the National Transport Development Policy Committee, the demand for road based transport services has dramatically accelerated following economic liberalization, and has provided for as much as 90% of the total passenger traffic, leaving a meager 10% for rail. Rail and road freight traffic is expected to grow at about 12% and 8% per annum respectively, to achieve a 50% share each in the total freight traffic at the end of 15th plan. Accordingly construction of New Roads / Up gradation of existing road net work exerts pressure on Forest Land. This depletes forest wealth as well as fragments the habitat leaving the animals in isolation. Similarly the transmission lines are being drawn in all rural / urban areas and it passes through forests. Electrocutions of animals are frequently observed.

3.7.2 Depletion of tree cover / Forest crop density.

From satellite imagery study and experience, it is observed that the crop density is more or less is declining and more forest blocks are being managed under Rehabilitation Working Circle. Reasons for such depletion / thinning of over wood resulted in depletion of cover to animals. Due to lack of camouflaging the animals became easy prey to predators.

3.7.3 Scarcity of Water in interior & high altitude Forests in summer:

Now as it is observed, the Forests are more or less confined to Hills / Ridges. Plain Forests are decreasing day by day and are subject to much biotic pressure. Animals are withdrawing

from forest fringes and concentrating on inaccessible pockets of Forest. Day by Day the rainfall is erratic and number of Rainy days in a year is decreasing. The nalla / Rivulets are drying up and in summer it became dry. The animals face water scarcity. Sometimes, in search of water they come to nearby habitation and endangered their life.

3.7.4 Depletion of Food stock and deterioration of quality Food / Fodder.

The forests of the tract are becoming more dryer due to annual fire, reduced rainfall and reduced rainy days, grazing beyond its carrying capacity, compacting of soil, increased runoff, top soil erosion etc. The plant community is gradually regressing towards thorny, unpalatable, stunted seral stage rather than improving towards climax. In the process the forest lacks quality food / fodder to herbivorous. Due to lack of micro organisms, bears, wild boar etc are facing scarcity of food stock. The movement of Elephant in search of food and water is depicted below.

3.7.5 Depletion of Prey base / herbivorous.

Herbivorous animals are mostly the base prey of all Carnivorous. Due to depletion of Grass lands / quality fodder and poaching of animals, their number / population is in a declining trend. It has affected the population of carnivore's animals. In many forest areas, concentration of prey base is at a threshold limit. The health of the forest is also indicated from presence / abundance of carnivorous animals. It is a common observation in all forest blocks of Nayagarh Division that both prey base and predators are in a rapid declining trend. It is clear signal to all forest managers to act for increase in fodder, water and adequate tree cover for animals.

3.7.6 Annual Fire and loss of Ground Flora.

Most of the forests of Nayagarh Division are of deciduous nature. Annual Fire is a common occurrence which destroyed the ground flora, regeneration, humus layer and affects the living of animals. Though adequate steps are being taken by department, it is felt the need to associate the VSS, general public in an intensive manner to combat fire menace. The Fire Map is given below to have an idea of area prone to annual fire.

3.7.7 Heavy biotic interference and intrusion by domestic animals (Cattle/ Goat/ Sheep)

The forests are freely assessable to the public throughout the year though it is legally prohibited. Lopping of branches, cutting of trees for fodder for cattle, Goat etc is a common phenomenon. It always breaks the tranquility of wild animals. It seriously hampered the

breeding, movement and always in a state of disturbed environment. Grazing related problems are increasing.

3.7.8 Illegal hunting by putting nets, electric live wire, etc.

The Forests and agricultural field are intermingling at many places. The villagers / anti social elements are putting Nets, loops (Phasa), Electric live wires in agricultural field to protect their crop from depredation. These loops (phasa) sometimes put threat to animals.

3.8 Protection & Management of Fauna:

Nayagarh Division is bordering Baisipali Sanctuary which is a part of Tiger Reserve. Eco Sensitive Zone on default comes within this division. A part of the division constitutes Mahanadi Elephant Reserve. Due to Mahanadi it also harbors many aquatic birds. Hence from protection & management point of view, it has special importance.

3.8.1 Management Practices adopted:

A. Deployment of Squad:

In order to strengthen the existing staffs in Ranges, Squads have been deployed under various nomenclatures i.e. Anti Depredation Squad, Elephant trackers, Anti Poaching squad, Fire Fighting Squad, Protection Squad.

B. Creation of Water Body:

In order to improve habitat, besides plantations water body are being created inside the Forest Blocks where the concentration of Animals are good. (**Table No 5.2 Water Body Created in Nayagarh Division.**)

C. Maintaining Salt licks:

There are natural salt licks distributed throughout the division. These are being maintained. The list of Salt likes available at present is at **Table No 3.11.**

Table 3.11 Salt Lick Location (Natural) / Artificial.

SI No	Name of Forest Block	Precise location	GPS Location (Lat / Long)	Name of the nearby Stream / Nalla	Section / Beat	Range
1	Sulia RF	Mulajhar	N.20.09 ⁰ 64'75" E.85.02 ⁰ 89'31"	Mulajhara Nala	Nayagarh /Machhipada	Nayagarh
2	Hatimunda RF	Rajgir	N.20.39 ⁰ 08'89" E.85.13 ⁰ 16'75"	Kadilaganda	Khedapada /Koska	Nayagarh
3	Central RF	Near Central RF	N.20.38 ⁰ 68'29" E.84.72 ⁰ 83'50"	Near Nallah Banderi Khola	Takara	Dasapalla
4	Sulia RF, C/8		N-20 ⁰ 05' 11.11" E-84 ⁰ 57' 12.69"	Near Baliajhara Nalla (Artificial)	Bahadajhola / Ambapada	Odagaon
5	Gochha RF, C/7		N-19 ⁰ 55'1.8" E-84 ⁰ 58' 21.0"	Near Sagadabhaga Nalla (Artificial)	Odagaon / Banthapur	Odagaon
6	Gochha RF, C/8		N-19 ⁰ 55' 1.8" E-84 ⁰ 58' 21.0"	Near Sagadabhaga Nalla (Artificial)	Odagaon / Banthapur	Odagaon
7	Gochha RF		N19.95 ⁰ 12'56", E85.06 ⁰ 50'18"		Panchirida /Gochha	Panchirida
8	Gochha RF		N19.95 ⁰ 09'23" E85.07 ⁰ 93'58"		Panchirida /Gochha	Panchirida
9	Gochha RF		N19.95 ⁰ 55'18" E85.08 ⁰ 30'78"	Nuadani Bandha	Panchirida / Gochha	Panchirida

D. Improved Communication System:

For speedy communication between staffs and Divisional Control Room VHF System is in operation in each Range. Hand hold Set has also been provided.

E. Public Awareness camps:

For creation of public awareness, Wildlife Week is being celebrated every year with involvement of School Children, VSS members and local NGOs.

F. Legal action:

Cases are booked against offenders as per provisions of Wildlife (Protection) Act, 1972.

CHAPTER-4

MAINTENANCE AND ENHANCEMENT OF FOREST HEALTH & VITALITY

4.1 Status of Regeneration:

Regeneration survey has been conducted during point sampling enumeration. The procedure followed is as per Para 74 of the National Working Plan Code-2014. As per the guideline the following steps are taken.

- Young plants of tree species up to 10 cm diameter are taken into consideration for assessment of regeneration status of a particular species as practiced in National Forest Inventory by FSI.
- Data collected from the square plots of 3x3m for saplings (2cm to 10 cm collar diameter) and from the square plots of 1x1m for seedlings are used to assess the regeneration status of species in the management unit i.e. compartment/ blocks.
- The phyto-sociological data from plot level enumeration, the regeneration status of the sampled species have been assessed in the following categories as follows.

Category	Guiding Principle
Good regeneration	If seedlings are more in numbers than the saplings and likewise saplings is more than that of adults.
Fair regeneration	If seedlings are more in numbers than the saplings but the saplings are equal or less than that of adults.
Poor regeneration	If a species survives in only sapling stage, but not as seedlings (though sapling may be less, more or equal to adults).
No regeneration	If a species is absent both in sapling and seedling stage, but present as adult.
New regeneration	If a species has no adults but only sapling and/or seedlings.

For study of Regeneration status some species common to all forest blocks and of economic importance are taken in to consideration.

Species taken for Consideration:

- I. Sal (*Shorea robusta*)
- II. Asan (*Terminalia tomentosa*)
- III. Dhaura (*Anogeissus latifolia*)
- IV. Bija (*Pterocarpus marsupium*)
- V. Phasi (*Anogeissus latifolia*)

On analysis of sample survey data, the regeneration status of these species in various blocks is inferred as follows.

Table 4.1 : Regeneration status of species						
Sl No	Species	Regeneration Status (Name of Forest Blocks)				
		Good	Fair	Poor	No Regeneration	New Regeneration
1	Sal (<i>Shorea robusta</i>)	S1	S2	S3	S4	S5
2	Asan (<i>Terminalia tomentosa</i>)	A1	A2	A3	A4	A5
3	Dhaura (<i>Anogeissus latifolia</i>)	D1	D2	D3	D4	D5
4	Bija (<i>Pterocarpus marsupium</i>)	B1	B2	B3	B4	B5
5	Phasi (<i>Anogeissus latifolia</i>)	P1	P2	P3	P4	P5

Note Symbol	Forest Block
S1 (Good)	Hatimunda RF, Palva RF, Ratadei RF, Panchu Pandab RF, Sulia RF, Ragadimada RF, Maichheli-Sampada RF , Gochha RF, Gayalasingh RF, Balisinsa-Badhulipur RF, Ragadimada PRF, Bhagabati DPF, Bahadajhola RF, Nariamba DPF
S2(Fair)	Poibadi RF, Chadeyapalli RF, Bankamunda RF, Sapua RF, Sikharapur RF, Dengabahada RF, Gochha RF
S3 (Poor)	Pithakhai RF, Bandra RF, Similibanka RF, Mainsibindhya RF, Barkhola RF
S4 (No Regeneration)	Guriabari RF, Chadeibasa RF, Jamubani-Patrabani RF
S5 (New Regn.)	Hatimunda RF
A1 (Good)	Hatimunda RF, Palva RF, Ratadei RF, Panchu Pandab RF, Sulia RF, Ragadimada RF, Maichheli-Sampada RF, Ragadimada PRF, Bhagabati DPF
A2 (Fair)	Nuagaon RF, Pokharigochha RF, Nasaghara RF, Ambalimba RF, Chhadesh

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	RF, Central RF, Makaraprasada RF, Gochha RF, Gayalasingh RF, Sulia RF, Bahadajhola RF, Makaraprasada RF, Baisipalli Extn.IV PRF, Banihari PRF, Sukarmal PRF, Nariamba DPF
A3(Poor)	Sapua RF, Khatia Damasahi RF, Patharaganda RF
A4(No Regn)	Guriabari RF, Jamubani-Patrabani RF, Chadeibasa RF.
A5 (New Rgn)	Gochha RF, Gayalasingh RF.
D1	Hatimunda RF, Palva RF, Ratadei RF, Sulia RF, Ragadimada RF, Maichheli-Sampada RF, Ragadimada PRF, Bhagabati DPF
D2	Nuagaon RF, Pokharigochha RF, Nasaghara RF, Ambalimba RF, Chhadesh RF, Central RF, Makaraprasada RF, Gochha RF, Sulia RF Bahadajhola RF, Baisipalli Extn. IV PRF, Nariamba DPF.
D3	Sapua RF
D4	Guriabari RF, Jamubani-Patrabani RF, Chadeibasa RF
D5	Nil
B1 (Good)	Nil
B2(Fair)	Nil
B3(Poor)	Bahadajhola RF, Gochha RF
B4(No Regn)	Nil
B5 (New Regn)	Nil
P1 (Good)	Nil
P2(Fair)	Nuagaon RF, Pokharigochha RF, Nasaghara RF, Ambalimba RF Chhadesh RF, Central RF, Phasi extn. I, II & III PRF
P3(Poor)	Hatimunda RF, Palva RF, Ratadei RF, Panchu Pandab RF, Sulia RF, Ragadimada RF, Maichheli-Sampada RF, Ragadimada PRF, Bhagabati DPF.
P4(No Regn)	Nil
P5 (New Regn)	Nil

Besides the above, there is no regeneration which can be categorized as **“in plenty / abundant”** for any specific species in the division confined to specific forest blocks noticed during Regeneration Survey. The overall status of regeneration is good to fair. Suitable strategy is required to be incorporated in management practices to achieve establishment of regeneration.

Forest Block wise regeneration Status as observed after analysis by ORSAC is furnished below for reference.

Table No 4.2 Regeneration status of important Forest blocks.

Sl No	Name of Forest Block	Regeneration Status	Sample Point no	Crop Composition
1	Purunadaspalla RF	Moderate	NY693	Dhaura
2	Chadeyapali RF	Moderate	NY246	Sal 35%
3	Ambalimba RF	Moderate	NY1	0.6%
4	Baisipalli Ext-II, PRF	Moderate	NY22	8%
5	Central RF	Moderate	NY91	Non Sal 10%
6	Arakhatalia DPF	Moderate	NY13	karada,mai,dhaura,asana,halada,bhalia,mundi, Ghanta,kusuma,kaluchua,anchhu
7	Baisipali Ext IV PRF	Moderate	NY26	Mahula,Dhaura,Asana,Sal
8	Makaraprasad RF	Dhaura, Karada, Chara	NY57	kusum, asana, dhura, bandhna, gphantla, mai, sirish
9	Bankamund Extn 1 PRF	Moderate	NY71	Karada,Asana,Bheru,Bela,Mai,Sisoo,Dhaura,Patuli,Jari, Giringa,Sidha
10	Gania RF	Moderate	NY314	Sisu, Piasal, Asan, Dhaura, Kendu
11	Balaram RF C-1	Moderate	NY35	Most dominant-Kusum, Pre dominant- Char,Kaluchua
12	Barbank PRF C-1	Moderate	NY77	Scanty with well regenerated of neem and bel
13	Hatimunda RF C-10	Moderate	NY454	Dominant –Sal Pre Dominant-Char
14	Bhatasahi RF	Mai	NY894	Mixed Forest
15	Sulia RF C-4(P)	Moderate	NY899	Most dominant-Dhaura predominant –Karada, Kendu
16	Bahadajhola RF	Moderate	NY16	Most dominate-Sal 80%, Predominate-Asan 20%
17	Balisinsa-Badhulipur RF	Poor	NY37	Sal-20%, Asan-20%, P.Sal-10%, Giringa-10%, Kendu-20%, Dhaura-20%
18	Gayalsingh C-1	Moderate	NY316	Most dominate-Sissoo,Predominate-Sidha
19	Gocha RF , C-18	Moderate	NY382	Most dominate-Asan,Predominate-Dhaura, Kendu
20	Makarapali PRF	Moderate	NY543	Most dominate-Mai,Predominate Asan
21	Mainsibindha RF	Moderate	NY537	Mixed Forest
22	Bandra RF	Moderate	NY42	Sal is a dominant & Chara is predominant
23	Barakhola RF	Moderate	NY78	Mixed forest

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24	Dengabahaya RF, C/2	Moderate	NY299	Most dominant - Sanachakunda, Teak
25	Sapua RF, C/7	Adequate	NY840	Bamboo density - GoodQuality - Moderate Bambooregeneration - Poor
26	Bhagabti DPF	Moderate	NY84	Sal,Giringa,Halda etc
27	Hatimunda RF	Moderate	NY450	Sal 55 %, Asan 10%, Mahula 15%, Dhaura 5%, Sirisa 5%, Jamu 10%
28	Maichheli-Sampada RF, C/2	Moderate	NY533	Sal 40 %, Bhalia 20, %,Bahada 10 %,Dhaura 20 %,Mai 10%
29	Palva RF, C/3	Moderate	NY620	Dhaura, giringa, halda
30	Ragadimada RF, C/5	Moderate	NY756	Asan 20%, Dhaura 30%,Kendu 10%, Bamboo 40%
31	Ambamundia PRF	Moderate	NY10	Kusuma, Giringa, simili, karada,kasi,Jamu,dhaman,Anchhu, Mai
32	Banijhari PRF (Near Village Guanda)	Moderate	NY45	Mixed Forest
33	Darpanarayanpur (Status RF, C/4)	Moderate	NY679	Mixed Forest
34	Khatia Damasahi RF-1	Moderate	NY505	sal-58% char-4% Asan-10%

From the above data it is observed that the regeneration is good for Sal and moderate for other important species. Bamboo is available to a greater extent.

4.1.1 Regeneration Survey of Bamboo (Rattans).

All culms occurring in the clump has been enumerated as per different classes of National Forest Inventory and these data has been used to assess the availability of bamboo/rattan using post stratification for a management unit as per the methodology adopted by FSI. Data from plot enumeration has been used to estimate the number of clumps per management unit (compartment, village or any other unit) and inference has been derived basing on the following criteria.

Table No 4.3 Regeneration Survey of Bamboo (Rattans)		
Inference	Condition of Bamboo / Rattans	Name Forest Blocks
Luxuriant	All healthy, un-congested, undamaged and in good condition	Ragadimada RF (C/3,4,5 & 6), Hatimunda RF C-9 , Ratadei RF (C/1,2,3 & 4,) Central RF (C-5,6 , 9,10,11,12,13); Pokharigochha RF (C-1,2) ; Chadeyapalli RF (C-3,4,6,7,8, 9 & 10) ; Nasaghar RF(C-1,2,3,4) ; Bankamunda RF, Makaraprasad RF , Gochha RF(C/1, 2, 3, 4, 5, 6 & 7)
Degraded	Not capable of being rehabilitated and of attaining normal productivity	Palva RF, Hatimunda RF, Sulia RF, Pokharigochha RF(C-3,4,5,6,7,8); Ambalimba RF, Chadeyapalli RF (C-1 ,2,5), Nuagaon RF(C-1,2) Central RF (C-1,2,3,4,7,8), Poibadi RF , Chhadesh RF, Mainsibindha RF, Sapua RF (C/1, 9, 10, 11 & 12); Sulia RF (C/8 & 9), Gochha RF (C/18 & 8 (P))
Culturable	Not included in above category.	Maichheli-Sampada RF, Sapua RF (C/4,5, 6, 7 & 8)
Non-clump forming bamboos	Single Culm	Gochha RF(C/8,9,10)

Status of Regeneration of Bamboo has been depicted above. The overall inference is fair.

4.2 Area affected by Forest Fire:

Forest Fire is of common occurred in forests of this division during fire season. The dry season in the area extends from the month of October to June and experiences a very hot summer during April to June. Due to the prolonged hot weather, not a single forest block is free from forest fire. Almost all instances of forest fire are man-made. The occurrence of repeated forest fire year after year prevents regeneration of many valuable tree species. As a result of this phenomenon, many fire hardy species found to replace the economically important species in the forests. Annual repeated fires are causing a series of damages both directly and indirectly to the forests. It burns leaves and other residue lying on the forest floor and destroys the microbial population of the soil and thus prevents the formation of humus. The humus is very vital for the soil fertility and its absence adversely affects the growing stock. Forest fire is also one of the main factors responsible for the mortality of

seedlings, sapling even of poles in forests. It also causes desiccation and hardening of the soil which accelerate the process of soil erosion.

4.2.1 Causes of Forest Fire:

The major causes of fire in forests of Nayagarh Division are enumerated below to have a better understanding of the nature of the fire and how to Control & Manage. Normally the forests experience Ground Fire in general. No Crown fire has been noticed in forests of this division.

- Burning of forest floor for local people / cultivators / cow herd boys etc. for good growth of grass.
- During winter (November to February), people of locality and far places visit important places in Forest & do their picnic. After Picnic Un-extinguished and unattended fires sometimes caused accidental fire.
- Burning of fallen woods / Green timber for preparation of Charcoal, sometimes spread to nearby Forest, if not properly attended.
- Un-extinguished cigarettes or bidi butts being thrown by passerby leads to break out of ground fire.
- Collectors of NTFP sometimes set fire to get better harvest / yield.
- To prevent movement of wild elephants to a particular region / part, people may set fire to scar them. This fire became wild and causes Forest Fire.
- Encroachers set fire to clean the encroached area free from debris.
- Some cultivators set fire to get ashes into their crop land through runoff water to provide organic manure to nearby agricultural field.

4.2.2 Damage Caused to Forests by Fire:

Though Forest fire has a better role in management of Grass Land, induce regeneration of species having hard coat seeds, Reduce thickness of un-decomposed coriaceous leaf litters, control weeds, burning of seeds of unwanted species. Fire as a good servant has some role in forest management in this division. Forest fire occurs annually and the damage caused is enumerated as follows.

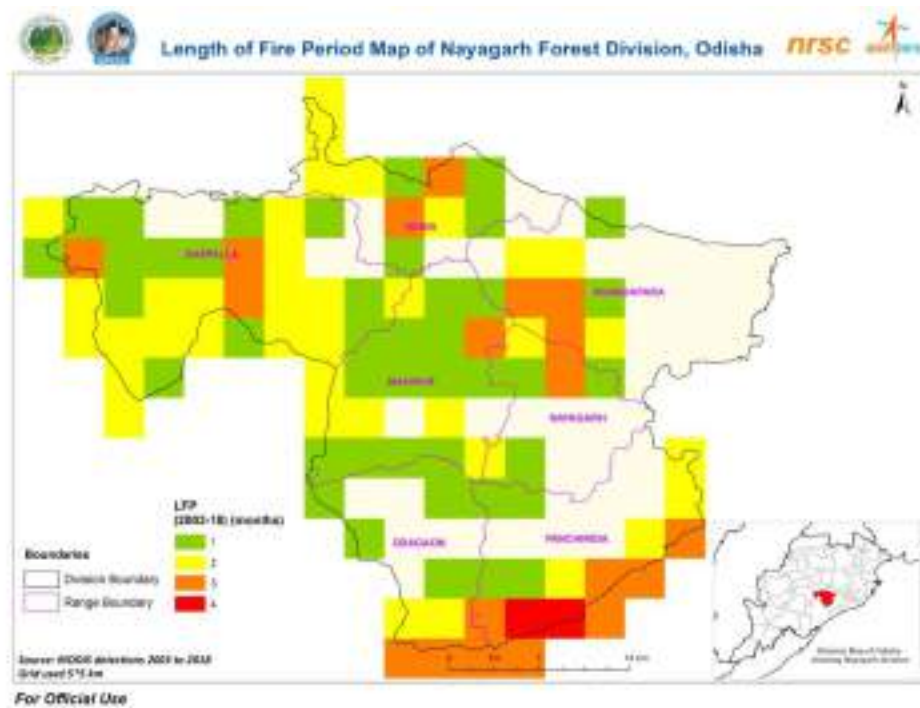
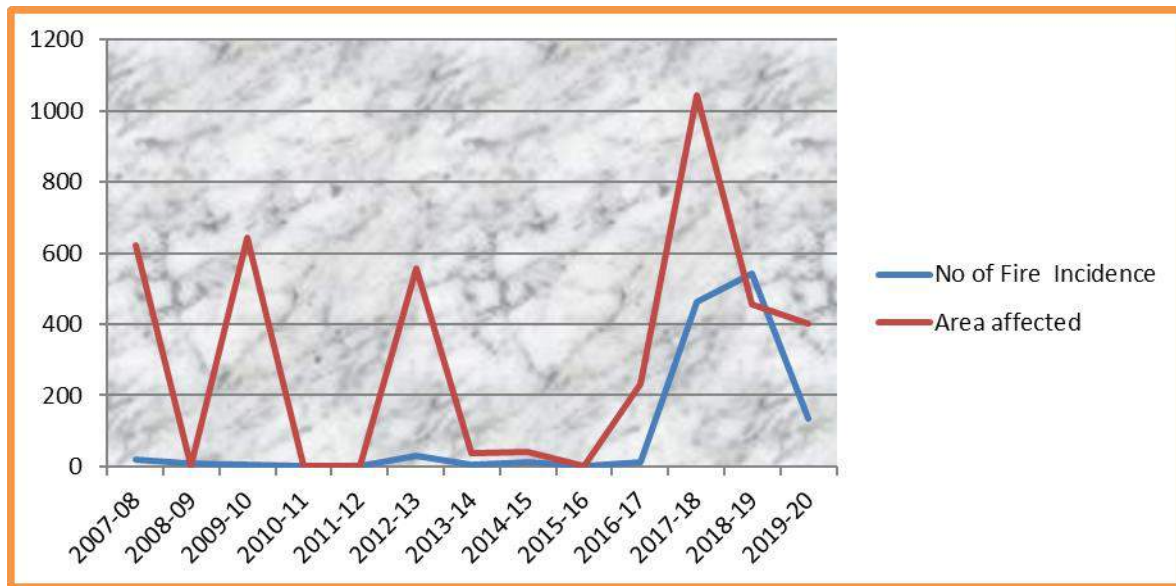
- It adversely affects the establishment of seedlings / Saplings. The most affected species is Sal.
- It results in degradation of forests, loss of soil fertility and accelerates soil erosion.
- In Bamboo forests, the rhizomes are badly affected. In case of such fire spreads to bamboo forests devastates the clumps.

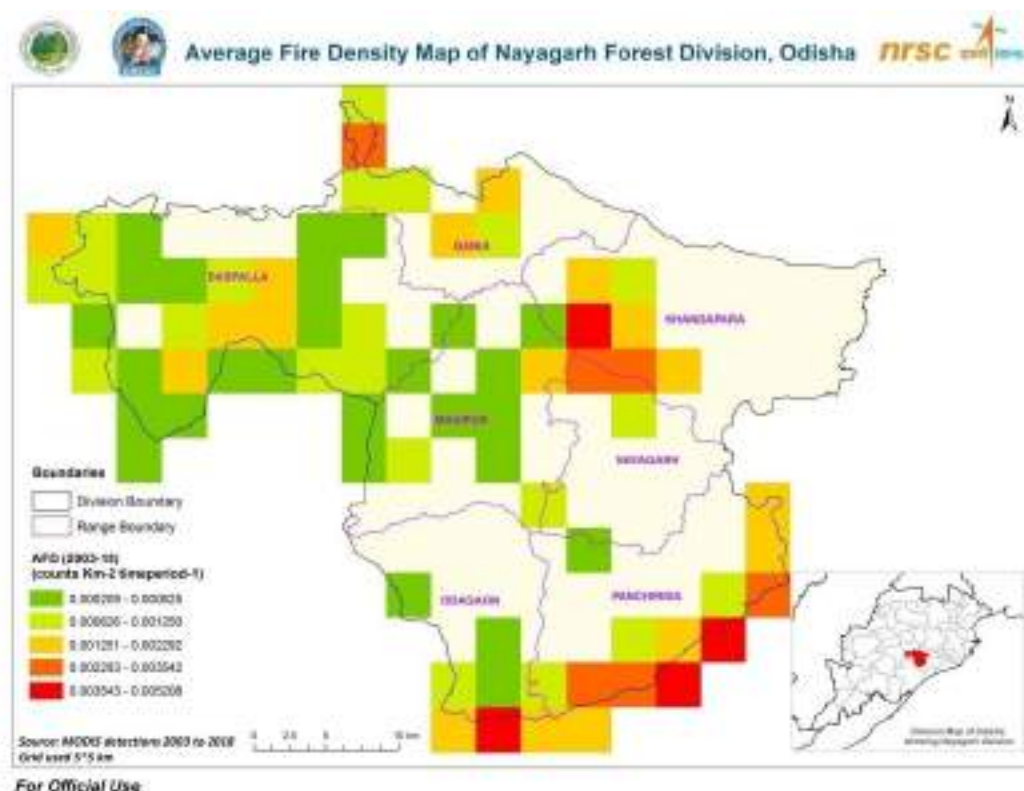
- Fire destroys the organic elements and microfauna in the soil and its nutrient content. Repeated fire in the Dry Deciduous Forests causes retrogression of the vegetation towards a more xerophytic condition.
- It causes imbalance in the entire ecosystem.
- It has an adverse effect on insects, amphibians and reptiles.
- It affects the movement of animals; also affect the corridors, habitat for the bigger animals.
- Germination capacity of seeds is badly affected.
- Repeated Fire results entry of intrusive species like Lantana, Eupatorium etc.

The occurrence of fire recorded during plan period is furnished below.

Table No 4.4 Abstract of Incidence of Forest Fire in Nayagarh Division			
Year	No of Fire Incidence as per Satellite Data	Area affected in Ha.	Remark
2007-08	19	620	<i>Fire incidence and area affected is in an increasing trend.</i>
2008-09	7	2.69	
2009-10	4	642	
2010-11	1	1	
2011-12	1	1	
2012-13	30	557	
2013-14	4	37	
2014-15	14	42	
2015-16	1	1	
2016-17	13	232.5	
2017-18	462	1045.2	
2018-19	541	456.73	
2019-20	136	400.081	
Total	1233	4038.201	

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A separate District action plan on forest fire prevention and management has been prepared for the year 2022. In this plan forest fire affected spots, preventive and control measures & budget allocation are incorporated. Every year such forest fire management plan will be prepared taking into consideration the prevailing situation.

4.3 Area damaged by Natural Calamities:

4.3.1 Drought:

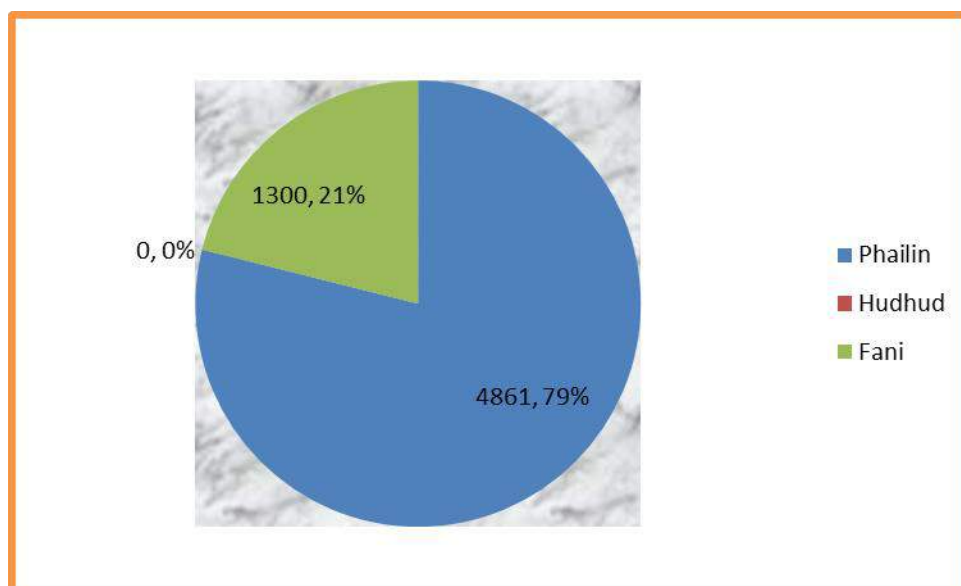
The drought is considered as a natural calamity which is moderate in this division. No serious damage has been reported. Due to erratic rainfall plantations have been affected. The growth expected has not been achieved. Moderate Drought occurs in a cycle of 3 to 4 years. No severe drought has been recorded during the last plan period.

4.3.2 Cyclone:

During the ongoing plan period Cyclone Phailin occurred on 12th & 13th October, 2013 and Hud Hud on 11th to 13th October, 2014 and Fani on 2nd / 3rd May, 2019. Due to Cyclone Phailin some damages have been occurred to forests in this district. The damage has been

assessed and found to be limited to uprooting of some trees in different Reserved Forests. The damage caused has been illustrated below (Table No 4.5)

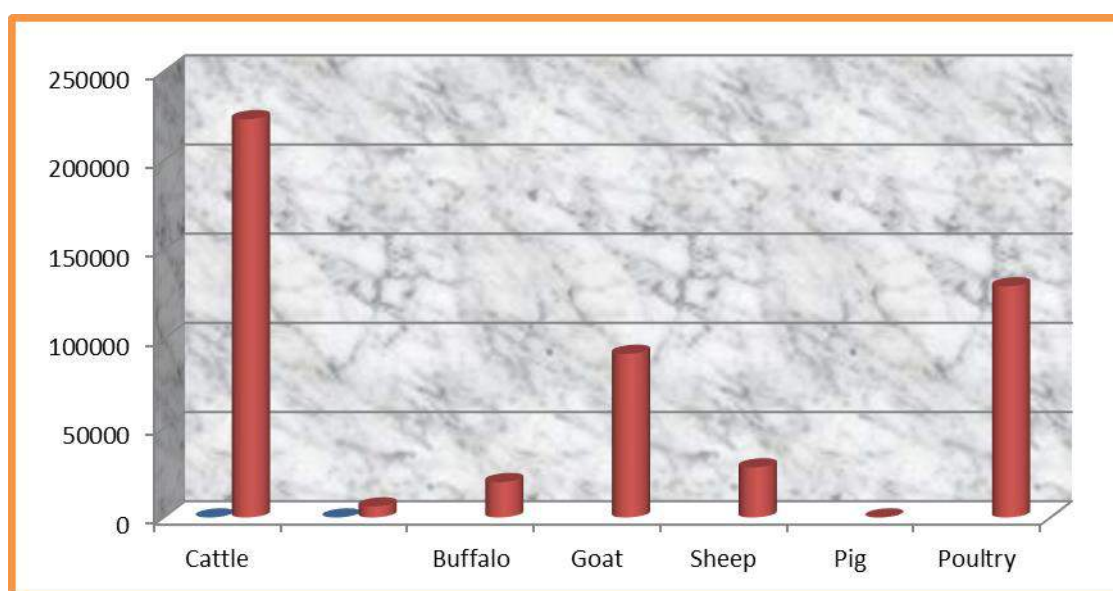
Table No 4.5 damage caused by Cyclone Phailin / Huduhudu / Fani .			
Name of Range	Name of forest blocks	Nos. of trees uprooted	Remark
Phailin			
Mahipur	Panchupandav RF	1172	Uprooted Trees Salvaged and delivered to Odisha Forest Development Corporation Ltd.
	Hatimunda RF	740	
	Maichheli Sampada RF	985	
	Maichheli Sampada RF	751	
	Hatimunda RF	1213	
Total		4861	
Hudhud			
		Nil	
Fani			
Khandapada	Pithakhai RF	1300	
Total		1300	



4.4 Area Protected from Grazing:

The forests of Nayagarh Division are having many villages. There are 194 Grampanchayats and 1702 villages functioning in the District. The 19th Livestock census taken up during 2012 indicates the cattle / buffalo, Goats population & magnitude of grazing pressure on common land i.e. Forest.

Table No 4.6 Cattle / Live stock Population in Nayagarh District (19th Live stock Census)								
Sl. No.	Districts	Cattle		Buffalo	Goat	Sheep	Pig	Poultry
		IND	C.B					
1	Nayagarh	223340	6184	19838	91777	28079	19	129640



Nayagarh is famous for its Goat Population.

The plantations raised under various schemes are protected against grazing. The area treated under ANR (Aided Natural Regeneration) is supposed to be closed to grazing for three years as per prescriptions of Working Plan. No formal Orders have been issued to this effect.

4.5 Lopping Practices:

The buffalo and goats usually like to eat from lopped branches of trees. The cowherd boys while let their cattle / goats in the forest for food / grazing, they used to lop the branches. The species mostly affected due to lopping are Kanchan, Bija, Bamboo, Babool, Aamba, Panasa (Jack Fruit), Sirisa, Bada Chakunda, Kumbhi, Zyziphus, Kusuma, Kendu, Anla, Bahada, Neem, Gambhari, Sisoo, Sal etc. The trees not only lopped for fodder, in many a time many NTFP trees are lopped for collection of fruits / leaf/ flowers.

Status of existing lopping practices-

In this division there is no such common trend for lopping during fodder / NTFP collection. No such scheme has been made for allowing lopping of branches either for fodder or NTFP collection. Information has been furnished in Chapter-7 of Part-1 of the Working Plan regarding recorded removal of NTFPs including MAPs. Most of the available NTFP & MAP are now collected by the registered collectors under Gram Panchayat jurisdiction. Records of removal of NTFP except Sal leaf are not available. Kendu leaf is also produced in this tract. Sal leaf collection target / achievement & royalty collected by the Division are furnished in Table No7.4. Kendu Leaf is also another Non-Timber Forest Produce being managed by Kendu leaf wing of the Department. The area comes under Daspalla KL Range of Phulbani KL Division. The production of KL and sale price in average is furnished at Table No7.5 & 7.6. No systematic survey has been taken up to assess the demand of timber & firewood in the division. The total number of House hold in the division as per 2011 census is 188225. Due to urbanization, Ujjala Yojana of Govt. of India, about 50% house hold is using alternate source of energy for cooking purpose. The balance households i.e. 94112 are depending on Fuel wood. The minimum use of Firewood per house hold per month is 1.00 quintal. Hence for a year at least $94112 \times 12 = 112935$ Ton or say 1.13 lakh Tons of fuel wood is required annually. The local VSS members or villagers collect fallen dry and dead branches as fire wood. No such scheme has been prepared for fire wood collection. There are timber and Firewood depot maintained by OFDC Ltd at Daspalla for Timber & Firewood and other places for Firewood. The location of depot is furnished in Table 7.8 of Chapter-7 of Part-1 of the Working Plan.

4.5.1 Effect of lopping:

Lopping in some species retarded the growth. Fruit / flower bearing capacity also reduced due to frequent lopping. In some first growing species and fodder species lopping is part of management practice. In forest lopping of Sisoo, Ghambar, Bija, Kubhi, Zyziphus for fodder and Sal, Siali, Bela for leafs, Amnla, Char, Kendu, Harida and Bahada for fruits have serious retarding effect on growth.

4.5.2 Precautionary Measures:

Lopping of secondary and tertiary branches can be lopped to encourage new branches to have new flush of leafs and to induce good flowering and fruiting. In case primary and secondary branches are lopped it will hamper the growth. Lopping resistance species may be given a light to medium lopping for good flush of leafs.

As a part of the schedule of operation, provision has been made for protection of forest areas including plantations from grazing in respect of different afforestation modules including ANR & AR.

4.6 Area infested by invasive weed species in Forests:

The forests those are severely affected by Fire, having permanent opening of canopy, heavy grazing or permanent blank space are occupied by weeds. Eupatorium, Lantana and Bana tulasi are seen in major part of open space and periphery of forest blocks. Sometimes it became an impenetrable ground flora. The Forest Blocks invaded by weeds and extent of area under weeds are furnished below.

Table No 4.7 Forest Blocks invaded by Weeds

Sl No	Name of forest Block	Invading Weeds	Extent of Area in Ha(appx.)
Nayagarh Range			
1	Balaram RF	Epatorioum and Other Throny Bushes	150
2	Barabank PRF	Epatorioum and Other Throny Bushes	250
3	Rukhi RF	Epatorioum and Other Throny Bushes	50
Mahipur Range			
4	Hatimunda RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra) Lantana (Lantana camara)	1000
5	Maichheli-Sampada RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	50

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6	Panchu Pandab RF	Lantana (Lantana camara)	400
7	Ragadimada RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	800
8	Ratadei RF	Lantana (Lantana camara)	400
9	Palva RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	650
10	Sulia RF	Lantana (Lantana camara)	300
11	Bhagabati DPF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	50
12	Makarapalli PRF	Lantana (Lantana camara)	15
13	Palva PRF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	50
14	Ragadimada PRF	Lantana (Lantana camara)	30
Dasapalla Range			
15	Pokharigochha RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	30
16	Central RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	20
17	Chadeyapalli RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	15
18	Nuagaon RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	14
19	Nasaghar RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	11
20	Poibadi RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	12
21	Chhadesh RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	20
22	Ambalimba RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	25
Gania Range			
23	Gania RF	Paladhua, Karada, Chhana, Khajuri, Muturi	119
24	Manivadra RF-1	Atundi, Buduli, Muturi, Chhana, Dhatuki, kuruhan	130
25	Manivadra RF -II	Atundi, Buduli, Muturi, Chhana, Dhatuki, kuruhan	125

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26	Bankamunda RF	Siali, Gila,Pokusunga, Atundi, Buduli, Muturi,Chhana, Dhatuki, kuruhan	133
27	Bankamunda Extn.	Siali, Gila,Pokusunga, Atundi, Buduli, Muturi,Chhana, Dhatuki, kuruhan	125
28	Matia RF –II	Pokasunga, Kanteikoli, Siali, Atundi, Dhatuki, Muturi	85
29	Matia RF-I	Siali, ,Pokusunga, Atundi, Buduli, Muturi,Chhana, Dhatuki, Kuruhan, Dantari,	45
30	Matia PRF	Siali, Gila,Pokusunga, Atundi, Buduli, Muturi,Chhana, Dhatuki, kuruhan	25
31	Arakhataila PRF	Pokasunga, Kanteikoli, Siali, Atundi, Dhatuki, Muturi	20
32	Makaraprasada RF	Siali, Gila,Pokusunga, Atundi, Buduli, Muturi,Chhana, Dhatuki, kuruhan, Dantari	250
33	Ambaghati DPF	Pokasunga, Kanteikoli, Siali, Atundi, Dhatuki, Muturi	75
Khandapada Range			
34	Chadeibasa RF	Pokasunga, Kanteikoli, Siali, Atundi, Dhatuki, Muturi	50
35	Sikharapur RF	Pokasunga, Kanteikoli, Siali, Atundi, Dhatuki, Muturi	200
36	Sapua RF	Pokasunga, Kanteikoli, Siali, Atundi, Dhatuki, Muturi	1000
37	Guria Bari RF	Pokasunga, Kanteikoli, Siali, Atundi, Dhatuki, Muturi	200
38	Hanumantia RF	Pokasunga, Kanteikoli, Siali, Atundi, Dhatuki, Muturi	200
39	Dengabahada RF	Pokasunga, Kanteikoli, Siali, Atundi, Dhatuki, Muturi	200
40	Pithakhai RF	Pokasunga, Kanteikoli, Siali, Atundi, Dhatuki, Muturi	50
41	Similibanka RF	Pokasunga, Kanteikoli, Siali, Atundi, Dhatuki, Muturi	50
42	Mainsibindha	Pokasunga, Kanteikoli, Siali, Atundi, Dhatuki, Muturi	50
43	Barkhola	Pokasunga, Kanteikoli, Siali, Atundi, Dhatuki, Muturi	100
Odagaon Range			
44	Gochha RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	160

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45	Gayalasingh RF	Pokasunga (Chomolaena odorata), Bisalyakarani (Tridax procumbens)	90
46	Sulia RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra) Bisalyakarani (Tridax procumbens)	30
47	Balisinsa-Badhulipur RF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	25
48	Bahadajhola RF	Pokasunga (Chomolaena odorata), Bisalyakarani (Tridax procumbens) Eupatorium, Guguchia (Chrysopogon)	35
49	Nariamba DPF	Pokasunga (Chomolaena odorata), Gajargrass (Parthenium hysterophorus)	30
50	Makarapalli PRF	Pokasunga (Chomolaena odorata), Lajakuli (Mimosa pigra)	35
Panchirida Range			
51	Gochha	Pokasunga, Giringa, Baincha, Kateikoli, Nageri, muturi, Atendu, Siali, Palaslai, Suama Lai	600
52	Banijhari	Pokasunga, Giringa, Baincha, Kateikoli, Nageri, muturi, Atendu, Siali, Palaslai, Suama Lai	300
53	Binjhagiri	Pokasunga, Giringa, Baincha, Kateikoli, Nageri, muturi, Atendu, Siali, Palaslai, Suama Lai	100
54	Sukarmal	Kateikoli, Nageri, muturi, Atendu, Siali, Palaslai, Suama Lai	200
55	Patharaganda	Kateikoli, Nageri, muturi, Atendu, Siali, Palaslai, Suama Lai	100
56	Khatiadamasahi	Kateikoli, Nageri, muturi, Atendu, Siali,	100
	Div. Total		9379

The weeds affected area is very high and constitutes about 8.5 % of the total forest area under RF/ PRF & DPF combine. It is in alarming stage. Immediate precautionary measures is required to be initiated.

4.6.1 Effects of Weeds on Forest Management:

Weed growth in forest blocks put hindrance in management. The effects are

- Bringing the area under Plantations became difficult and weeds suppress the planted seedlings.
- Regeneration due to seed becomes extremely difficult as the recruits are suppressed if not attended.
- Removal of weeds become cost prohibitive.

- Weed seeds dispersed through by wind / animals and spreading to nearby forest area.
- Weeds when dry became fire hazards.
- It increases Rodent population in nearby area.

4.6.2 Practices to Control the weeds:

Controlling of weeds is of paramount importance to allow natural regeneration to establish and check invasion. It may be of Physical method, Chemical method and combination of both.

4.6.2 (a) Physical Method:

Controlling the weeds can be possible by uprooting the weeds when it is green (in case of weeds those dies in summer and reappear during rains i.e. annual weeds). Cutting of weeds in green stage / before flowering is also practiced under which no seed formation or seed dispersal is allowed. There are weeds like lantana, those can be controlled / eradicated by cutting followed by controlled burning and uprooting the species. After uprooting, the area must be covered under plantation with extra weeding in first two years. Under tree cover the weeds growth will be substantially checked.

4.6.2(b) Chemical Method:

There are Chemicals / Weedicides available in the market which suppresses the weeds to a greater extent. Application of such chemicals at pre-monsoon period is more effective. These chemicals trade name along with its main constituents (Components) and application practices are furnished below.

i) Glyphosate 41% SL: It is an Amino Acid synthesis inhibitor. It inhibits the EPSP synthase enzyme, which leads to depletion of key amino acids that are necessary for protein synthesis and plant growth. This should be applied @0.5 Kg active ingredient+200 ltr water/acre or 1.2 Ltr formulation+ 200 ltr water/acre during growth phase. The plant can be pruned and applied with this solution after first rain. The soil must remain moist. Avoid inhalation, skin or oral contact with the weedicide. Do not chew tobacco, eat food or smoke during spraying. Follow normal precautions – keep away from food stuff containers and animal food; avoid contact with mouth, eyes and skin; avoid inhalation of the spray mist; spray in the direction of wind; wash thoroughly the contaminated cloths and parts of body after spraying; do not smoke, drink, eat or chew while mixing and spraying; and wear full protective clothing while mixing and spraying.

ii) 2,4-D Dimethyl Amine salt 58% SL: It affects weeds by causing uncontrolled cell division in vascular tissue. This should be applied @1 Kg active ingredient+120 ltr water/acre or 1.8 Ltr formulation+ 120 ltr water/acre during growth phase. The plant can be pruned and applied with this solution after first rain i.e. during active growth phase. Follow normal precautions – keep away from food stuff containers and animal food; avoid contact with mouth, eyes and skin; avoid inhalation of the spray mist; spray in the direction of wind; wash thoroughly the contaminated cloths and parts of body after spraying; do not smoke, drink, eat or chew while mixing and spraying; and wear full protective clothing while mixing and spraying.

Precautions: Chemical weedicides are poisons and it should not be used in wildlife concentrated area, near to water source where it is likely to be leached / washed to water body. This chemical method may be applied to area where physical control is difficult and not supported by financial provision.

4.7 Incidence of pest & Diseases:

No massive infestation by pests is recorded during last plan period. In dry tract Sal heart rot disease has been noticed.

Sal borers, Teak defoliators, Teak Skeletonizer and termite attack to seedlings at early stage are noticed.

a) Sal Borer:

Sal (*Shorea robusta*) is the prime species of the division. Unfortunately, Sal has been the victim of heartwood borer, *Hoplocerambyx spinicornis*. Ever since it was noticed as a pest on sal in 1899, its 20 epidemic outbreaks have been recorded in India causing extensive damage to sal forests. During the latest 1996-2001 epidemic, the borer affected more than 3.5 million sal trees in an area of around 5 000 km². The emergence of beetles takes place immediately on the onset of monsoon. This pest is immune to all known forms of control measures as most of its year-long life cycle passes in the tree, except for 20-30 days of adult beetle stage. Natural regeneration and the establishment of sal have been the other major problems, which are compounded by the borer attacks.

Although there have been considerable studies on this pest, there has been no breakthrough as its outbreak in epidemic forms is governed by weather conditions. Despite

cyclic outbreaks, the latest epidemic had to be confronted with the previously known silvicultural and mechanical measures only.

Control Measures adopted.

The following control measures which have been tested in many epidemic situations in different countries may be adopted in case of outbreak of epidemic.

(i) **Catching and killing** of insects through Trap-Tree method. In this Operation, one to two trees per ha of 60-90 cm girth are felled, cut into 2-3 m long logs and the bark near cut ends is beaten up to provide shelter for the beetle. The beetles gets attracted to the smell of sap, gets intoxicated after consuming it and become sluggish, rendering their collection and killing easier. Beetles are collected from traps every morning and evening. Dey (1999) observed that the total catch during the night hours was over three times the total catch of insects during the day hours which are contrary to the observations of Beeson (1941). Trap tree operation starts on the onset of monsoon and that continued till the day the insect catches are nil.

(ii) **Felling and removal** of affected trees away from the sal forests. Based on different intensities of infestation, the affected trees are classified into seven categories as under (Beeson 1941)

Table No 4.8 Symptoms & sign of Sal borer in forests.	
Category	Description of tree
I	Crown foliage fallen, epicormic branches leafless, wood dust thrown out by larvae from trunk deposited in heaps more than 7 cm. deep at base of the tree.
II	Crown foliage brown, epicormic branches dead or brown, wood dust more than 7 cm. deep.
III	Crown brown or dead, epicormic branches or bark dead in upper parts but alive in lower parts of the trunk, wood dust more than 7 cm. deep.
IV	Crown partly alive, green and partly dead or brown, epicormic branches green and dust deposition is less than 7 cm. deep.
V	Crown alive, green epicormic branches green, wood dust in heaps more than 7 cm. deep.
VI	Stumps with heaps of wood dust.
VII	Crown alive, green epicormic branches, resin abundant, wood dust scanty.

Infested trees of category I to V are to be felled and removed from forests. Stumps of category VI are burned before next rains and category VII trees are not felled.

(iii) **Burning of debris** and stumps after harvesting of trees.

(iv) **Stacking of infested timber** in depots five km away from sal forests in order to prevent the beetles from flying back to forests.

b) Teak defoliator:

Hyblaea puera, the **teak defoliator**, is a moth native to south-east Asia. The species has also been recently reported to be present in Central America and Africa. The caterpillar feeds on teak and other trees. It is considered to be one of the major teak pests around the world.

The teak defoliator is present year round in teak plantations, but in varying population densities. During the period of natural defoliation of teak (November, December, and January), the pest density is very low (endemic). Every year high-intensity outbreaks of teak defoliator occur immediately after the pre-monsoon showers in late February or early March. These centers are highly localized outbreaks which represent the transitional stage between very sparse endemic population and high density outbreak population. These centers will be 5,000 to 15,000 square meters in area and are characterized by heavy tree top infestation. The months of April, May, June, and July witness a series of large outbreaks. During late July or September, the population declines to the endemic level. In some years, there will be fresh outbreaks during October. From then on until the next year, the population remains at the endemic level.

Control Measures:

i) Parasitoids

The main parasitoids attacking teak defoliator include the tachinid *Palexorisa solennis*, a eulophid *Sympiesis hyblaeae*, the chalcid *Brachymeria lasus* and the three ichneumonids, *Eriborus gardneri*, *Stictopisthus* sp. and *Echthromorpha agrestoria notulatoria*. *B. lasus* is a pupal parasitoid and all others are larval parasitoids. The overall parasitism by all species is about 9%.

ii) Predators

Wasps, spiders, birds, and bonnet macaques eat *H. puera*. Forty-eight species of birds have been recorded as feeding on teak defoliator larvae during large-scale outbreaks.

iii) Pathogens

The bacteria *Enterobacter aerogenes*, *Bacillus thuringiensis*, *Pseudomonas aeruginosa* and *Serratia marcescens* are identified as causing mortality to the teak defoliator. A synnematus fungus of the genus *Hirsutella* is found to be pathogenic to this pest. An absolutely specific virus with refractile polyhedral inclusion bodies, staining blue in Giemsa and thick blue in Buffalo Black, named as *Hyblaea puera* nucleopolyhedrovirus (HpNPV) is found to be very effective in the biological control of this pest.

c) Teak Skeletonizer:

Teak skeletonizer, *Eutectona machaeralis* is a serious pest of *Tectona grandis* (Teak). Teak is one of the important plantation tree species being utilized in many industries. During the field visit of Western Ghats in Maharashtra during November–December of 2018, *E. machaeralis* was found to be infesting the leaves of *Vitex negundo*. Most of the twigs were found infested by *E. machaeralis*. *V. negundo* is an important medicinal plant, available in various regions of India. The inclusion of this alternative host of *E. machaeralis* may be due to climatic variation.

From various observations / researches it is concluded that the teak skeletonizer, *E. machaeralis* can be managed by spraying any one of the following bio – products at the respective concentration i.e. *B. thuringiensis* @ 1.5%, Grub kill @ 2 % , *B. bassiana* 2.5% , *M. anisopliae* 3% , , Neem oil 6% and five leaves extracts @ 6 %. Normally two sprays are needed to reduce the population with an interval of 15 days. It was observed that a few of the pupae in the soil under the trees treated with grub kill, found infected and dead. This should be investigated thoroughly; because, the positive results in this line may turn the application technique easier. Instead of foliar application, soil application can be recommended so as to kill the pupae which normally pupate inside the soil under the tree. This may reduce the application rate and cost of protection.

d) Termite Control:

Termite attack to plants in young stage causes lot of damage especially in plantations. Normally chemicals like Aldine, Gramacsin (BHC 50%) are used during planting operation.

Due to proximity to water body, it is not advisable to use bob degradable pesticides in plantations. Non Chemical methods are suggested.

Non-chemical control of termites in agriculture and forestry is attracting renewed interest following increasing restrictions on the use of persistent organochlorine (cyclodiene) insecticides. Non-chemical control involves methods which attempt, without using commercial pesticides, to (i) prevent termite access to the plants, (ii) reduce termite numbers in the vicinity of the plants or (iii) reduce susceptibility/increase resistance of the plants themselves. There have been few adequate trials of any of these methods. Numerous cultural procedures have been suggested, including measures to enhance plant vigour, to manipulate termite numbers and behaviour, and others whose mode of action is unclear. Many are simply part of good agricultural/silvicultural practice and to be recommended. Biological control by predators or pathogens is unlikely to be successful due to the termites' social structure and behavioural responses to infected individuals and to loss of individuals to predators. The use of 'natural' insecticides from locally available plant products may be effective in some cases but, as they are not subject to the same rigorous safety and environmental evaluation as commercial pesticides, their use cannot be sanctioned unconditionally. Other locally available products, e.g. wood ash, have not been adequately evaluated. Removal of reproductives from the nest and construction of physical barriers may have limited applications, but resistant species and varieties, combined with appropriate cultural methods and, perhaps, minimal use of modern pesticides in an integrated approach, offer the greatest potential for a long term solution. The lack of critical scientific evaluation of non-chemical control makes it a field wide open for research.

4.7.1 Parasites:

Parasites like loranthus- Some species of *Loranthus*, in the broad sense, are troublesome parasites. These plants grow strongly on ageing trees particularly somewhere in the middle of old branches. Once established, it steals minerals and water, as well as block sunlight by covering the encroached place. The flowers of *Loranthus europaeus* are small, green, usually have four to six parts and may be either unisexual or bisexual. Other species of a broader *Loranthus* have very large, showy flowers, with blooms in lively colours. The fruits are berries, usually containing a single seed, that are dispersed by birds.

The floral characteristics indicate that it is ornithophilous in nature and has moderate quantity nectar stored in its perianth tube. The mature buds require external factors like tripping to ensure that they open up. In the absence of this, the buds fall off without

opening. Birds help in this process and mature buds eject a cloud of pollens which sticks to the head or beak of the probing bird. The birds seen visiting these flowers in India are Tickell's flowerpecker, purple-rumped sunbird, purple sunbird and spider.

4.8 Forest degradation & its drivers:

Forest degradation is mainly due to illegal removal of Forest Produce i.e. timber & Fire wood. Due to Biotic pressure & interference like heavy grazing, Ground fire and above all pressure from increasing population which exert pressure on land resulting encroachment. The nature of degradation & its driver are summarized below.

4.9 Forest Degradation & its drivers.		
Forest degradation:	Drivers of Degradation.	Remedial measures.
Loss of Tree cover	Collection of Firewood and timber for local consumption.	To provide alternate fuel, timber substitute. To have strict enforcement of protection & legal action.
Loss of Bamboo Forest	Collection food standard "Karadi". Non implementation of Bamboo Cutting Rules. Elephant prone area and consumed by wild elephants.	It is difficult to prohibit collection of Karadi completely. A particular area may be set aside for Karadi and motivate people to collect from assigned area than from entire area. Management practices to be designed to include bamboo forests in Revenue Forest for Karadi purpose. Intensive Simultaneous Silvicultural Operation in bamboo forest.
Loss of Ground Flora	Forest fire.	Regulating Picnic party entering in to Forest / Plantations. Maintaining Fire Lines on chess board pattern ie along the contour and across the contour by using Fire Blower. Strict vigilance on Forest Fire detection & combating. Taking help of nearby Fire stations / brigades/VSS .
	Heavy Grazing.	Regulating Grazing, Practicing Rotational grazing. Development of Grass lands.
Reduction in Forest area.	River Bank erosion.	Planting of Soil binding species on River banks. Resorting to construction of structures to prevent bank erosion in extreme cases of importance.
	Land grabbers / Encroachers.	Appropriate legal action, Motivate the encroachers to resort to Agro Forestry.
Bio diversity.	Loss of Bio diversity.	Introduce / protect less known species. Educate students / villagers regarding importance of

		Bio Diversity. Control use of pesticides in agriculture. Protect Riverine plant succession. Introduction of creation of adequate SMC work over the Forest

4.9 Pollution Control and Protection of Environment:

4.9.1 Pollution Related to Tourism:

Important tourist places of Nayagarh Division are as given below.

1) Kantilo Nilamadhab

Standing elegantly on the banks of the river Mahanadi, Kantilo is famous for the temple of Lord Nilamadhaba, on top of the twin hills with surrounding green forests. Lord Nilamadhaba occupies a prominent position in the cult of Lord Jagannath. This temple is a miniature form of the Sri Jagannath Temple at Puri and observes similar rites rituals. One can also find amazing brass and bell metal crafts here, which are lovingly carried by many visitors as souvenirs. A permanent flow of holy water flows from the feet of Lord Nilamadhaba. Lord Siddheswar is also a highlight of this place. Kantilo is one of the most popular picnic spots in Orissa and is 100 kms away from the State capital, Bhubaneswar and 33 kms from Nayagarh town. Maghasaptami is celebrated here on a grand scale. Brass and Bellmetal utensils are famous here.

2) Panchupaili Pragana

Located about 55kms from Nayagarh, Panchupaili Pragana is an enchanting destination with serenity nestled amidst nature's tranquility. The meeting place of River Mahanadi and River Brutang, this place enfolds the picturesque shrines of Sri Gupteswar Mahadev, Sri Sri Navagunjara Jiu and Goddess Kalapat Thakurani. Different cultural events organized here throughout the year keep the festive charm of this place intact.

3) Odagaon

Odagaon is known for the Temple of Lord Raghunathji. It is one of the famous temples in Odisha dedicated to Lord Ramachandra. This temple has beautiful wooden idols of Sri Raghunath, Sita and Laxman enshrined in it. The Kalash of the temple is made of pure gold. A popular legend associated with the temple states that famous poet of 17th century, Kavisamrat Upendra Bhanja, had composed his magnum opus- Baidehisha Vilas, here at the feet of Sri Raghunath. Ramanavami is the most important festival celebrated here. Odagaon is 26 kms away from Nayagrah (town). It is said that the renowned poet of Odisha, Upendra

Bhanja mediated here and attained perfection in the Rama Taraka Mantra. This temple was built around 1903.

4) Nayagarh

Situated 90 kms away from Bhubaneswar, between two steep hill ranges, Nayagarh houses the district headquarters. Abounding in natural beauty, this town is also famous for many historic places and ancient temples prominent among which are the shrines of Dakshinakali, the living Shakti-peeth and Sri Jagannath Temple. Built between 1788 and 1808 A.D, the Jagannath Temple here, reflects Kalingan style of architecture. The presiding deity is worshiped in the form of Dadhibamana.

5) Kuanria

Kuanria, a picturesque getaway, about 50 kms from Nayagarh, comprises of a huge reservoir flanked by blue hillocks and a 1.5 kms long dam over River Kuanria. Among the top attractions is a large deer park spread over 6 acres by the river basin. The park is home to about 160 numbers of spotted deer, barking deer and sambar. A large number of migratory birds also flock to this reservoir during winters. The tranquil beauty of the hills, river, forests and the deer park make the place a much sought after retreat by the tourists.

6) Jamupatna

At the foot of Sulia hills, 32 kms from Nayagarh stands the shrine of Sri Dutikeswar Mahadev. A centuries-old Banyan Tree popularly known as kalpabata stands magnanimously in front of the temple adjoining a pond. Temples dedicated to Goddess Bana Durga, the Sun God and Astabhuja (eight armed Goddess Durga) are found within the temple complex.

7) Gokulananda Temple

It is situated near Sidhamula village, Sidhamula Grampanchayat in Khandapara Block. The temple of Gokulananda is situated on top of a hill on the bank of river Mahanadi. It is founded by late Sri Baba Swami Ram Laxman Dash Maharaja. It is nice to watch the panoramic view of the hill and flowing water of Mahanadi from the hill as well as from Sidhamula bridge. The hill is full of tall trees and medicinal plants. There is nearly 1 KM of plane surface with full of greenery on bottom of the Hill on the bank of river Mahanadi suitable for cooking as well as playing games which attracts most of the local and nearby district tourists to this place.

8) Kuturi

Just 8 kms from Baramul, inside the Mahanadi Wildlife Division Sanctuary, is a place called Kuturi which houses the Habitat Development Centre for facilitating natural breeding of wild animals. This area contains a pond, salt lick, fodder variety Napier grass and an orchard with varieties of indigenous decorative and medicinal plants. There are cottages, watch towers from where one can watch the free movement and activities of animals during nights. These two places of Nayagarh district are famous for their natural beauty and artistic excellence. These are lovely picnic spots under cool mango groves and other shady trees by the side of a hillock. Picturesquely carved out of the big mountains, these two places create an impression of a zoological park where animals move in their natural habitat. These relaxing spots surrounded by nature preserves a variety of indigenous plants, both decorative and medicinal.

9) Baramul

This small village is prominent due to the magnificent Mahandi gorge on the banks of which it is situated. From Sunakania hills up to Barmul, the course of the river is known as the Satakosia Ganda (Gorge), having a water spread of about 22 km. Barmul, 110 km from Bhubaneswar, is an ideal place for an outing. Satakosia Gorge is a biological refuge and is considered as an important biographical stepping stone in the link between forest species of Central and South India. Satakosia has significant genetic and ecological importance as is the wet portion of the Deccan Zone. It is famous for its unique gorge eco system and for being a beautiful picnic spot.

10) Sarankul

combined form of Hari (Vishnu) and Hara (Shiv) as is the case with Sri Lingaraj in Bhubaneswar. The festivals and rituals of Sri Ladukeswar are also similar to that of the Lingaraj temple. This shrine is the most prominent one from amongst a good number of Shaivite shrines dotting the region. Pilgrims from far flung places flock to Sarankul on the occasion of Mahashivaratri.

Tourism related pollutions can be briefly described as follows.

i. Depletion of Natural Resources.

Tourism development can put pressure on natural resources when it increases consumption in areas where resources are already scarce.

a. Water resources.

Water, and especially fresh water, is one of the most critical natural resources. The tourism industry generally overuses water resources for hotels, swimming pools, golf courses and personal use of water by tourists. This can result in water shortages and degradation of water supplies, as well as generating a greater volume of waste water.

b. Local resources.

Tourism can create great pressure on local resources like energy, food, and other raw materials that may already be in short supply. Greater extraction and transport of these resources exacerbates the physical impacts associated with their exploitation. Because of the seasonal character of the industry, many destinations have ten times more inhabitants in the high season as in the low season.

c. Land degradation.

Important land resources include minerals, fossil fuels, fertile soil, forests, wetland and wildlife. Increased construction of tourism and recreational facilities has increased the pressure on these resources and on scenic landscapes. Direct impact on natural resources, both renewable and nonrenewable, in the provision of tourist facilities can be caused by the use of land for accommodation and other infrastructure provision, and the use of building materials.

Forests often suffer negative impacts of tourism in the form of deforestation caused by fuel wood collection and land clearing.

ii) Pollution.

Tourism can cause the same forms of pollution as any other industry: air emissions, noise, solid waste and littering, releases of sewage, oil and chemicals, even architectural/visual pollution.

a. Air pollution and noise.

Transport by air, road, and rail is continuously increasing in response to the rising number. One consequence of this increase in air transport is that tourism now accounts for more than 60% of air travel and is therefore responsible for an important share of air emissions. Transport emissions and emissions from energy production and use are linked to acid rain, global warming and photochemical pollution. Air pollution from tourist transportation has impacts on the global level, especially from carbon dioxide (CO₂) emissions related to transportation energy use. And it can contribute to severe local air pollution. Some of these impacts are quite specific to tourist activities. For example, especially in very hot weather tour buses often leave their motors running for hours while the tourists go out for an excursion because they want to return to a comfortably air-conditioned bus.

Noise pollution from airplanes, cars, and buses, as well as recreational vehicles is an ever-growing problem of modern life. In addition to causing annoyance, stress, and even hearing loss for its humans, it causes distress to wildlife, especially in sensitive areas. For instance, noise generated by vehicles can cause animals to alter their natural activity patterns.

b. Solid waste and littering

In areas with high concentrations of tourist activities and appealing natural attractions, waste disposal is a serious problem and improper disposal can be a major despoiler of the natural environment - rivers, scenic areas and roadsides. Solid waste and littering can degrade the physical appearance of the water and cause the death of animals.

c. Sewage.

Construction of hotels, recreation and other facilities often leads to increased sewage pollution. Wastewater has polluted Rivers surrounding tourist attractions, damaging the flora and fauna. Sewage pollution can threaten the health of humans and animals.

d. Aesthetic Pollution.

Often tourism fails to integrate its structures with the natural features and indigenous architectural of the destination. Large, dominating resorts of disparate design can look out of place in any natural environment and may clash with the indigenous structural design.

A lack of land-use planning and building regulations in many destinations has facilitated sprawling developments along coastlines, valleys and scenic routes. The sprawl includes tourism facilities themselves and supporting infrastructure such as roads, employee housing, parking, service areas, and waste disposal.

iii) Physical Impacts.

Attractive landscape sites characterized by species-rich ecosystems. Typical physical impacts include the degradation of such ecosystems.

An ecosystem is a geographic area including all the living organisms (people, plants, animals, and micro-organisms), their physical surroundings (such as soil, water, and air), and the natural cycles that sustain them. The ecosystems most threatened with degradation are ecologically fragile areas such as wetlands, mangroves, Sand dunes, Sanctuary and sea grass beds. The threats to and pressures on these ecosystems are often severe because such places are very attractive to both tourists and developers.

Physical impacts are caused not only by tourism-related land clearing and construction, but by continuing tourist activities and long-term changes in local economies and ecologies.

Physical impacts of tourism development can be summarized as follows:

a. Construction activities and infrastructure development.

The development of tourism facilities such as accommodation, water supplies, restaurants and recreation facilities can involve sand mining, beach and sand dune erosion, soil erosion and extensive paving. In addition, road and other related construction can lead to land degradation and loss of wildlife habitats and deterioration of scenery.

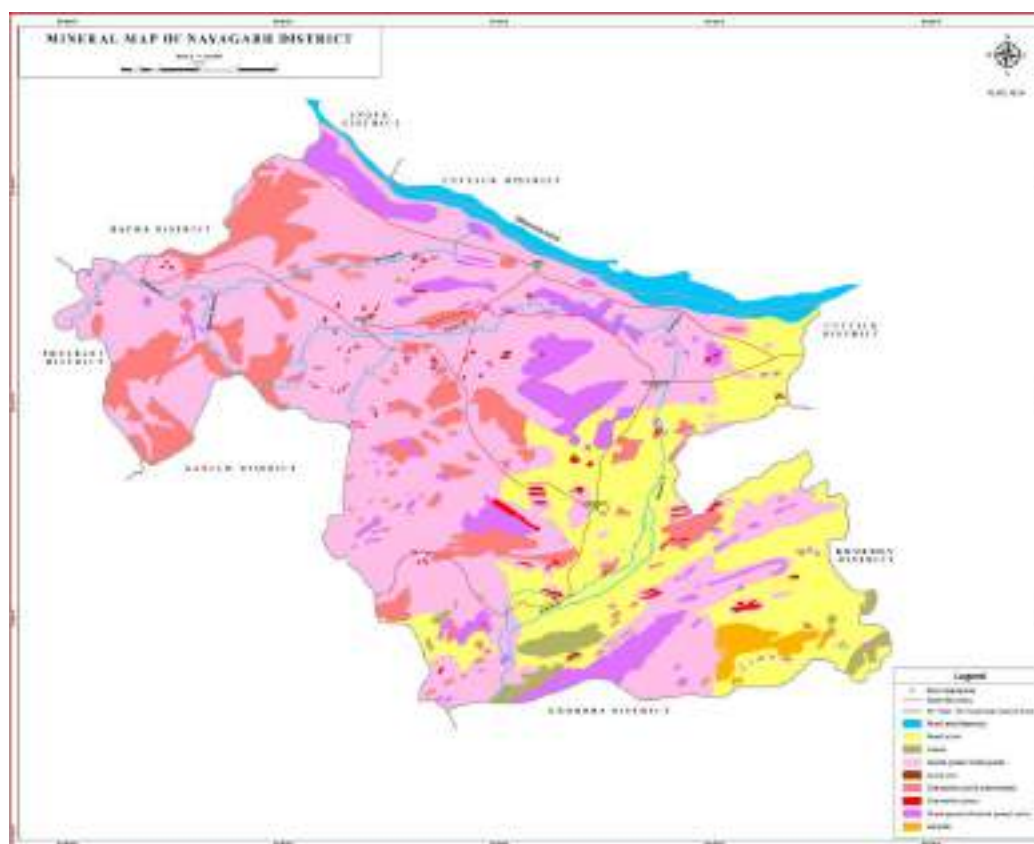
b. Deforestation and intensified or unsustainable use of land.

Construction of luxurious resort accommodation and facilities frequently requires clearing forested land. Wetlands are often drained and filled due to lack of more suitable sites for construction of tourism facilities and infrastructure. These activities can cause severe disturbance and erosion of the local ecosystem, even destruction in the long term.

4.9.2 Mining / Industries within the Division:

At present there are no mining / industrial projects in the division. Minor minerals are allowed at many places. The locations of minor minerals are as given below.

MINING LEASES MARKED ON THE MAP OF THE DISTRICT



4.9.2.1 Regulating Activities:

Considering the importance and fragile nature of the eco system, Wildlife many regulations to protect the environment have been in force. These regulations / Notifications are

a) Ban on use of polythene of specified thickness.

The Government of Odisha, Forest & Environment Department has issued notification banning use of polythene , thermo cool etc within the municipal limits or as the case may be within the Municipal Corporation Limits of Bhubaneswar, Cuttack, Berhampur, Rourkela, Sambalpur and Puri, namely:-

- (i) Polythene carry bags of any shape, thickness and size (excluding compostable);
- (ii) Bottled drinking water Polyethylene Terephthalate (PET/PETE) bottles of less than 500 ml. capacity;
- (iii) Single use disposable cutleries made up of thermocol (polystyrene) or plastic such as dish, spoon, cup, plate, glass, fork, bowl, straw, pouch to store liquid and container etc. of any size and shape &
- (iv) Thermocol decorative materials (flowers and the like)

(Note: Compostable plastics shall conform to the Indian Standard: IS 17088:2008. The manufacturers or seller of compostable plastic carry bags shall obtain a certificate from the Central Pollution Control Board before marketing or selling.). The ban order is at Annexure - VIII.

CHAPTER-5

CONSERVATION & MAINTENANCE OF SOIL AND WATER RESOURCES

5.1 Area treated under Soil & water conservation Measures:

In course of implementing working plan prescriptions, ANR (Aided Natural Regeneration), Plantation and various Soil & Moisture Conservation measures are being taken up in the division. In all forest vegetation improvement activities Soil & Water Conservation Measures are being implemented. Forest Block wise SMC measures taken and extent of area is furnished at Table No 5.1 and water body created at Table No 5.2

5.1 Soil & Moisture Conservation:

Soil & Moisture Conservation is an integral part of Aided Natural Regeneration (ANR) taken up in Rehabilitation Working Circle / improveme of degraded forests. During last ten years the activities under SMC is furnished at **Table No 5.1** below.

Table No 5.1 Abstract of SMC undertaken in the Division.							
Name of Division	Year & Area treated (in ha)						
	Year	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Nayagarh	Area	690	1455	645	1175	1598	2130
	Year	2015-16	2016-17	2017-18	2018-19	2019-20	
	Area	3079	5835	435	5105	845	22992

From the above it is observed that 22992 ha has been treated for Soil & Moisture Conservation during Plan Period and beyond up to 2019-20.

5.1.1 Water body Created during plan period:

Sixty Six numbers of New Water Bodies have been created in forests during last plan period and beyond.

Table No 5.2 Water Body Created in Nayagarh Division durin outgoing plan.			
Name of Range	Forest Block	Number of Water body Created	Remark
Nayagarh	Hatimunda	1	Inside the Forest area.
Nayagarh	Patharakata	1	
Nayagarh	Sulia	2	
Mahipur	Hatimunda	3	
Mahipur	Palva	1	
Mahipur	Ragadimada	2	
Mahipur	Ratadei	1	Outside Forest area.
Mahipur	Sulia	8	
Daspalla	Central	3	
Daspalla	Chadeyapalli	3	
Daspalla	Chhadesh	1	
Daspalla	Poibadi	3	
Daspalla	Pokharigochha	3	
Gania	Bankamunda	2	
Gania	Makaraprasad	2	
Khandapada	Guriabari	2	
Khandapada	Pithakhai	3	
Khandapada	Sapua	1	
Khandapada	Sikharpur	1	
Panchirida	Banijhari	1	
Panchirida	Dengajhari	1	
Panchirida	Gochha	5	
Panchirida	Khatia-Damasahi	3	
Panchirida	Patharaganda	2	
Odagaon	Balisinsa		
	Badhulipur	1	
Odagaon	Gochha	6	
Odagaon	Nariamba	1	
Odagaon	Sulia	3	
Total		66	

Map of Water body created inside & out Side Forest Area is given in Annexure-XXX

Table No 5.3 Creation of Water Body / WHS (Abstract)															
Range	Year														Total
	2007-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	
Nayagarh					3		1								4
Mahipur				2	4	2		3	2				1	1	15
Daspalla			3			2	2	-	1	-	2	3			13
Gania							1	1	1				1		4
Khandapada	3					1	-	1	-		1	1	-		7
Pandhirida	6					2	-	1	1		-	1	-	1	12
Odagaon					4	1	1	2	1		1	1	-	-	11
Total	9		3	2	11	8	5	8	6		4	6	2	2	66

These water bodies act as a Ground Water Recharger and also drinking place for animals.

5.2 Duration of Water flow in Selected Seasonal streams:

There are number of nalla / Stream in the forest & outside the forest. Most of the nallas are of seasonal in nature. Water flows in it mostly up to February / March and there after, the nalla dries up. The list of such nalla / Streams are furnished at table No 5.4

Table No - 5.4 Name of Seasonal Streams (Nala / Rivulets)							
Sl No.	River/ Tributary	Starting point	Pass Through	Drains to	Perennial/ Seasonal	Period of Flow	
1	Kusumi River	Balisinsa R.F.	Sarankul, Badapandusar, Khandapara and Kamei	River Mahanadi	Seasonal	July-March	9 month
2	Duanta River	Gochha R.F.	Patulisahi, Dimisar, Haripur, Gamharidihi, Nuagon	River Kusumi	Seasonal	July-March	9 month
3	Dahuka River	Ratadei R.F.	Mahipur, Gumi, Sulia, Balugaon and Haripur	River Kusumi	Seasonal	July-March	9 month
4	Khalakhal a Nallah	Sapua R.F.	Khandapara, Khalakhala	River Kusumi	Seasonal	July-March	9 month
5	Kaligiri Nallah	Manibandha RF	Arikama, Patapur, Fategarh, Manipur, Kendupalli, Baideshwar	River Mahanadi	Seasonal	July-March	9 month

6	Dhamana Nallah	Hatimunda R.F.	Dhaman, Dhipamala, Balabhadrapur,	River Dahuka	Seasonal	July-Mar	9 month
7	Sulia Nallah	Sulia R.F.	Machhipada, Rajapatna	River Kusumi	Seasonal	July-Mar	9 month
8	Uchhei Nallah	Gochha R.F.	Belaragadi, Panchumu	Nagajhar Nallah	Seasonal	July-Mar	9 month
9	Nagajhar Nallah	Gochha R.F.	Gochha, Panchumu, Patulisahi	River Duanta	Seasonal	July - Mar	9 month

5.3 Wetlands in Forest Areas:

Wetlands are one of the crucial natural resources. Wetlands are areas of land that are either temporarily or permanently covered by water (Westlake & Pratt, 2006). This means that a wetland is neither truly aquatic nor terrestrial; it is possible that wetlands can be both at the same time depending on seasonal variability. Thus, wetlands exhibit enormous diversity according to their genesis, geographical location, water regime and chemistry, dominant plants and soil or sediment characteristics. Because of their transitional nature, the boundaries of wetlands are often difficult to define. Wetlands do, however, share a few attributes common to all forms. Of these, hydrological structure (the dynamics of water supply, through put, storage and loss) is most fundamental to the nature of a wetland system. It is the presence of water for a significant period of time which is principally responsible for the development of a wetland. One of the first widely used classifications systems, devised by Cowardin et al., (1979), was associated to its hydrological, ecological and geological aspects, such as: marine (coastal wetlands including rock shores and coral reefs, estuarine (including deltas, tidal marshes, and mangrove swamps), lacustrine (lakes), riverine (along rivers and streams), palustarine ('marshy'- marshes, swamps and bogs). Given these characteristics, wetlands support a large variety of plant and animal species adapted to fluctuating water levels, making the wetlands of critical ecological significance. Utility wise, wetlands directly and indirectly support millions of people in providing services such as food, fiber and raw materials, storm and flood control, clean water supply, scenic beauty and educational and recreational benefits. The Millennium Ecosystem Assessment estimates conservatively that wetlands cover seven percent of the earth's surface and deliver 45% of the world's natural productivity and ecosystem services of which the benefits are estimated at \$20 trillion a year (Source : www.MAweb.org). The Millennium Assessment (MA) uses the following typology to categories ecosystem services:

Provisioning services	The resources or products provided by ecosystems, such as food, raw materials (wood), genetic resources, medicinal resources, ornamental resources (skin, shells, flowers)
Regulating services	Ecosystems maintain the essential ecological processes and life support systems, like gas and climate regulation, water supply and regulation, waste treatment, pollination etc.
Cultural and Amenity services	Ecosystems are a source of inspiration to human culture and education through recreation, cultural, artistic, spiritual and historic information, science and education Supporting services
Supporting services	Ecosystems provide habitat for flora and fauna in order to maintain biological and genetic diversity

Despite these benefits, wetlands are the first target of human interference and are among the most threatened of all natural resources. Around 50% of the earth's wetlands are estimated to have already disappeared worldwide over the last hundred years through conversion to industrial, agricultural and residential developments. Even in current scenario, when the ecosystem services provided by wetlands are better understood, degradation and conversion of wetlands continues. This is largely due to the fact that the 'full value' of ecosystem functions is often ignored in policy-making, plans and corporate evaluations of development projects.

The following wetlands are available in the forests of this division.

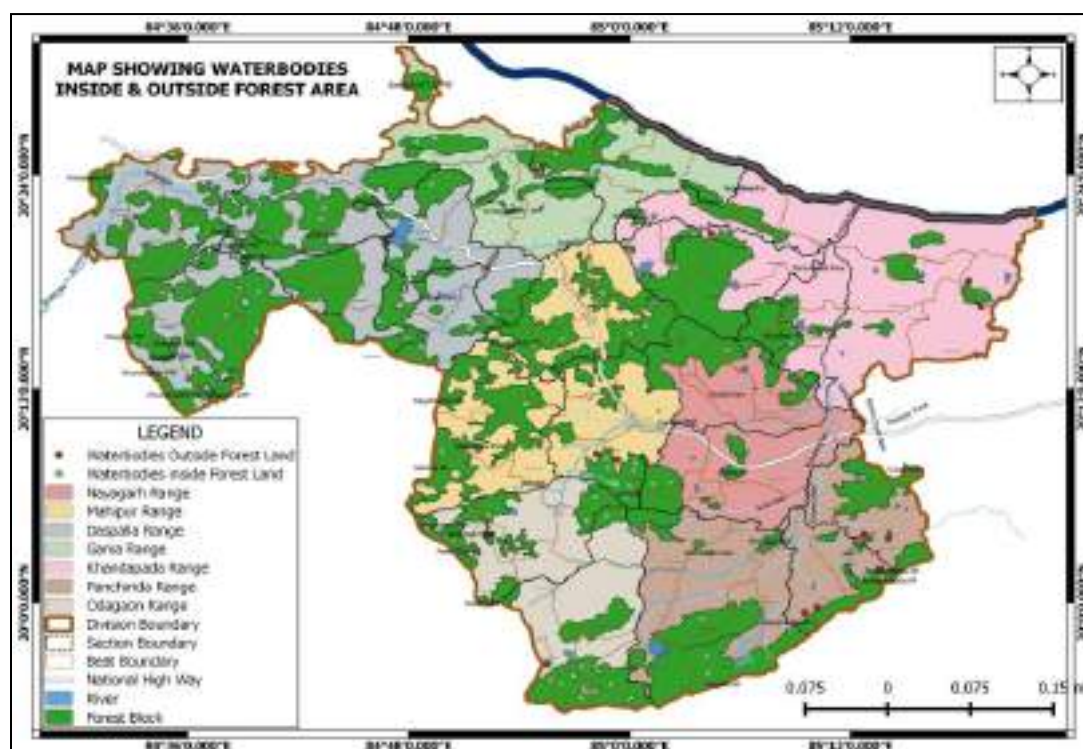
Table No 5.5 Wetlands in Forest Areas

Sl No	Name of the Range	Name of the Wetlands	Extent in Ha	Natural / Artificial	Latitude N	Longitude E
1	Odagaon	Dholapathara Dam (Phasipalli)		Artificial	20.0713	85.0388
2	Odagaon	Baghua Dam (Rohibanka)		Artificial	19.9527	84.9424
3	Odagaon	Baghua Bandha (Sakeri)		Artificial	20.0677	85.0005
4	Odagaon	Panasakhala Dam (Bahadajhola)		Artificial	20.087	84.8971
5	Odagaon	Alasu Dam (Balisinsa)		Artificial	20.0466	84.8386
6	Odagaon	Beladwar Pond (Makarapalli)		Artificial	20.0646	84.8571
7	Panchirida	Katrajhari Dam		Artificial	20.0364	85.0284
8	Panchirida	Budhabudhiani Dam		Artificial	19.9539	85.0180
9	Panchirida	Mohanguru Dam		Artificial	20.1166	85.1350
10	Panchirida	D.N.Pur Dam		Artificial	20.088	85.24088889
11	Panchirida	Bhalujhar Bandha		Artificial	19.9824	85.1408

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12	Panchirida	Komanda Dam		Artificial	20.0181	85.1656
13	Panchirida	Damasahi Dam		Artificial	20.3748	85.1974
14	Khandapada	Tantuliapalli Pata	20.00	Natural	20.3121	85.1721
15	Khandapada	Akurabandha Sara	40.00	Natural	20.4482	85.0978
16	Khandapada	Sunamunhi MI Project	80.00	Artificial	20.2635	85.1565
17	Khandapada	Borogaon Pata	40.00	Natural	20.2344	85.1903
18	Mahipur	Salapadiha	5.70	-	20.1466	84.86459722
19	Mahipur	Muriamba Pond	1.30	Artificial	20.1311	84.8553
20	Mahipur	Andikiari Pond	1.30	Artificial	20.1414	84.9990
21	Daspalla	Mahisanal Dam		Artificial	20.2503	84.8173
22	Daspalla	Haguri Dam		Artificial	20.2900	84.8288
23	Daspalla	Kuanria Dam		Artificial	20.3499	84.8014
24	Nayagarh	Lekhanapur Pond	2.50	Artificial	20.11794444	85.08158333
25	Nayagarh	Dianpada Dam		Artificial	20.1075	85.0621
26	Nayagarh	Panipaila Dam		Artificial	20.2221	85.1047
27	Nayagarh	Koska Dam		Artificial	20.2125	85.0769
28	Nayagarh	Fulasouruni	2.0	-	20.1172	85.0463
29	Gania	Bantala		Artificial	20.7681	84.9682
30	Gania	Ghagara Dam		Artificial	20.4060	84.9708

The Wetlands, as defined under the Wetland (conservation and Management) Rules, 2017 situated within the Division shall be restored and sustainably managed. Under these Rules riparian restoration will be done.



5.3.1 Wetland Classification System:

Modified National Wetland Classification system is used for wetland delineation and mapping comprising of 19 wetland classes which are organized under a Level III hierarchical system. Level one has two classes: Inland and coastal, these are further bifurcated into two categories as: natural and man-made under which the 19 wetland classes are suitably placed. Two date data pertaining to pre- monsoon and post monsoon was used to confirm the classes. Wetlands put to agriculture use in any of the two dates are not included as wetland class. Definitions of wetland categories used in general is as follows

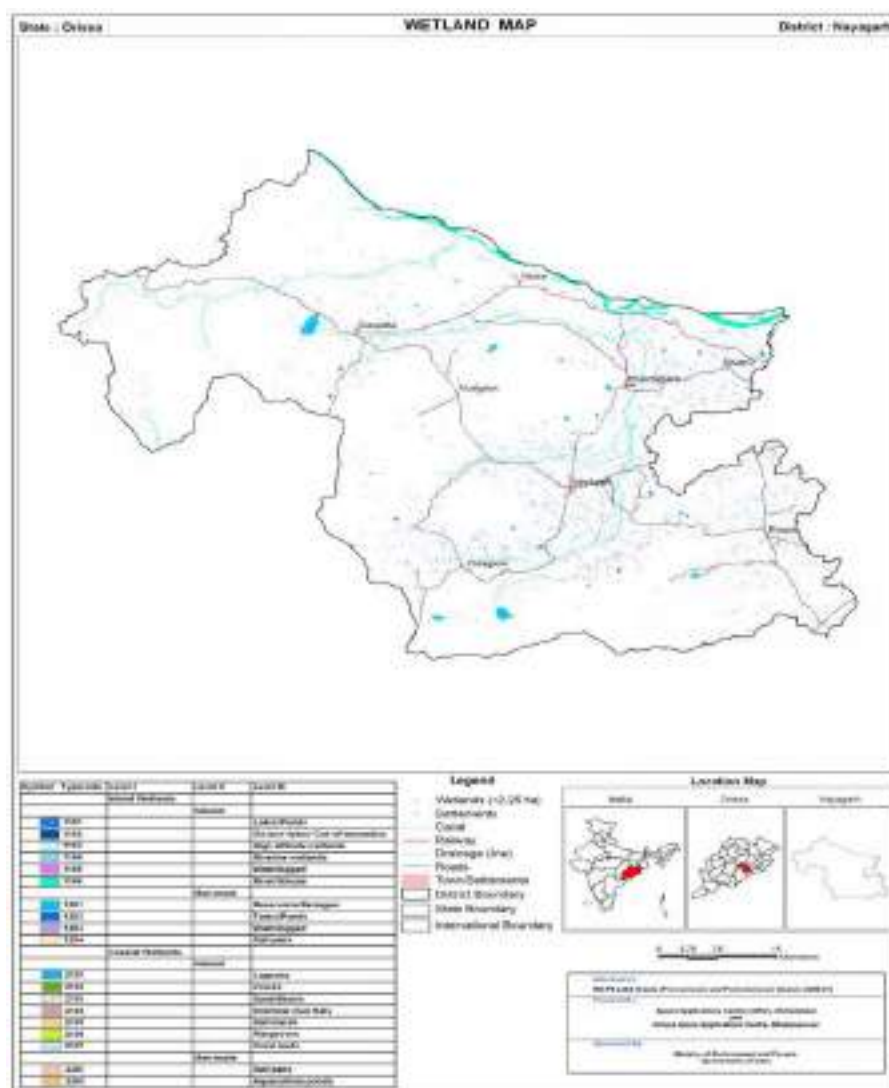
Table No 5.6 Wetland Classification System and coding			
WettCode	Level-I	Level-II	Level-III
1000	Inland Wet Lands		
1100		Natural	
1101			Lakes
1102			Ox- Bow lakes / Cut-Off Meanders
1103			High altitude wet lands
1104			Riverine Wet Lands
1105			Waterlogged
1106			River / Stream
1200		Manmade	
1201			Reservoirs / Barrages
1202			Tanks / Ponds
1203			Waterlogged
1204			Saltpans
2000	Coastal Wetlands		
2100		Natural	
2101			Lagoons
2102			Creeks
2103			Sand / Brach
2104			Intertidal Mud flats
2105			Salt marsh
2106			Mangroves
2107			Coral Reefs
2200		Man- made	
2201			Salt Pans
2202			Aquaculture Ponds

The district data on wetland is furnished below

Table No 5.7Area estimates of wetlands in Nayagarh district in ha						
WettCode	Category	No of Wetlands	Total wetland area	% of wetland area	Open Water	
					Post Monsoon	Pre monsoon
1000	Inland Wet Lands					
1100	Natural					
1101	Lakes					
1102	Ox- Bow lakes / Cut-Off Meanders					
1103	High altitude wet lands					
1104	Riverine Wet Lands					
1105	Waterlogged	8	115	1.25	35	35
1106	River / Stream	29	5301	57.71	5301	5123
1200	Manmade					
1201	Reservoirs / Barrages	26	1241	13.51	949	788
1202	Tanks / Ponds	121	582	6.34	346	248
1203	Waterlogged	2	27	0.29	--	--
1204	Salt pans					
Total inland		186	7266	79.1	6631	6194
2000	Coastal Wetlands					
2100	Natural					
2101	Lagoons					
2102	Creeks					
2103	Sand / Brach					
2104	Intertidal Mud flats					
2105	Salt marsh					
2106	Mangroves					
2107	Coral Reefs					
2200	Man- made					
2201	Salt Pans					
2202	Aquaculture Ponds					
	Total Coastal	00	0	0	0	0
	Sub Total	186	7266	79.1	6631	6194
	Wetlands <2.25 ha	1919	1919	20.89	0	0
	Total	2105	9185	100.00	6631	6194

Table No 5.8 Nayagarh Wet land data as per National Wetland Atlas Report.

Name of District	Geographical area in Km ²	Wetland in ha	% of Wet land	% of Geographical area	Open Water in ha		Seasonal Reduction in open water extent (%)
					Post monsoon	Pre Monsoon	
Nayagarh	3954	9185	1.3	0.1	6631	6194	7
Area under aquatic vegetation					636	893	
Area Under Turbidity Levels							
Low					1265	2730	
Medium					5366	3464	
High					--	---	



5.4 Water level in the Wells in the vicinity (Up to 5km) of Forest area:

The phreatic zone constitutes the most potential ground water reservoir in the district. This zone has been mapped in course of hydro geological surveys. With a view to ascertain the changes in the ground water regime and make an over all assessment of the ground water resources CGWB has, so far, established 16 network hydrograph stations through out the district which are monitored manually 4 times in a year, during January, April, August and November. The depth to water table values depend on several factors like rainfall, topography, drainage characteristics, proximity to drainage channels, lithology, water bearing and water yielding properties of the rocks, as also land use.

Table No 5.9 Depth of Water table in different season (m BGL) in different well				
Location	January	April	August	November
Banigocha	6.38	7.62	3.85	4.33
Daspalla -i		0.9	0.8	0.3
Daspalla-ii	4.95	7.05	4.63	6.01
Gania	3.29	4.92	2.96	3.84
Khandapara	7.58	11.02	5.53	5.79
Kantilo	1.14	1.64	0.29	0.99
Mahipur	3.32	4.26	1.75	2.31
Nayagarh	3.59	3.95	2.79	3.32
Odogaon	4.66	6.79	1.91	3.42
Purysottampur	2.89	5.13	1.40	1.75
Sarankul	3.09	4.47	1.43	2.30
Subalaya	4.01	5.84	0.58	1.54
Takara	6.41	7.52	3.08	4.87

A perusal of the data indicates that the average depth to water level in the district ranges from 0.9 m below ground level (at Daspalla -i) to 11.02 m below ground level (at Khandapada) during pre-monsoon period and from 0.30 m below ground level (at Daspalla-i) to 6.01 m below ground level (at Khandapada) during post monsoon period respectively. In the year 2011 the range of water level in the hydrograph stations was between 0.65 and 9.48 m below ground level during the pre monsoon period (April 2011) and between ground level to 6.27 m below ground level during the post monsoon period (November 2011). The water table is shallow in most part of the district. The pre-monsoon depth to water level values are generally 10 in the range of 5m to 10m (in about 50% of the wells) in most part of the area, about 31% of the wells showing depth to water level between 2m and 5m and about 18% of the wells showing depth to water level less than 2m.

Seasonal Fluctuations:

A perusal of the categorization of change in water level of 2011 pre monsoon with respect to the mean of last 10 years of data from 2001 to 2011 reveals that 11 Nos of well (73.3% of the total NHS) show rising trend in the depth range of 0-2 m bgl. 1 no of wells (6.7% of the wells) shows water level in the depth range of 2-4m bgl. 3 Nos of wells (20% of the well) shows falling trend in the depth range of 0-2m bgl. The post monsoon seasonal fluctuation of the data shows rising trend in 7 Nos of wells (46.7% of the well) in the depth range of 0-2 m bgl and 1 no of wells show rising trend in the depth range of 2-4 m bgl. The falling trend in 7 nos of wells is recorded in the depth range of 0-2m. The pre monsoon and post monsoon water level data with the decadal mean shows that there is no appreciable change in the ground water regime. Trend Analysis of the Hydrograph Stations also supports this phenomenon except those in the canal command areas where the stations show a perceptible rising trend during the pre monsoon period probably due to the release of canal water during this period.

Water level trend:

The decadal water level trends during pre-monsoon period indicate that 66.7 percent stations show rising trend of water level, the maximum being 0.199 m/Yr. The falling trend of water level is shown by about 37 % of the stations and maximum fall recorded is 0.105 m/yr. The decadal water level trend analysis data of post-monsoon indicate that there is a rising trend of water level in 53.4% cases and falling trend in rest 46.7% cases. The maximum rise recorded is 0.231 m/yr with the majority of the values being less than 0.10 m/yr. The maximum fall is around 0.083/yr with the majority of the values being less than 0.1m/yr.

5.5 Status of Aquifers:

5.5.1 Quality of ground water in the Shallow aquifers:

Quality of ground water is an important factor for assessing its suitability for various uses. Ground water quality depends upon the lithological and chemical composition of the aquifer, climatic conditions, quantum of recharge made and its movement, activities of microorganisms, temperature and presence of contaminants in the environment. The specific conductance value in the district generally ranges from 500 to 1000 micro mhos/cm at 25°C but values of the order of 1500 to 2600 micro mhos/cm have also been noted near Odogaon in the east near Nayagarh and in the villages located in Burtang nadi valley north

of Daspalla. The concentration of chloride generally ranges from 50 to 100 mg/l. However at places where the specific conductance values are high, the chloride content also is relatively high up to 300 mg/l. 12 High fluoride in ground water (> 1.5 mg/l) may cause crippling skeletal fluorosis. High fluoride is retained mainly in the skeletal and a small portion in teeth. High fluoride concentration is found at Nuagaon of Nayagarh district. High concentration of Iron in ground water gives bitter sweet astringent taste and making it aesthetically undesirable in colour, odour and turbidity. Intake of high dose of Iron present in ground water may result in Haemochromatosis i.e. accumulation of Iron in kidneys, lungs, liver etc. resulting in stone formation and malfunctioning of these organs. The concentration of Iron more than permissible limit (> 1.0 mg/l as per BIS :10500) have been recorded in wells of Daspalla-II (17mg/l), Odagaon (4.9 mg/l) and Khandapada(1.3mg/l) of Nayagarh District.

5.5.2 Ground Water Conservation and Artificial Recharge:

Some parts of the district show deeper water level condition during the post monsoon period. This is mainly due to the prevailing topographic conditions and water table gradient, which facilitates flow of ground water through nalas, rivers and streams as base flows. To arrest the rapid decline of water table in these areas special studies may be taken up to pin point the areas where water scarcity problems are more pronounced during pre-monsoon period. In these pockets suitable sites are required to be pin pointed to adopt artificial recharge techniques and rain water-harvesting methods based on site-specific conditions. This artificial recharge will help in increase of ground water storage and also in improving the quality of ground water. The most feasible artificial recharge and rain water harvesting structures are percolation tanks, nalla/contour bunding, small check dams/weirs, renovation of old tanks to percolation tanks, water spreading, gully plugging, gabion structures etc. Suitable Rain water Harvesting and Artificial Recharge Techniques may be adopted where fluoride concentration is more than permissible limit. The suitable areas identified for ground water conservation and artificial recharge is shown in the ground water development possibility map of the district.

5.5.3 Ground Water Related Issue & Problems:

The concentration of Iron more than permissible limit (> 1.0 mg/l as per BIS 10500) have been recorded in wells of Daspalla-II(17 mg/l), Odagaon (4.9 mg/l) and Khandapada(1.3 mg/l) of Nayagarh District. High fluoride concentration is found at Nuagaon of Nayagarh district. The analysis of water level trend over the years (last 10 years) for both premonsoon

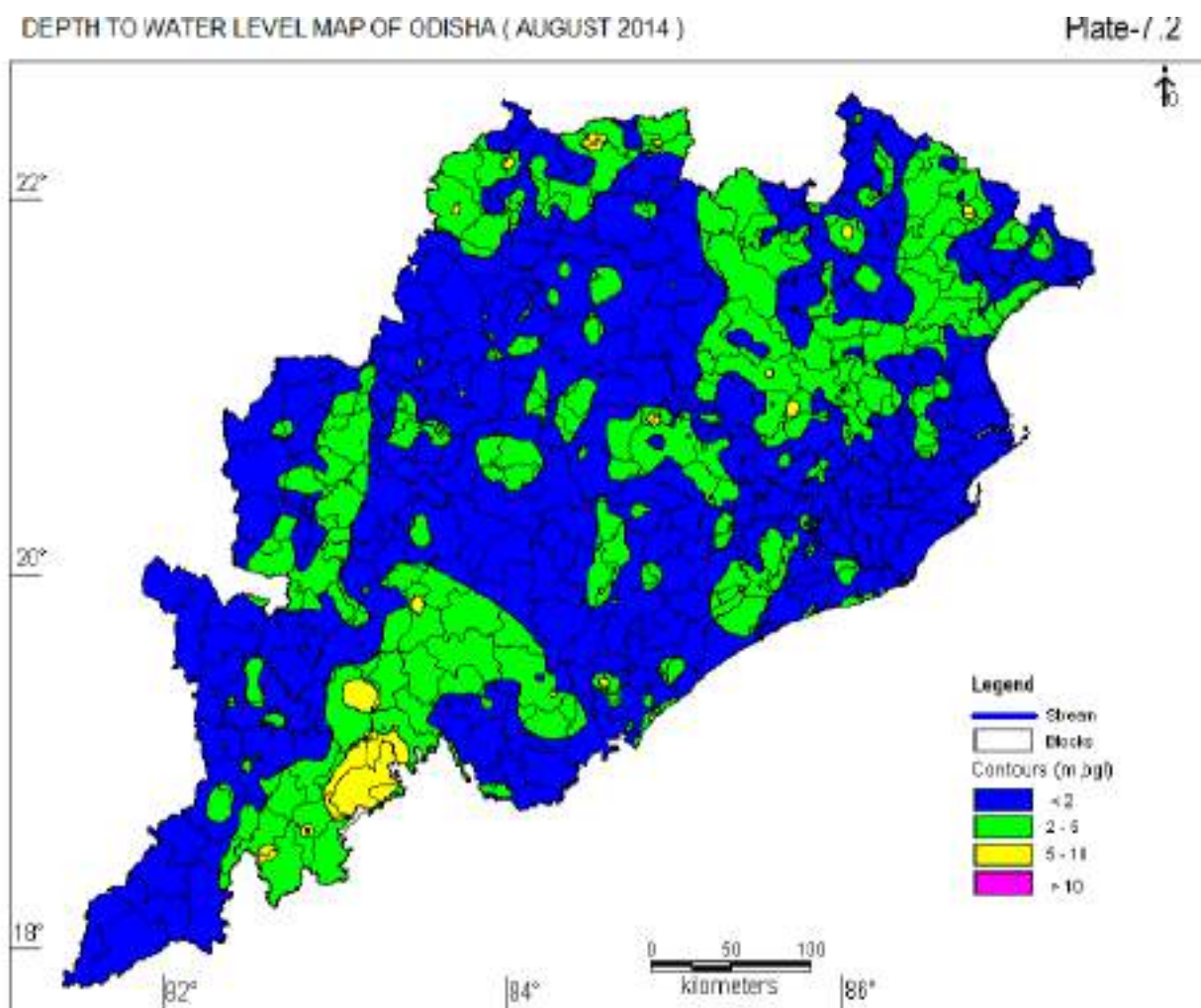
and post monsoon periods indicates that there is no appreciable change in water levels. This indicates that no depletion of water level has taken place in the district.

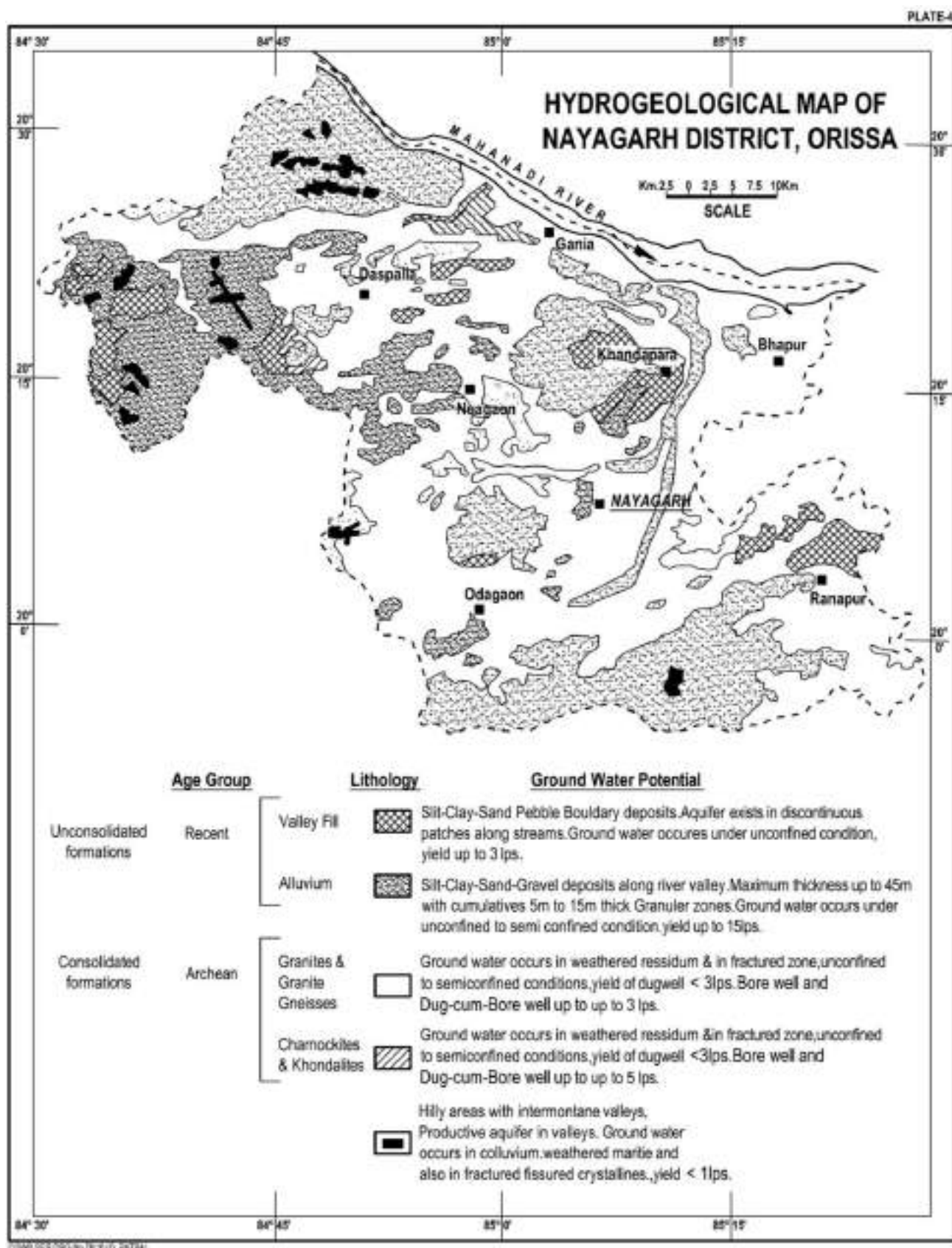
5.5.4 Recommendations:

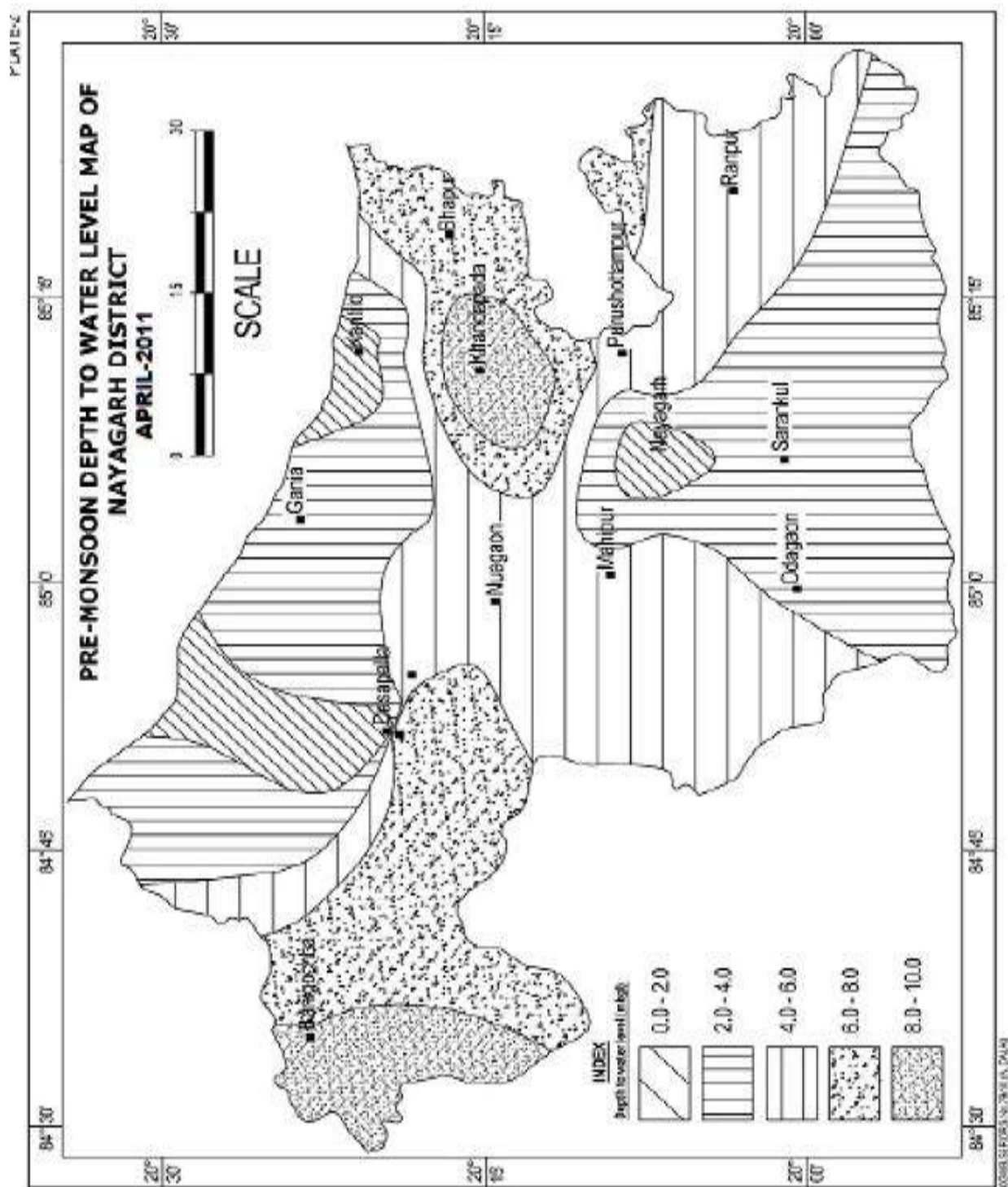
- 1) As there is large scope for development of ground water, suitable schemes may be launched for ground water development to boost agricultural production in the district. The financial institutions should generously finance such schemes.
- 2) In construction of ground water abstraction structures, such as dug wells, dug cum bore wells and bore wells, for irrigation minimum safe spacing should be maintained to avoid interference of the wells.
- 3) For optimum utilization of the groundwater potential, necessary steps should be taken for energisation of the wells.
- 4) The yield of existing dug wells may be enhanced by converting those into dug cum bore wells wherever feasible and the wells should be provided with brick lining which will facilitate the free flow of ground water into the well.
- 5) Detailed surface geophysical survey aided by photogeological & remotesensing studies may be taken up in the district to identify the exact thickness of weathered zone and occurrence and extent of lineaments, which form potential aquifer zones.
- 6) The agricultural extension services should motivate and guide the farmers to adopt suitable cropping patterns to maximize the benefits of irrigation through dug wells / bore wells.
- 7) Construction of check dams, nalla bunds, percolation tanks at suitable locations will help in effecting additional recharge to the ground water reservoir. Sub-surface dams may also be constructed at hydrogeologically suitable sites to arrest sub-surface out flow of ground water in the weathered mantle of hard massive rocks. This will increase the dynamic ground water storage in the adjacent phreatic aquifer.
- 8) Ground water monitoring in the district, for water level and water quality, through National Hydrograph Stations should be strengthened to assess the impact of envisaged ground water development on the ground water regime and to find out the status of water logging in the canal command areas.

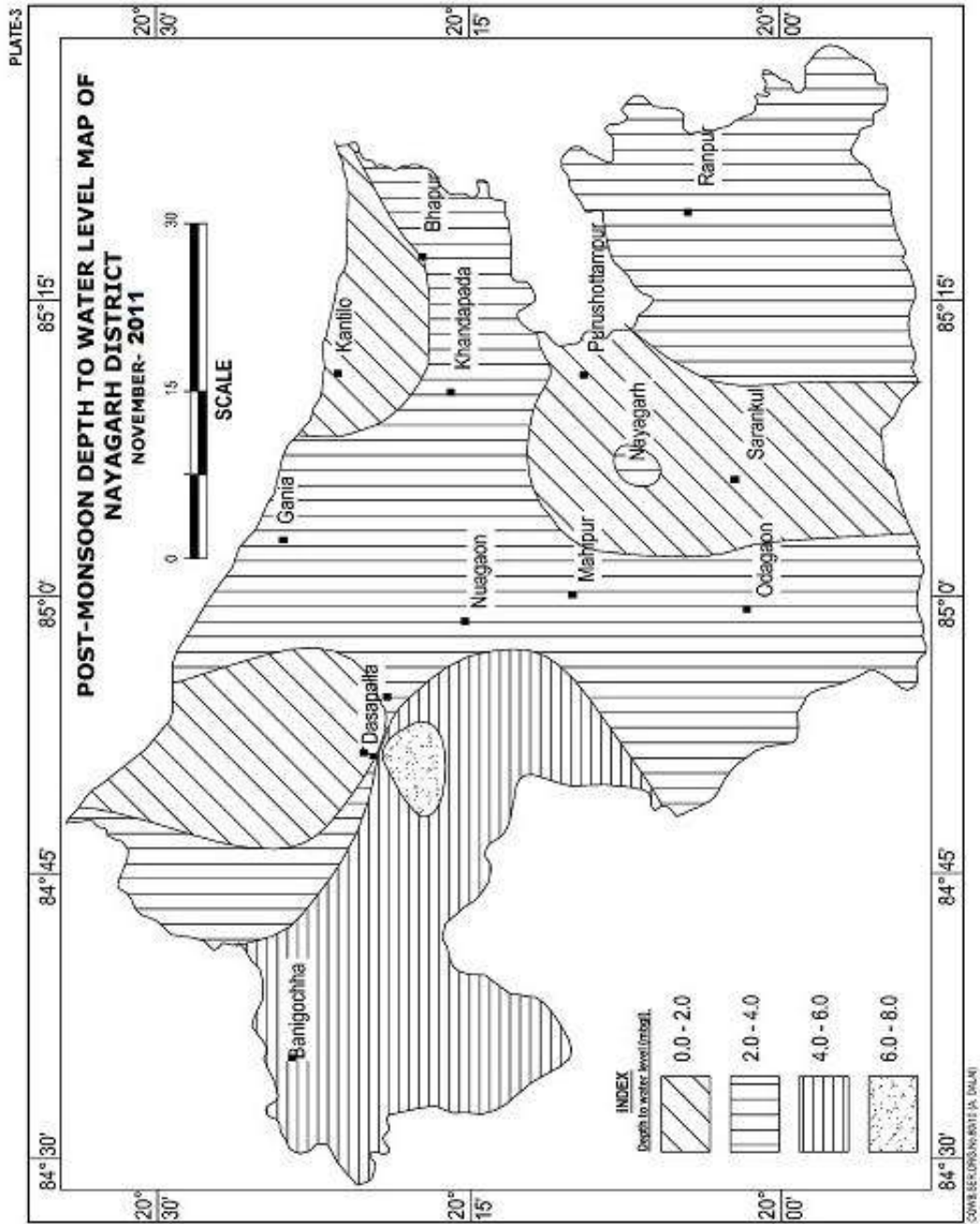
5.5.5 Depth of Water Level:

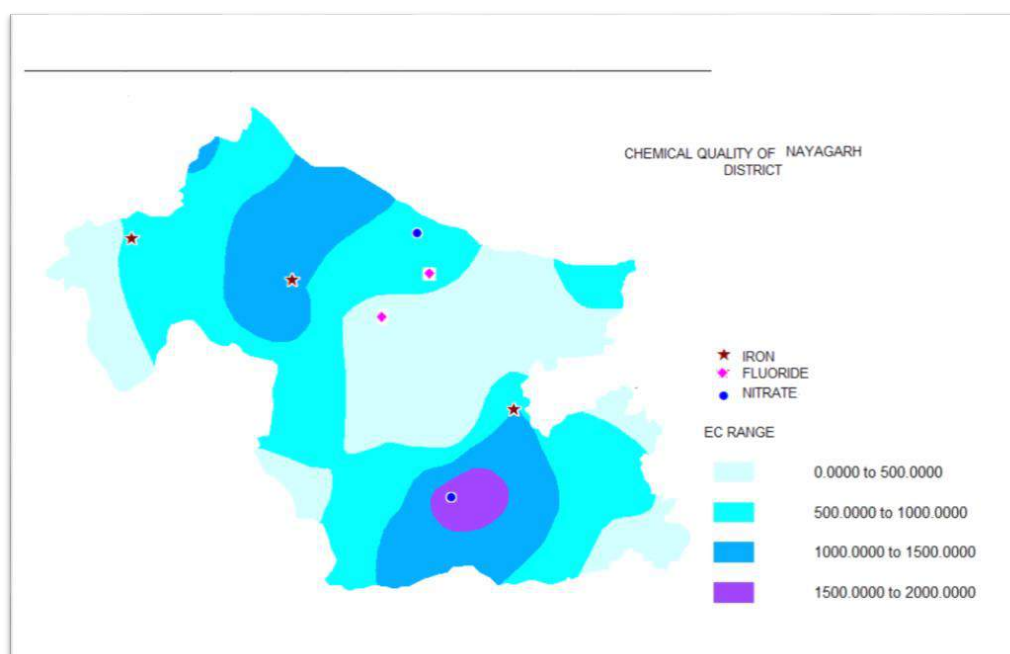
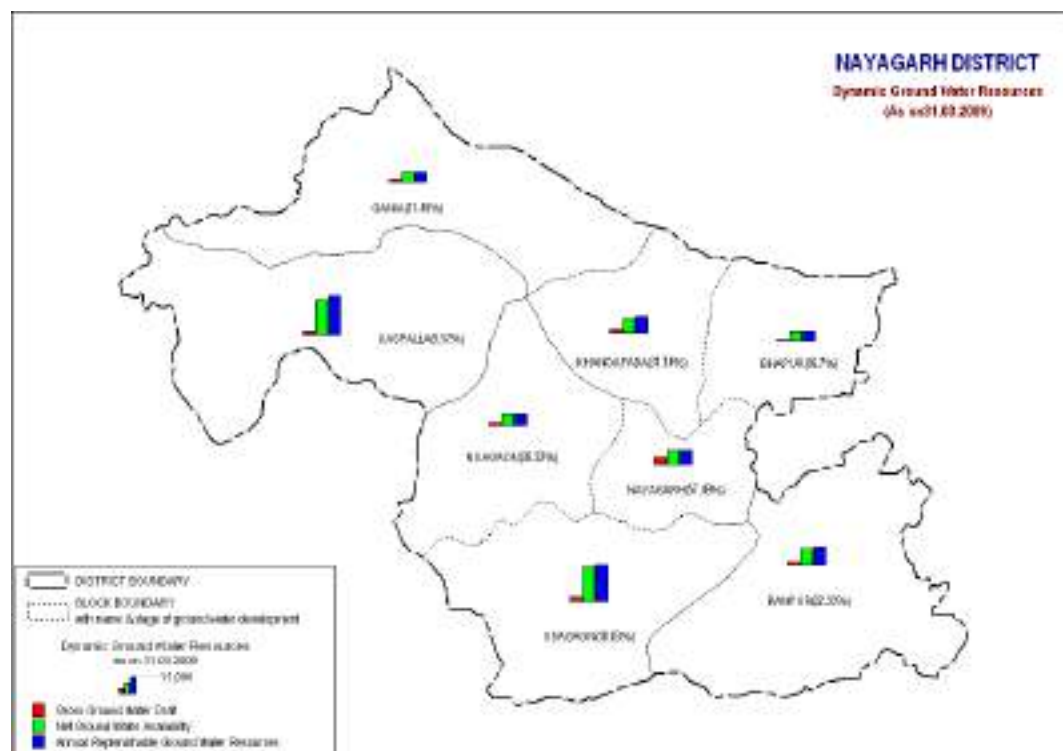
The depth of Water table of the State is depicted below.











CHAPTER-6

MAINTENANCE & ENHANCEMENT OF FOREST RESOURCE PRODUCTIVITY

6.1 Growing Stock of Wood:

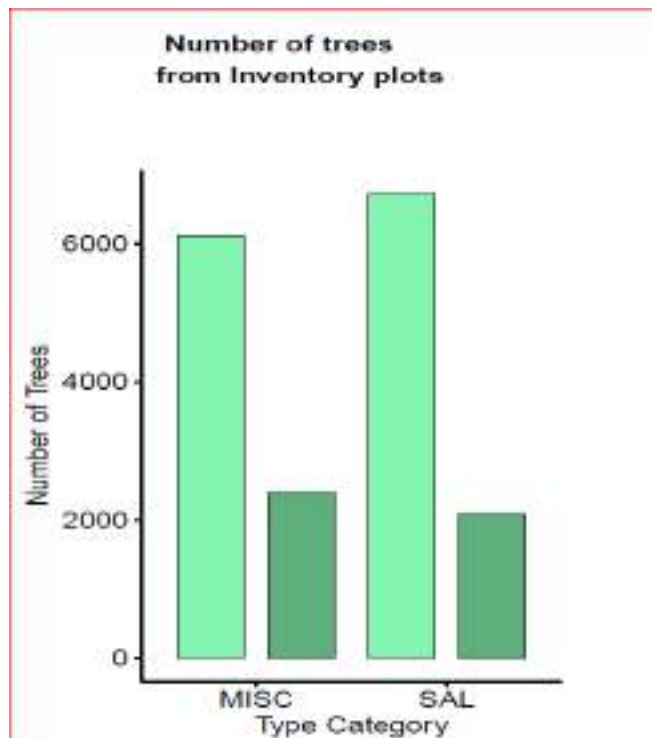
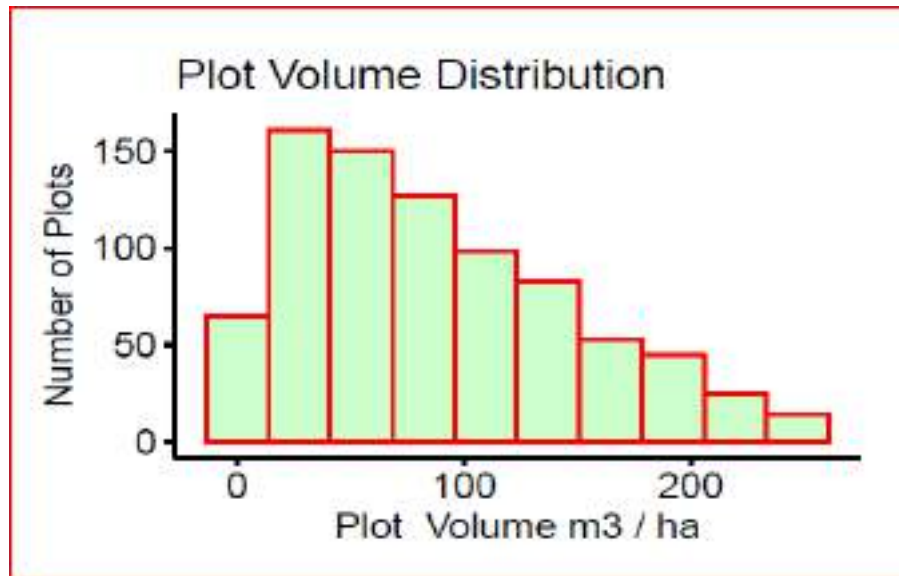
6.1.1 Sampling & Sample point distribution:

The Growing stock has been estimated basing on Sample enumeration carried out at 917 Sample points furnished by ORSAC. The field staff enumerated the trees available within 1000 m² taking the Sample points on the centre of the Square of 31.623m side. The collected data has been analysed. On analysis the Growing stock in each forest block has been computed. Distribution of Sample plots to different density Class is furnished below. Data analysis report has been obtained for 821 points from ORSAC, Bhubaneswar.

Table No 6.1 Sample points Distribution Density class wise.						
Sl No	Range	No of sample plots under density class				
		D1	D2	D3	D4	Total
1	Daspalla	80	165	89	4	338
2	Gania	9	37	14	2	62
3	Khandapara	19	39	24	9	91
4	Mahipur	5	90	37	12	144
5	Nayagarh	1	22	8	7	38
6	Odagaon	3	45	11	2	61
7	Panchirida	24	49	12	2	87
	Total	141	447	195	38	821

Canopy Density Classes are D1 : > 70%, D2 : 40–70% D3 : 10–40%, D4 : <10%

The plot volume distribution is furnished below.

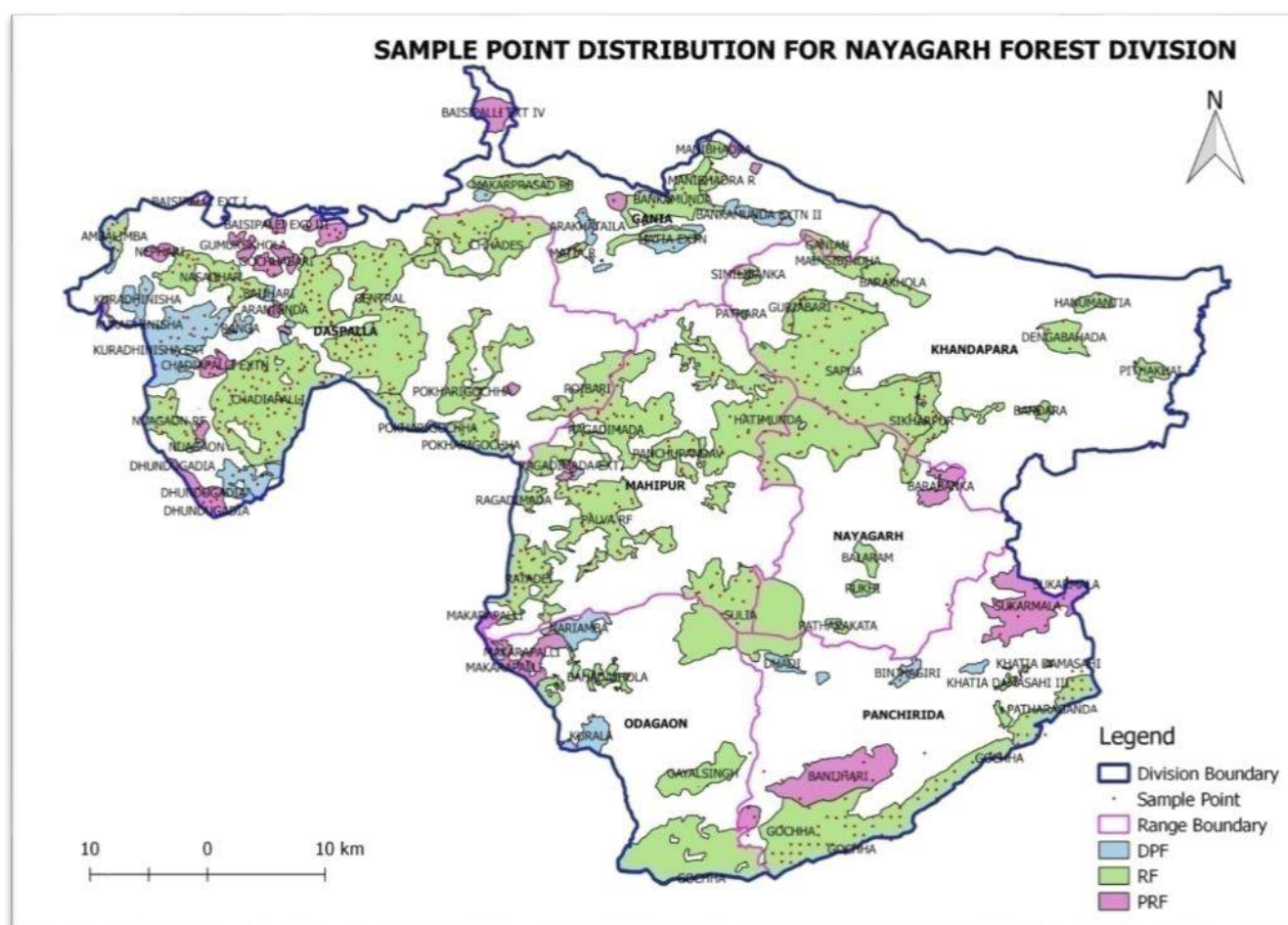


Regarding Crop composition in Sal and Misc Forests, the proportion of Sal has been depicted in the following graph.

The crop density of forest area has been observed after analysis as follows.

Table No 6.2 Stand volume parameters – Nayagarh Division.

Criteria						
No of trees / ha	Basal Area per ha (M ³)	Volume per Ha (in M ³)	Mean Volume (in M ³)	Standard Error	LB (in M ³)	UB (in M ³)
219.27	11.51	86.97	95.54	0.03	90.73	100.35

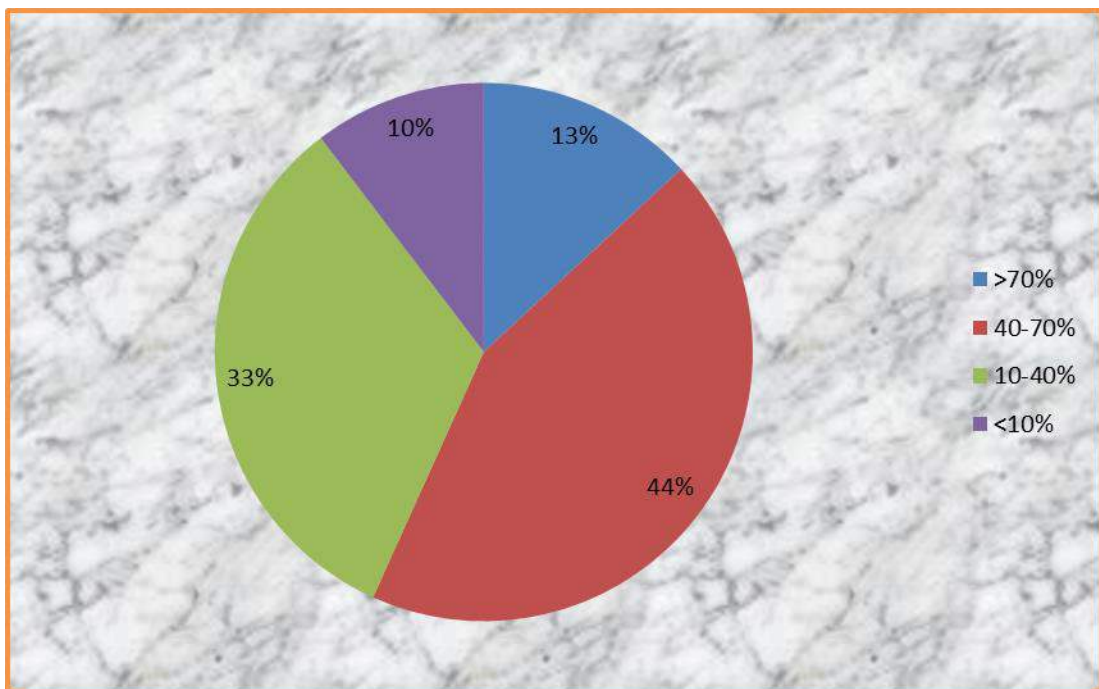
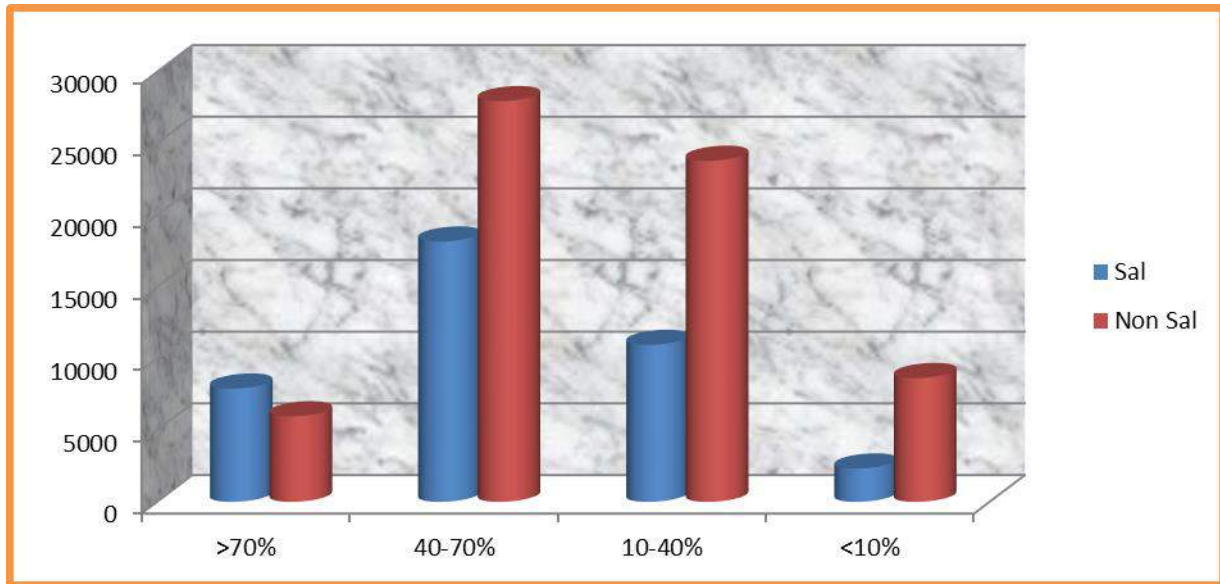


6.1.2 Distribution of Area (Density class)

The Overall crop density of the division for Sal and Non sal Forest and area under each density class has been furnished by ORSAC. The details is as given below (table No 6.3).

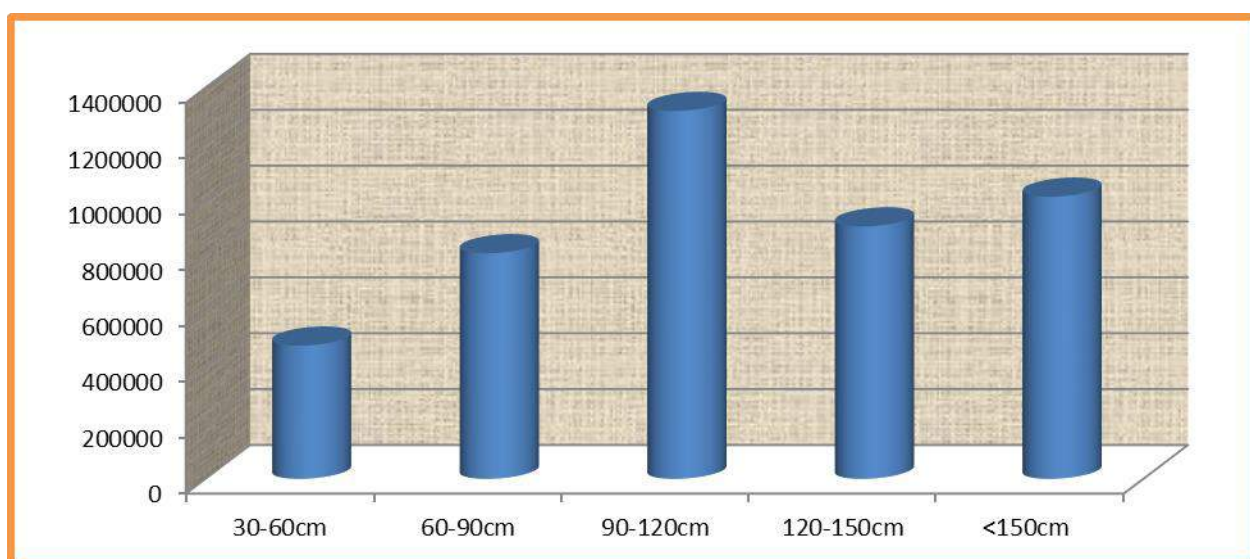
Table No 6.3 Forest Area under Different density Class (Sal & Non sal)					
Category	Area under different Density class (in Ha)				Total
	>70%	40-70%	10-40%	<10%	
Sal Forest (SFC)	7897.38	18162	10953	2323.3	39336.12
No of Plots in SFC	93	229	115	10	447
Density Class %	20.08	46.17	27.85	5.91	100
Non Sal Forest (Non-SFC)	5966.82	27959	23796	8635.8	66358.04
No of Plots in Non SFC	48	218	80	28	374
Density %	8.99	42.13	35.86	13.01	100
Div. Total					
Area (All)	13864.2	46121.17	34749.69	10959.1	105694.2
Sample plots	141	447	195	38	821
%	13.12	43.64	32.88	10.37	100.00

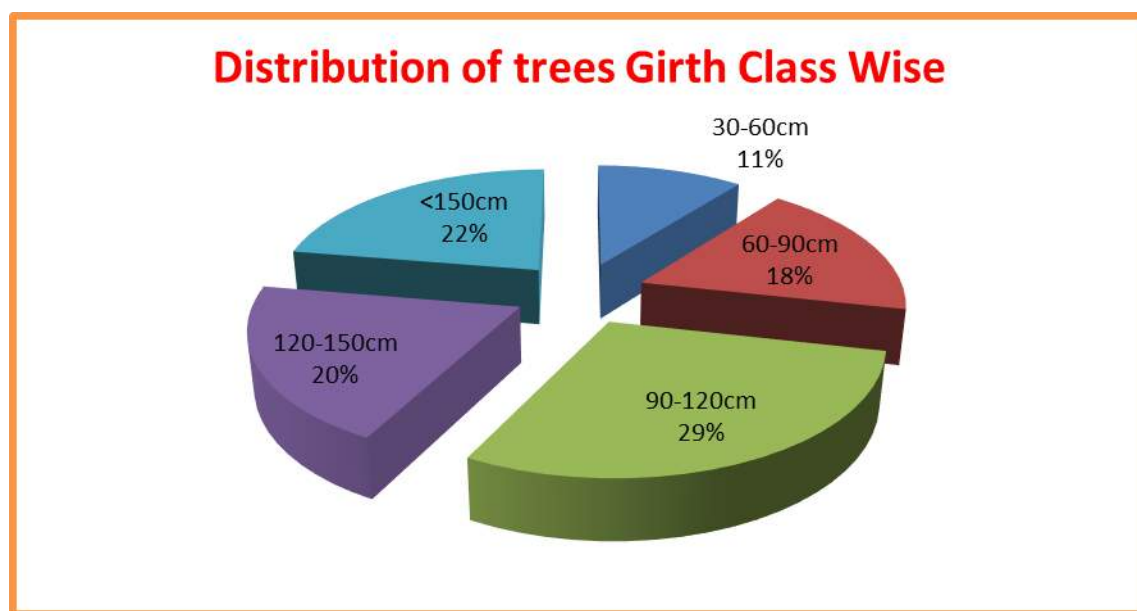
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The range wise distribution of trees under different Girth Class is furnished at Table No 6.4

Table No 6.4 Distribution of trees under different Girth Class							
Sl No	Range	No of trees in different Girth Class					Total
		30-60cm	60-90cm	90-120cm	120-150cm	<150cm	
1	Daspalla	41988	151868	254010	242716	236662	927244
2	Gania	40403	64184	103832	63123	64551	336093
3	Khandapara	93572	86373	110825	71569	70237	432576
4	Mahipur	136939	218493	308690	170213	202807	1037142
5	Nayagarh	49889	68699	115787	76708	80540	391623
6	Odagaon	70801	103970	167827	99017	86069	527684
7	Panchirida	43445	114267	256198	180451	269368	863729
Total		477037	807854	1317169	903797	1010234	4516091
Percentage		10.56	17.89	29.17	20.01	22.37	10.56



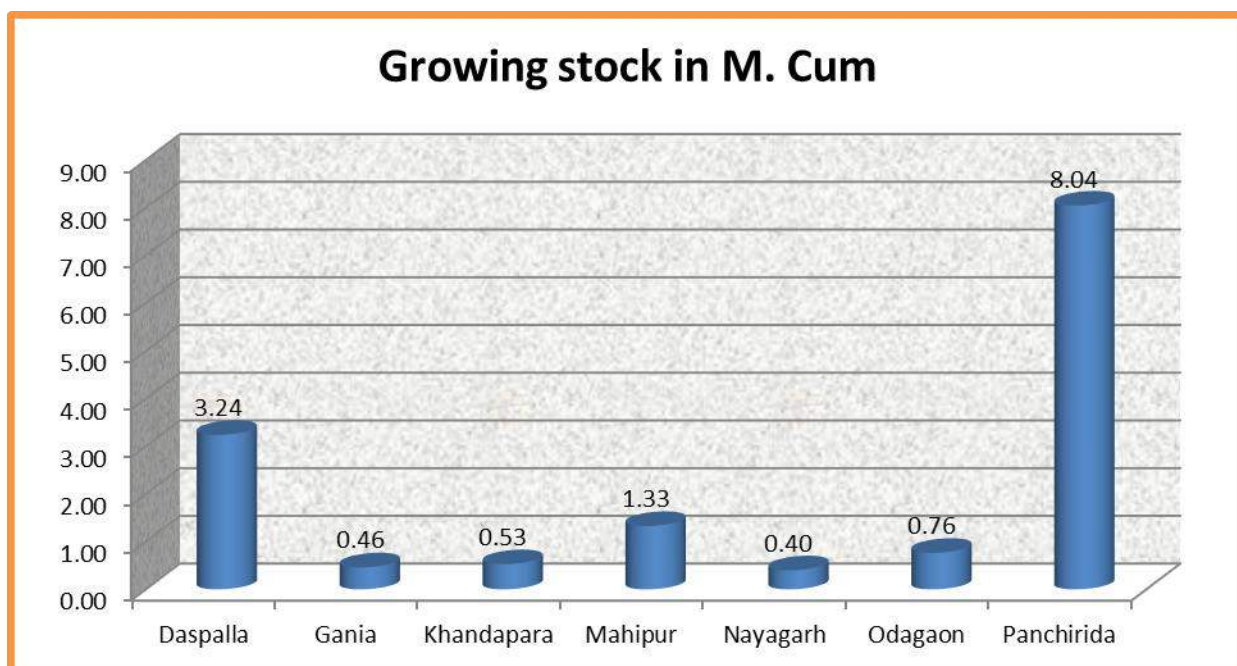


From the above facts & figures it is observed that due to conservationist approach followed in the past, the number of trees in higher girth class is adequate but the younger generation is sufficient to fill up the gap on removal of trees in higher girth class.

6.1.3 Estimation of Growing Stock:

Basing on Sample point analysis the growing stock of the division has been estimated. The Range wise available growing stock in Cum is furnished at Table No 6.5. The total growing stock has been estimated to be **14.76 Million Cum**

Table No 6.4 Distribution of trees under different Girth Class							
Sl No	Range	No of trees in different Girth Class					Total
		30-60cm	60-90cm	90-120cm	120-150cm	<150cm	
1	Daspalla	156223	548998	913737	796313	821091	3236362
2	Gania	54944	93320	140159	85104	87400	460927
3	Khandapara	117850	106889	132700	86746	82889	527074
4	Mahipur	177115	276765	398669	218997	256294	1327840
5	Nayagarh	50901	70067	118144	78228	82063	399403
6	Odagaon	103406	154349	245583	142142	119439	764919
7	Panchirida	723026	1418166	2327643	1678752	1896347	8043934
Total		1383465	2668554	4276635	3086282	3345523	14760459
Percentage		9.37	18.08	28.97	20.91	22.67	100.00



6.2 Growing Stock of Bamboo:

During Sample point enumeration occurrence of Bamboo has been recorded in many forest blocks Daspalla, Mahipur range in abundance. In Panchirida, Odogaon and Khandapada bamboo in fairly dense form is observed. Out of total bamboo forests i.e. 61151.015 ha on going plan clumps per ha and culms available per clump are assessed as follows.

Status of bamboo forest	In ha	No clumps per ha in average	No culms per clump	Total culm in lakh	Harvestable culms in Lakh per Cycle
Very Good	24460.41	125	45	1375.89	550.36
Moderate	18345.3	85	35	545.77	218.31
Degraded	18345.3	60	20	220.14	88.06
Total	61151.01	270	100	2141.80	856.73

From the growing stock assessment it is predicted that about 2.45 lakh Sale Unit of bamboo can be harvested in a Cutting Cycle of four years. Bamboo Potential of the division is estimated to bear harvesting of 60000 SU of bamboo every year.

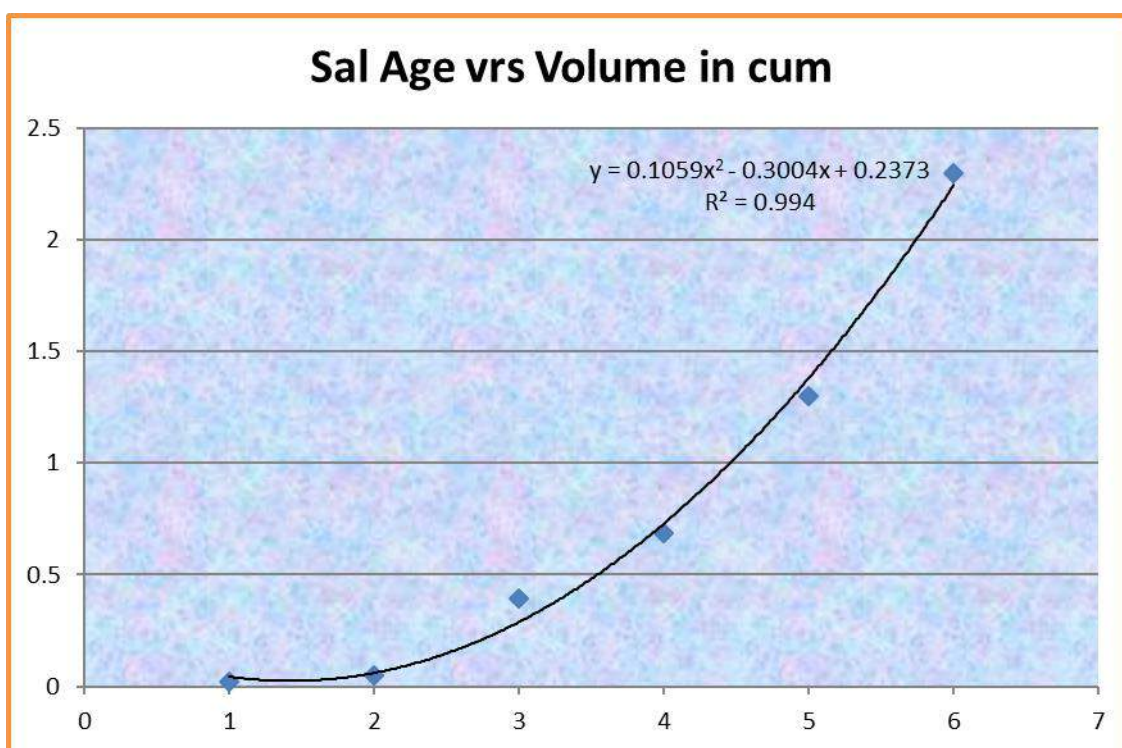
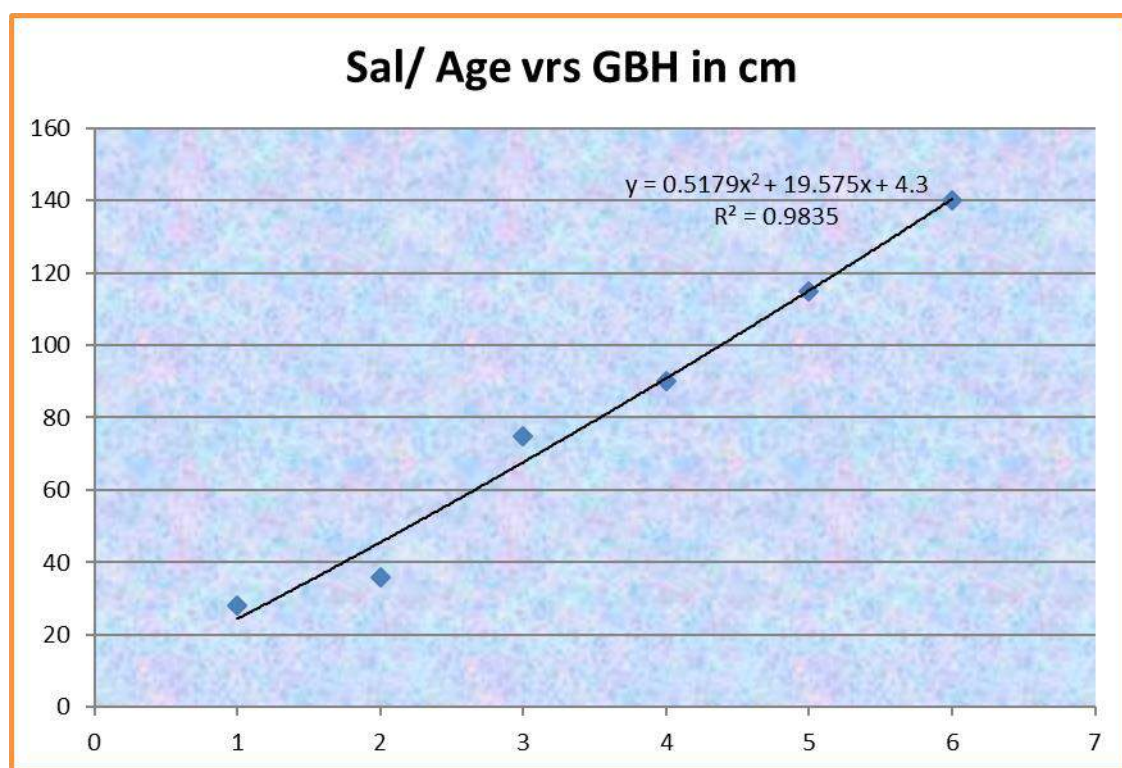
6.3 Increment in Volume of Identified Timber Species:

Field exercise has been conducted to find out the increment of important timber species like Sal, Bija, Asan, Arjun, and Teak. The Age has been ascertained, it's Girth at Breast Height and Top height measured. The data so collected are furnished below.

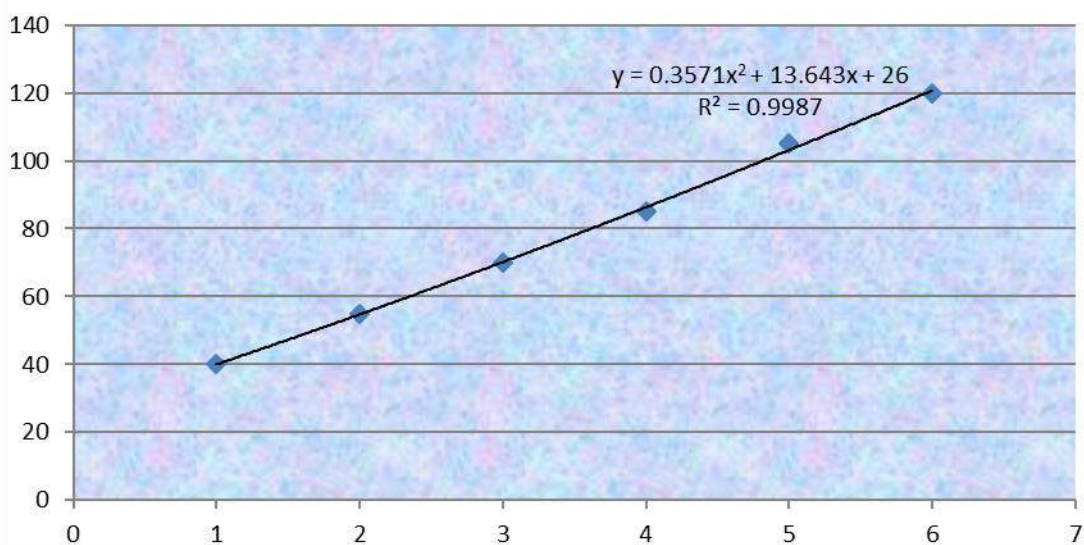
Table 6.5 Increment in volume of identified Timber species							
Name of Species	Age	10 yr	20yr	30yr	40yr	50yr	60yr
Sal	GBH in cm	28	36	75	90	115	140
	Height in M.	6.00	8.00	15.00	18.00	21.00	25.00
	Volume in cum	0.02205	0.0486	0.395508	0.683438	1.301836	2.296875
Bija (Piasal)	GBH in cm	40	55	70	85	105	120
	Height in M.	5.00	7.50	10.00	15.00	17.50	23.00
	Volume in cum	0.0375	0.106348	0.229688	0.508008	0.904395	1.5525
Asan	GBH in cm	35	60	90	120	140	160
	Height in M.	9.00	12.00	15.00	17.00	20.0	24.00
	Volume in cum	0.05168	0.2025	0.569531	1.1475	1.8375	2.88
Arjun	GBH in cm	35	65	95	130	150	165
	Height in M.	7.5	9.50	15.00	17.00	19.00	24.00
	Volume in cum	0.043066	0.188145	0.63457	1.346719	2.003906	3.062813
Dhaura	GBH in cm	30	65	105	140	150	160
	Height in M.	7.00	9.50	13.00	14.00	15.00	17.00
	Volume in cum	0.029531	0.188145	0.671836	1.28625	1.582031	2.04
Teak	GBH in cm	25	43	60	92	130	152
	Height in M.	5.5	9.5	15.8	23.5	25.2	30.4
	Volume in cum	0.016113	0.082338	0.266625	0.932363	1.996313	3.29232

The GBH and height have been taken from field observation and calculating the average of number of data. The volume has been calculated from Quarter Girth Formula with 70% of the tree height. The average Annual increment of few important species has been predicted below.

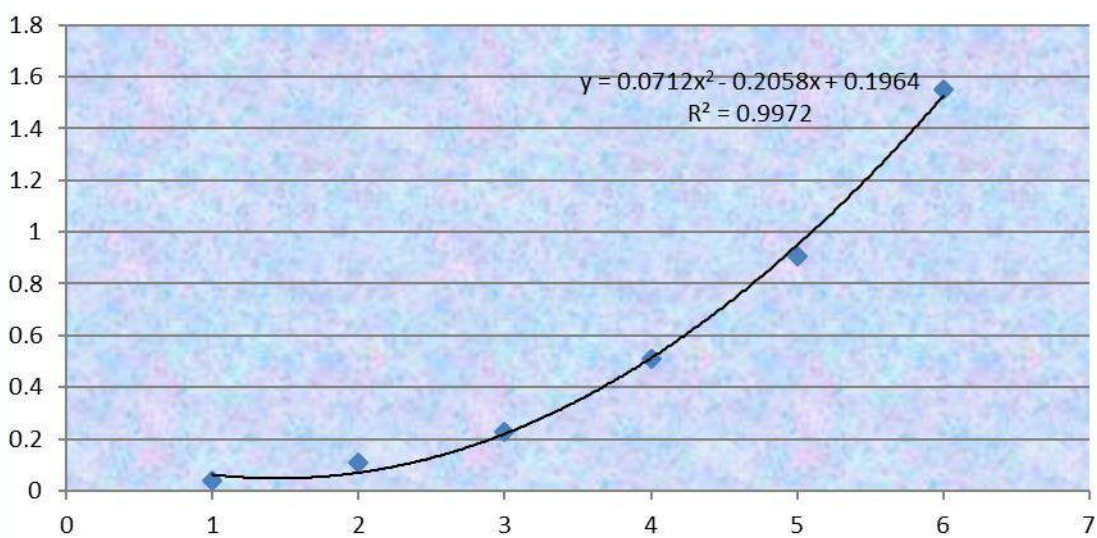
Table No: 6.6 Average Annual increment of few important species						
Name of Species	Growth in in cum					Annual increment predicted in Cum
	10-20 Yr	20-30 Yr	30-40Yr	40-50 Yr	50-60Yr	
Sal	0.02655	0.346908	0.28793	0.618398	0.995039	0.045497
Bija	0.068848	0.12334	0.27832	0.396387	0.648105	0.0303
Asan	0.15082	0.367031	0.577969	0.69	1.0425	0.056566
Arjun	0.145079	0.446425	0.712149	0.657187	1.058907	0.060395
Dhaura	0.158614	0.483691	0.614414	0.295781	0.457969	0.040209
Teak	0.066225	0.184287	0.665738	1.06395	1.296007	0.065524

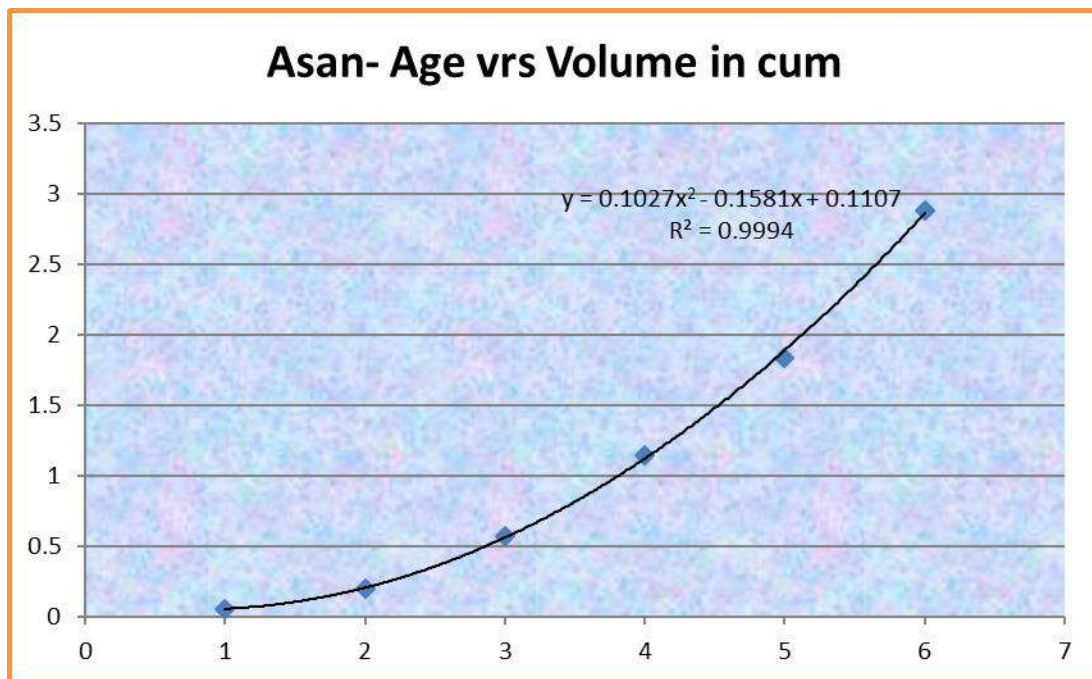
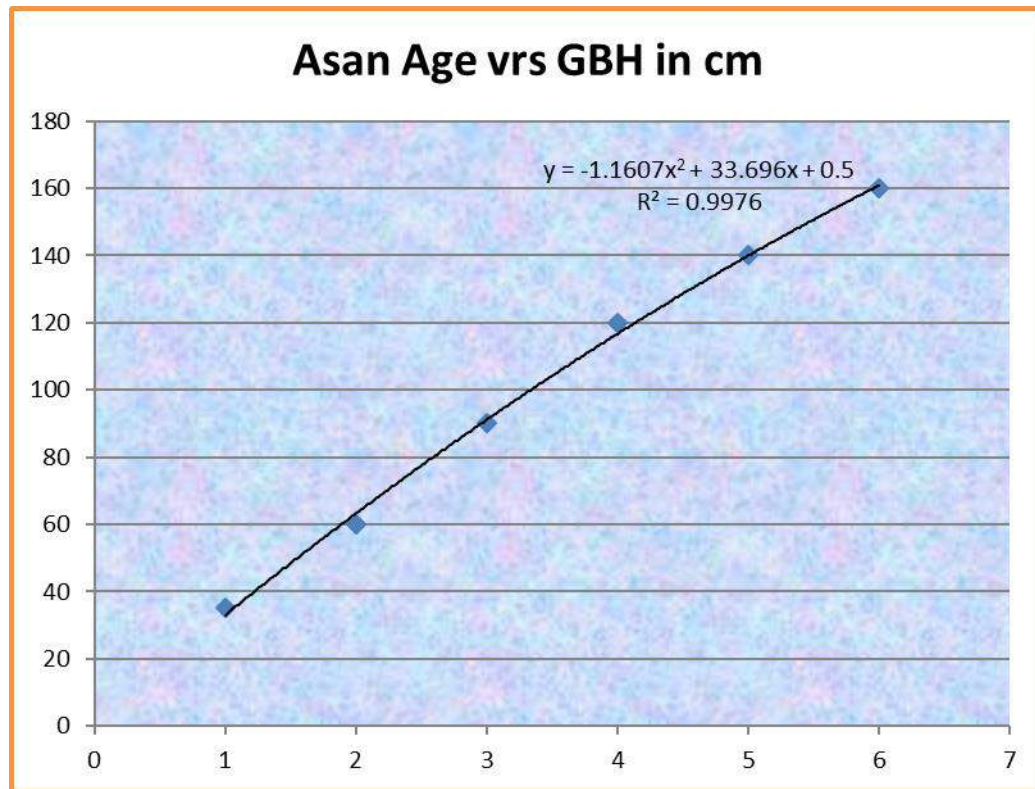


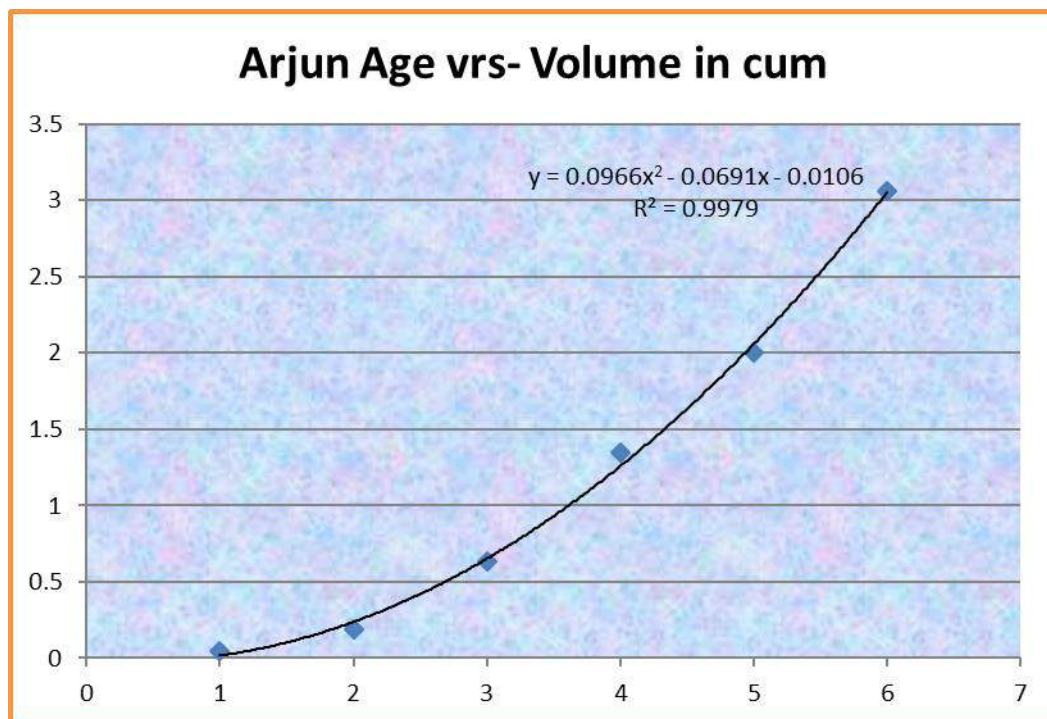
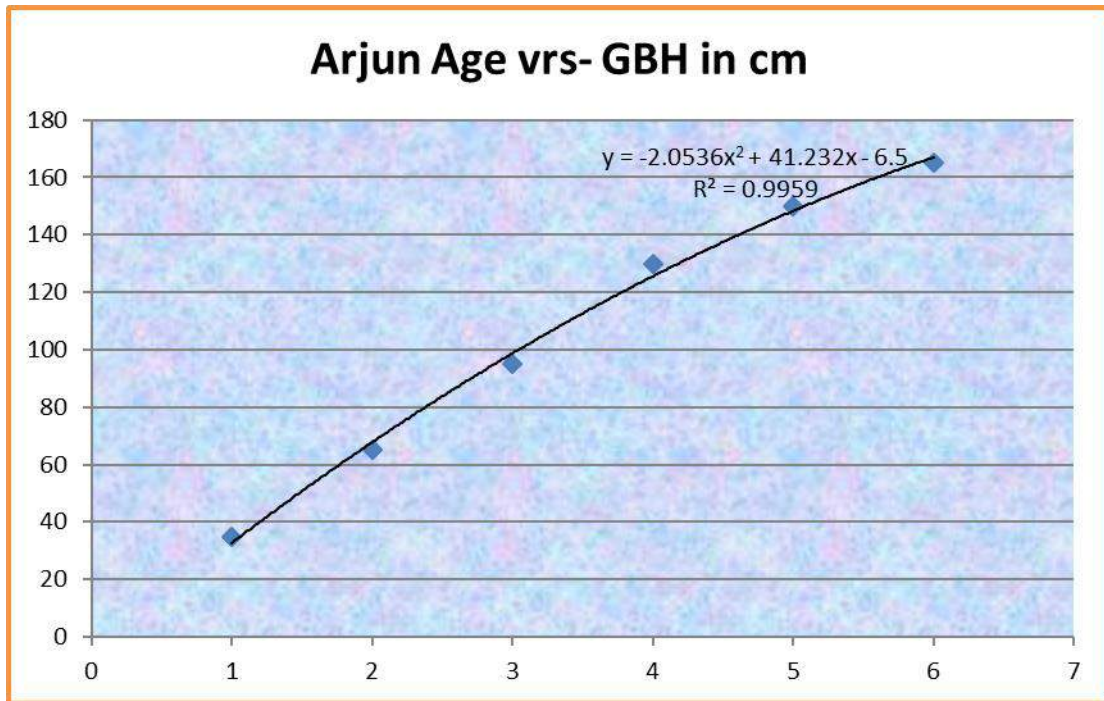
Bija Age vrs GBH in cm



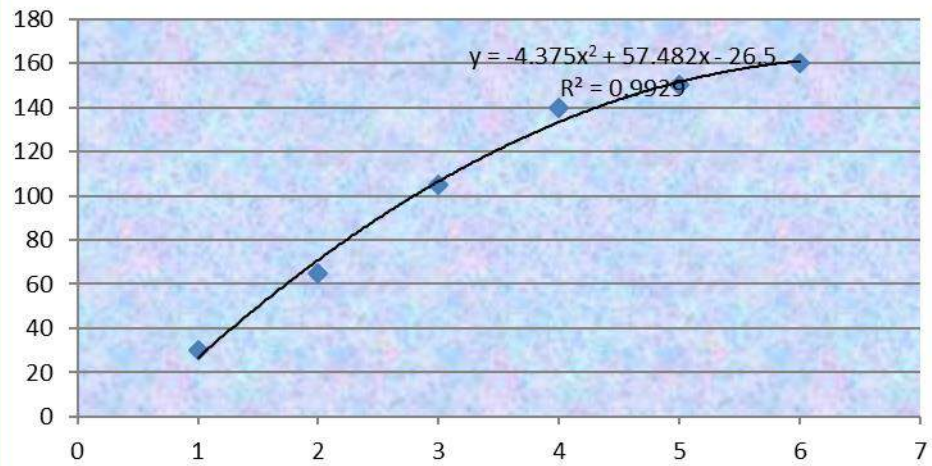
Bija Age vrs Volume in cum



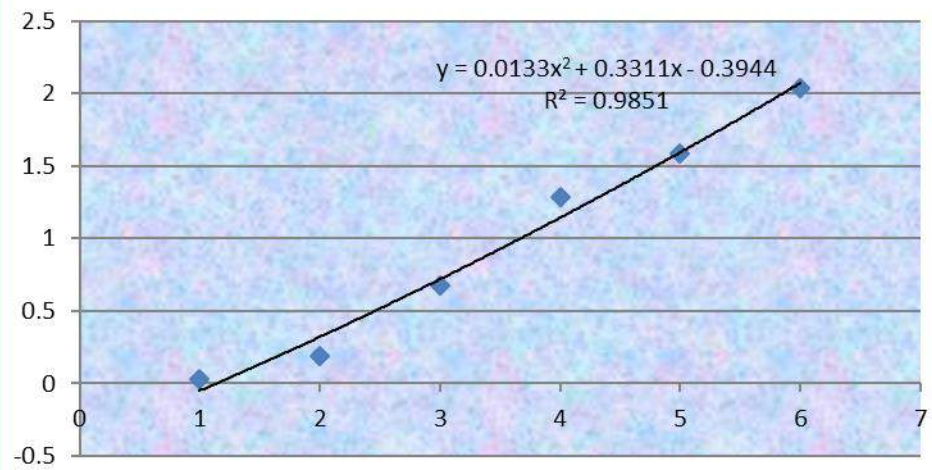


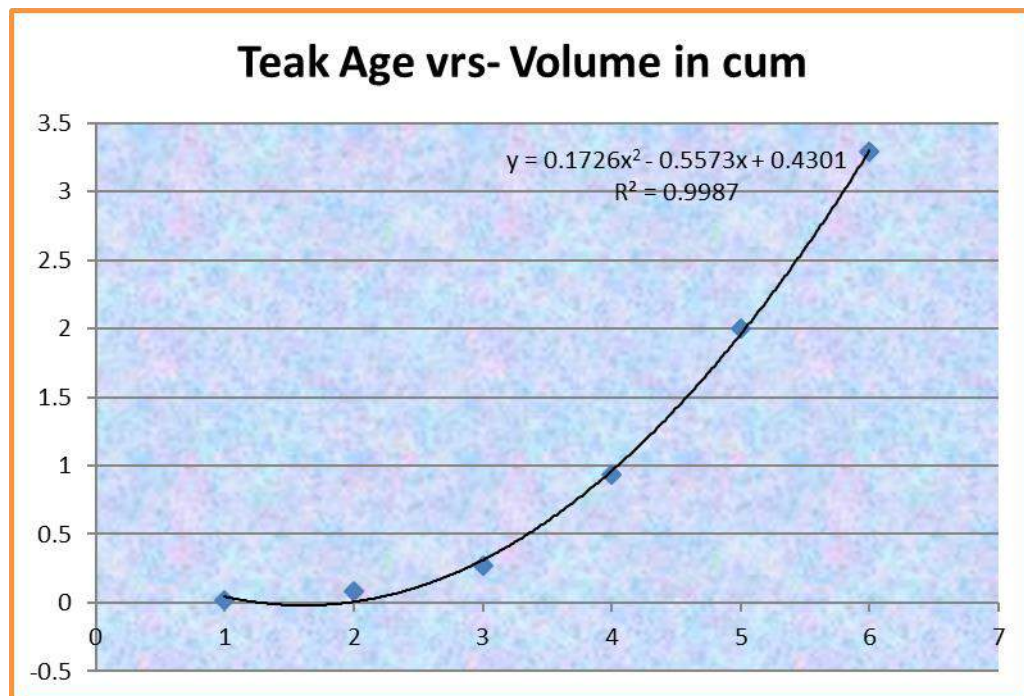
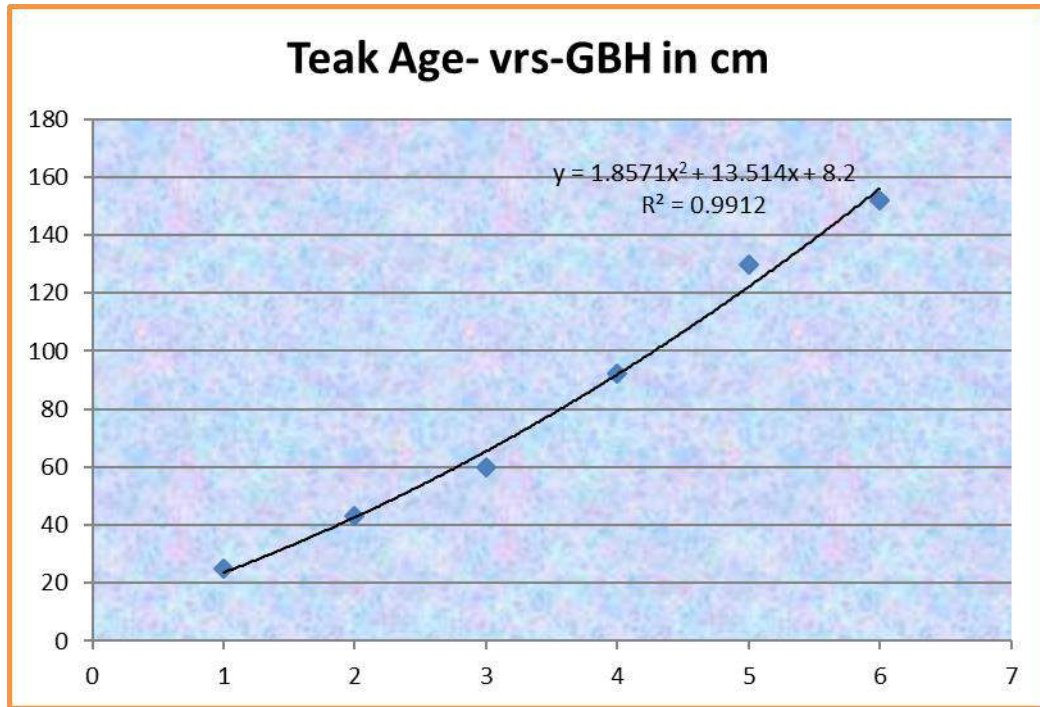


Dhaura Age- Vrs- GBH in cm



Dhaura Age vrs- Volume in cum





The species wise Volume equation derived from growth data is furnished below. This gives a general clue to calculate the volume from Graph or Equation.

Table 6.7 Volume equation for important Species of the Division.			
Sl no	Species	Volume Equation.	Remark
1	Sal	$y = 0.105x^2 - 0.300x + 0.237$	X – Age of the tree for 10 yr $x = 1$, 20 yr- $x = 2$ etc
2	Piasal (Bija)	$y = 0.071x^2 - 0.205x + 0.197$	
3	Asan	$y = 0.102x^2 - 0.158x + 0.110$	
4	Arjun	$y = 0.096x^2 - 0.069x - 0.010$	
5	Dhaura	$y = 0.013x^2 + 0.331x - 0.394$	
6	Teak	$y = 0.172x^2 - 0.557x + 0.430$	

6.4 Efforts towards enhancement of Forest Productivity through Quality Plantation activities:

Enrichment of Forests through silvicultural practices and enrichment through Plantation is being practiced many decades ago. Conversion of miscellaneous forest to Teak plantation by Economic plantation is attempted. It is required to improve regeneration by resorting to High forest system than coppice. Diameter growth is required to be attempted. It is observed that Sal is of Quality Class II/III in moist areas where as it is of III/ IV quality Class in a dry low altitude areas. Improvement of Soil quality by SMC will enhance the quality of Forest coupled with rigid Fire protection.

6.4.1 Raising Of Genetically Improved Seedlings Through Tissue Culture / Clonally Propagation :

The deforestation and depletion of genetic stocks due to variety of anthropogenic pressure warrants production of genetically improved seedlings for us in quality afforestation / Plantation programme. The concentrated efforts therefore made to evolve various scientifically proved techniques like tissue culture / clonal propagation and production of trees with highly genetic viability, high yielding variety, resistance to pests and diseases with increase photosynthetic efficiencies. This required genetic manipulation to evolve vigorous and genetic viable trees which can be massively propagated for its establishment in forestry sector to meet evolving challenges. Steps will be taken to raise genetically improved seedlings / clonal propagules for enhancement of timber productivity in future and accordingly yearly planning shall be made.

6.5 Carbon Stock:

For calculation of Carbon Stock due to trees / Herbs / Leaf litters on forest floor, is required to be enumerated as per procedures led out in the National Working Plan Code-2014. No systematic study has been taken up due to funds constraint. As per thumb Rule & taking Wood Empirical Formula $C_nH_{2n}O_n$, 30 gms of Wood contain 12 gms of carbon. Considering the Ash content i.e. Metals and its oxides in plants 1 % reduction of Carbon may be safely considered.

Hence 30 Tons of Wood may contain (12T-0.3T) 11.70 Ton of Carbon. Hence 1 Ton of Wood (Dry mass) may contain 0.39 Tons of fixed Carbon. For Conversion of mass of Wood from Cum to Ton, the density factors for various species recorded in Tropical forests are furnished below.

Table No 6.8 Density of Wood					
Sl No	Species	Wood density	Sl No	Species	Wood density
Tropical Asia					
1	<i>Acacia arabica</i>	0.70 *	19	<i>Amoora aheriana</i>	0.58
2	<i>Acacia catechu</i>	0.88	20	<i>Amoora macrocarpa</i>	0.55
3	<i>Acacia confusa</i>	0.75	21	<i>Amoora spp.</i>	0.6
4	<i>Acacia leucophloea</i>	0.76	22	<i>Anisophyllea zeylanica</i>	0.46 *
5	<i>Acacia richii</i>	0.69	23	<i>Anisoptera aurea</i>	0.53
6	<i>Adina cordifolia</i>	0.58, 0.59 +	24	<i>Anisoptera spp.</i>	0.54
7	<i>Aegle marmelo</i>	0.75	25	<i>Anisoptera thurifera</i>	0.54
8	<i>Agathis dammara</i>	0.41	26	<i>Anogeissus latifolia</i>	0.78, 0.79 +
9	<i>Agathis spp.</i>	0.44	27	<i>Anthocephalus chinensis</i>	0.36, 0.33 +
10	<i>Agathis vitiensis</i>	0.45	28	<i>Antidesma pleuricum</i>	0.59
11	<i>Aglaiia diffusa</i>	0.7	29	<i>Aphanamixis cumingiana</i>	0.58
12	<i>Aglaiia iloilo</i>	0.53	30	<i>Aphanamixis perrottetiana</i>	0.52
13	<i>Aglaiia llanosiana</i>	0.89	31	<i>Araucaria bidwillii</i>	0.43
14	<i>Alangium longiflorum</i>	0.65	32	<i>Artocarpus blancoi</i>	0.43
15	<i>Alangium meyeri</i>	0.63	33	<i>Artocarpus heterophylla</i>	0.6
16	<i>Albizzia amara</i>	0.70 *	34	<i>Artocarpus lakoocha</i>	0.53 *
17	<i>Albizzia falcata</i>	0.25	35	<i>Artocarpus ovata</i>	0.47
18	<i>Albizzia lebbek</i>	0.55, 0.66 +	36	<i>Artocarpus spp.</i>	0.58

Table No 6.8 Density of Wood

37	<i>Albizzia odoratissima</i>	0.76	67	<i>Azadirachta indica</i>	0.69
38	<i>Albizzia procera</i>	0.52 *, 0.59 +	68	<i>Azadirachta spp.</i>	0.52
39	<i>Aleurites moluccana</i>	0.25	69	<i>Balanocarpus spp.</i>	0.76
40	<i>Aleurites trisperma</i>	0.43	70	<i>Barringtonia edulis</i>	0.48
41	<i>Alnus japonica</i>	0.43	71	<i>Bauhinia spp.</i>	0.67
42	<i>Alphitonia philippinensis</i>	0.4	72	<i>Beilschmiedia tawa</i>	0.58
43	<i>Alphitonia zizyphoides</i>	0.5	73	<i>Berrya cordifolia</i>	0.78 *
44	<i>Alphonsea arborea</i>	0.69	74	<i>Bischofia javanica</i>	0.54, 0.58, 0.62 +
45	<i>Alseodaphne longipes</i>	0.49	75	<i>Bleasdalea vitiensis</i>	0.43
46	<i>Alstonia macrophylla</i>	0.62	76	<i>Bombax ceiba</i>	0.33
47	<i>Alstonia scholaris</i>	0.36	77	<i>Bombycidendron vidalianum</i>	0.53
48	<i>Alstonia spp.</i>	0.37	78	<i>Boswellia serrata</i>	0.5
49	<i>Bridelia retusa</i>	0.5	79	<i>Cedrela spp.</i>	0.42
50	<i>Bridelia squamosa</i>	0.5	80	<i>Cedrela toona</i>	0.43
51	<i>Buchanania lanzan</i>	0.45	81	<i>Ceiba pentandra</i>	0.23
52	<i>Buchanania latifolia</i>	0.45	82	<i>Celtis luzonica</i>	0.49
53	<i>Bursera serrata</i>	0.59	83	<i>Chisocheton cumingianus</i>	0.52
54	<i>Butea monosperma</i>	0.48	84	<i>Chisocheton pentandrus</i>	0.52
55	<i>Calophyllum blancoi</i>	0.51	85	<i>Chloroxylon swietenia</i>	0.76, 0.79, 0.80 +
56	<i>Calophyllum inophyllum</i>	0.57	86	<i>Chukrassia tabularis</i>	0.57
57	<i>Calophyllum neo-ebudicum</i>	0.5	87	<i>Cinnamomum mercadoi</i>	0.65
58	<i>Calophyllum obliquinervium</i>	0.58	88	<i>Cinnamomum spp.</i>	0.43
59	<i>Calophyllum spp.</i>	0.53	89	<i>Citrus grandis</i>	0.59
60	<i>Calophyllum vitiense</i>	0.5	90	<i>Cleidion speciflorum</i>	0.5
61	<i>Calycarpa arborea</i>	0.53	91	<i>Cleistanthus collinus</i>	0.88
62	<i>Cananga odorata</i>	0.29	92	<i>Cleistocalyx operculatus</i>	0.66
63	<i>Canarium asperum</i> var. <i>asperum</i>	0.50, 0.60 +	93	<i>Cleistocalyx spp.</i>	0.76
64	<i>Canarium hirsutum</i> forma <i>scabrum</i>	0.4	94	<i>Cochlospermum gossypium + religiosum</i>	0.27
65	<i>Canarium luzonicum</i>	0.51	95	<i>Cocos nucifera</i>	0.5
66	<i>Canarium spp.</i>	0.44	96	<i>Colona serratifolia</i>	0.33

Table No 6.8 Density of Wood

97	<i>Canarium vanikoroense</i>	0.54	130	<i>Combretodendron quadrialatum</i>	0.57
98	<i>Canarium vitiense</i>	0.54	131	<i>Cordia spp.</i>	0.53
99	<i>Canarium vrieseanum forma stenophyllum</i>	0.56	132	<i>Cotylelobium spp.</i>	0.69
100	<i>Canthium monstrosum</i>	0.42	133	<i>Crataeva religiosa</i>	0.53 *
101	<i>Carallia calycina</i>	0.66 *	134	<i>Cratoxylon arborescens</i>	0.4
102	<i>Cassia fistula</i>	0.71	135	<i>Cryptocarya spp.</i>	0.59
103	<i>Cassia javanica</i>	0.69	136	<i>Cubilia cubili</i>	0.49
104	<i>Cassia spectabilis</i>	0.48	137	<i>Cullenia excelsa</i>	0.53
105	<i>Castanopsis philippensis</i>	0.51	138	<i>Cynometra insularis</i>	0.76, 0.91 +
106	<i>Casuarina equisetifolia</i>	0.83	139	<i>Cynometra ramiflora</i>	0.7
107	<i>Casuarina nodiflora</i>	0.85	140	<i>Cynometra spp.</i>	0.8
108	<i>Cedrela odorata</i>	0.38	141	<i>Dacrycarpus imbricatus</i>	0.45, 0.47 +
109	<i>Dacrydium elatum</i>	0.48	142	<i>Dipterocarpus gracilis</i>	0.61
110	<i>Dacrydium nausoriensis</i>	0.52	143	<i>Dipterocarpus grandiflorus</i>	0.62
111	<i>Dacrydium nidulum</i>	0.52	144	<i>Dipterocarpus kerrii</i>	0.56
112	<i>Dacrydium spp.</i>	0.46	145	<i>Dipterocarpus kunstlerii</i>	0.57
113	<i>Dacryodes spp.</i>	0.61	146	<i>Dipterocarpus spp.</i>	0.61
114	<i>Dalbergia latifolia</i>	0.75	147	<i>Dipterocarpus warburgii</i>	0.52
115	<i>Dalbergia paniculata</i>	0.64	148	<i>Dracontomelon dao</i>	0.52
116	<i>Decussocarpus philippinensis</i>	0.5	149	<i>Dracontomelon edule</i>	0.46
117	<i>Decussocarpus vitiensis</i>	0.37	150	<i>Dracontomelon spp.</i>	0.5
118	<i>Degeneria vitiensis</i>	0.35	151	<i>Dryobalanops spp.</i>	0.61
119	<i>Dehaasia triandra</i>	0.64	152	<i>Drypetes bordenii</i>	0.75
120	<i>Dialium spp.</i>	0.8	153	<i>Durio spp.</i>	0.53
121	<i>Dillenia luzoniensis</i>	0.69	154	<i>Durio zibethinus</i>	0.44, 0.53 +
122	<i>Dillenia megalantha</i>	0.69	155	<i>Dyera costulata</i>	0.36
123	<i>Dillenia pentagyna</i>	0.53	156	<i>Dysoxylum altissimum</i>	0.42
124	<i>Dillenia philippinensis</i>	0.61	157	<i>Dysoxylum decandrum</i>	0.51
125	<i>Dillenia spp.</i>	0.59	158	<i>Dysoxylum euphlebiun</i>	0.63
126	<i>Diospyros embryopteris</i>	0.63 *	159	<i>Dysoxylum quercifolium</i>	0.49
127	<i>Diospyros inclusa</i>	0.68	160	<i>Dysoxylum richii</i>	0.49
128	<i>Diospyros melanoxylon</i>	0.68	161	<i>Elaeocarpus serratus</i>	0.40 *
129	<i>Diospyros mindanaensis</i>	0.69	162	<i>Embllica officinalis</i>	0.8

Table No 6.8 Density of Wood

163	<i>Diospyros nitida</i>	0.71	195	<i>Endiandra laxiflora</i>	0.54
164	<i>Diospyros philippensis</i>	0.81	196	<i>Endospermum macrophyllum</i>	0.4
165	<i>Diospyros pilosanthera</i>	0.8	197	<i>Endospermum peltatum</i>	0.31
166	<i>Diospyros poncei</i>	0.81	198	<i>Endospermum spp.</i>	0.38
167	<i>Diospyros pyrrocarpa</i>	0.6	199	<i>Enterolobium cyclocarpum</i>	0.35
168	<i>Diospyros spp.</i>	0.7	200	<i>Epicharis cumingiana</i>	0.73
169	<i>Diplodiscus paniculatus</i>	0.63	201	<i>Erythrina fusca</i>	0.25
170	<i>Dipterocarpus caudatus</i>	0.61	202	<i>Erythrina suberosa</i>	0.32
171	<i>Dipterocarpus eurynchus</i>	0.56	203	<i>Erythrina subumbrans</i>	0.24
172			204		
173	<i>Erythrophloeum densiflorum</i>	0.65	205	<i>Heritiera sylvatica</i>	0.77
174	<i>Eucalyptus citriodora</i>	0.64	206	<i>Hevea brasiliensis</i>	0.53
175	<i>Eucalyptus deglupta</i>	0.34	207	<i>Hibiscus tiliaceus</i>	0.57
176	<i>Eugenia spp.</i>	0.65	208	<i>Homalanthus populneus</i>	0.38
177	<i>Fagraea gracilipes</i>	0.84	209	<i>Homalium spp.</i>	0.76
178	<i>Fagraea spp.</i>	0.73	210	<i>Hopea acuminata</i>	0.62
179	<i>Ficus benjamina</i>	0.65	211	<i>Hopea foxworthyi</i>	0.64
180	<i>Ficus botryocarpa</i>	0.43	212	<i>Hopea plagata</i>	0.88
181	<i>Ficus minahassae</i>	0.42	213	<i>Hopea spp.</i>	0.64
182	<i>Ficus spp.</i>	0.39	214	<i>Intsia bijuga</i>	0.61, 0.68, 0.74
183	<i>Ficus variegata</i>	0.28	215	<i>Intsia palembanica</i>	0.68
184	<i>Ganua obovatifolia</i>	0.59	216	<i>Kayea garciae</i>	0.53
185	<i>Garcinia myrtifolia</i>	0.65	217	<i>Kingiodendron alternifolium</i>	0.48
186	<i>Garcinia spp.</i>	0.75	218	<i>Kleinhovia hospita</i>	0.36
187	<i>Gardenia latifolia</i>	0.64	219	<i>Knema spp.</i>	0.53
188	<i>Gardenia turgida</i>	0.64	220	<i>Koompassia excelsa</i>	0.63
189	<i>Garuga pinnata</i>	0.51	221	<i>Koompassia malaccensis</i>	0.72
190	<i>Gluta spp.</i>	0.63	222	<i>Koordersiodendron pinnatum</i>	0.65, 0.69 +
191	<i>Gmelina arborea</i>	0.41, 0.45 +	223	<i>Kydia calycina</i>	0.72
192	<i>Gmelina vitiensis</i>	0.54	224	<i>Lagerstroemia parviflora</i>	0.62
193	<i>Gonocaryum calleryanum</i>	0.64	225	<i>Lagerstroemia piriformis</i>	0.5
194	<i>Gonystylus bancanus</i>	0.52	226	<i>Lagerstroemia</i>	0.53

Table No 6.8 Density of Wood

				<i>speciosa</i>	
227	<i>Gonystylus macrophyllus</i>	0.52	260	<i>Lagerstroemia spp.</i>	0.55
228	<i>Gonystylus punctatus</i>	0.57	261	<i>Lannea coromandelica</i>	0.54
229	<i>Grewia multiflora</i>	0.46	262	<i>Lannea grandis</i>	0.5
230	<i>Grewia tiliaefolia</i>	0.68	263	<i>Leucaena leucocephala</i>	0.64
231	<i>Hardwickia binata</i>	0.73	264	<i>Litchi chinensis</i> var. <i>philippinensis</i>	0.88
232	<i>Harpullia arborea</i>	0.62	265	<i>Lithocarpus celebica</i>	0.68
233	<i>Heritiera ornithocephala</i>	0.68	266	<i>Lithocarpus llanosii</i>	0.63
234	<i>Heritiera spp.</i>	0.56	267	<i>Lithocarpus soleriana</i>	0.63
235			268		
236	<i>Litsea garciae</i>	0.34	269	<i>Milliusa velutina</i>	0.63
237	<i>Litsea leytensis</i>	0.35	270	<i>Mimusops elengi</i>	0.72 *
238	<i>Litsea perrottetii</i>	0.45	271	<i>Mitragyna parviflora</i>	0.56
239	<i>Litsea spp.</i>	0.4	272	<i>Myristica castaneifolia</i>	0.49
240	<i>Lophopetalum spp.</i>	0.46	273	<i>Myristica chartacea</i>	0.49
241	<i>Macaranga bicolor</i>	0.29	274	<i>Myristica gillespieana</i>	0.49
242	<i>Macaranga denticulata</i>	0.53	275	<i>Myristica spp.</i>	0.53
243	<i>Madhuca fulva</i>	0.53	276	<i>Neesia spp.</i>	0.53
244	<i>Madhuca longifolia</i> var. <i>latifolia</i>	0.74	277	<i>Neonauclea bernardoi</i>	0.62
245	<i>Madhuca oblongifolia</i>	0.53	278	<i>Neotrewia cumingii</i>	0.55
246	<i>Mallotus</i> <i>multiglandulosus</i>	0.42	279	<i>Ochna foxworthyi</i>	0.86
247	<i>Mallotus philippensis</i>	0.64	280	<i>Ochroma pyramidale</i>	0.3
248	<i>Mangifera altissima</i>	0.55	281	<i>Octomeles sumatrana</i>	0.27, 0.32 +
249	<i>Mangifera indica</i>	0.52, 0.59 +	282	<i>Oroxylon indicum</i>	0.32
250	<i>Mangifera merrillii</i>	0.52	283	<i>Ougenia dalbergiodes</i>	0.7
251	<i>Mangifera spp.</i>	0.52	284	<i>Palaquium fidjiense</i>	0.48
252	<i>Maniltoa grandiflora</i>	0.76	285	<i>Palaquium hornei</i>	0.7
253	<i>Maniltoa minor</i>	0.76	286	<i>Palaquium</i> <i>lanceolatum</i>	0.55
254	<i>Mastixia philippinensis</i>	0.47	287	<i>Palaquium luzoniense</i>	0.45
255	<i>Melanorrhoea spp.</i>	0.63	288	<i>Palaquium philippense</i>	0.41
256	<i>Melia dubia</i>	0.4	289	<i>Palaquium spp.</i>	0.55
257	<i>Melicope triphylla</i>	0.37	290	<i>Palaquium</i> <i>tenuipetiolatum</i>	0.5
258	<i>Meliosma macrophylla</i>	0.27	291	<i>Palaquium vitilevuense</i>	0.48
259	<i>Melochia umbellata</i>	0.25	292	<i>Pangium edule</i>	0.5
260	<i>Mesua ferrea</i>	0.83, 0.85 +	293	<i>Parashorea</i> <i>malaanonan</i>	0.51

Table No 6.8 Density of Wood

294	<i>Metrosideros collina</i>	0.70, 0.76 +	325	<i>Parashorea spp.</i>	0.44
295	<i>Michelia platyphylla</i>	0.51	326	<i>Parashorea stellata</i>	0.59
296	<i>Michelia spp.</i>	0.43	327	<i>Paratrophis glabra</i>	0.77
297	<i>Microcos stylocarpa</i>	0.4	328	<i>Parinari corymbosa</i>	0.76
298	<i>Micromelum compressum</i>	0.64	329	<i>Parinari insularum</i>	0.65
299	<i>Parinari spp.</i>	0.68	330	<i>Salmania malabarica</i>	0.32, 0.33 +
300	<i>Parkia roxburghii</i>	0.34	331	<i>Samanea saman</i>	0.45, 0.46 4
301	<i>Payena spp.</i>	0.55	332	<i>Sandoricum koetjape</i>	0.44
302	<i>Peltophorum pterocarpum</i>	0.62	333	<i>Sandoricum vidalii</i>	0.43
303	<i>Pentace spp.</i>	0.56	334	<i>Sapindus saponaria</i>	0.58
304	<i>Phaeanthus ebracteolatus</i>	0.56	335	<i>Sapium luzonicum</i>	0.4
305	<i>Phyllocladus hypophyllus</i>	0.53	336	<i>Schleichera oleosa</i>	0.96
306	<i>Pinus caribaea</i>	0.48	337	<i>Schrebera swietenoides</i>	0.82
307	<i>Pinus insularis</i>	0.47, 0.48 +	338	<i>Semicarpus anacardium</i>	0.64
308	<i>Pinus merkusii</i>	0.54	339	<i>Serialbizia acle</i>	0.57
309	<i>Pisonia umbellifera</i>	0.21	340	<i>Serianthes melanesica</i>	0.48
310	<i>Pittosporum pentandrum</i>	0.51	341	<i>Sesbania grandiflora</i>	0.4
311	<i>Planchonella vitiensis</i>	0.77	342	<i>Shorea agsaboensis</i>	0.35
312	<i>Planchonia spectabilis</i>	0.58	343	<i>Shorea almon</i>	0.42
313	<i>Planchonia spp.</i>	0.59	344	<i>Shorea assamica forma philippinensis</i>	0.41
314	<i>Podocarpus neriifolius</i>	0.52	345	<i>Shorea astylosa</i>	0.73
315	<i>Podocarpus spp.</i>	0.43	346	<i>Shorea ciliata</i>	0.75
316	<i>Polyalthia flava</i>	0.51	347	<i>Shorea contorta</i>	0.44
317	<i>Polyscias nodosa</i>	0.38	348	<i>Shorea gisok</i>	0.76
318	<i>Pometia pinnata forma pinnata</i>	0.58	349	<i>Shorea guiso</i>	0.68
319	<i>Pometia spp.</i>	0.54	350	<i>Shorea hopeifolia</i>	0.44
320	<i>Pouteria villamilii</i>	0.47	351	<i>Shorea malibato</i>	0.78
321	<i>Premna tomentosa</i>	0.96	352	<i>Shorea negrosensis</i>	0.44
322	<i>Pterocarpus indicus</i>	0.52	353	<i>Shorea palosapis</i>	0.39
323	<i>Pterocarpus marsupium</i>	0.67	354	<i>Shorea plagata</i>	0.7
324	<i>Pterocymbium macrorater</i>	0.47	355	<i>Shorea polita</i>	0.47

Table No 6.8 Density of Wood

356	<i>Pterocymbium tinctorium</i>	0.28	386	<i>Shorea polysperma</i>	0.47
357	<i>Pygeum vulgare</i>	0.57	387	<i>Shorea robusta</i>	0.72
358	<i>Quercus spp.</i>	0.7	388	<i>Shorea spp. balau group</i>	0.7
359	<i>Radermachera pinnata</i>	0.51	389	<i>Shorea spp. dark red meranti</i>	0.55
360	<i>Shorea spp. light red meranti</i>	0.4	390	<i>Terminalia chebula</i>	0.96
361	<i>Shorea spp. white meranti</i>	0.48	391	<i>Terminalia citrina</i>	0.71
362	<i>Shorea spp. yellow meranti</i>	0.46	392	<i>Terminalia copelandii</i>	0.46
363	<i>Shorea virescens</i>	0.42	393	<i>Terminalia foetidissima</i>	0.55
364	<i>Sloanea javanica</i>	0.53	394	<i>Terminalia microcarpa</i>	0.53
365	<i>Soymida febrifuga</i>	0.97	395	<i>Terminalia nitens</i>	0.58
366	<i>Spathodea campanulata</i>	0.25	396	<i>Terminalia pterocarpa</i>	0.48
367	<i>Stemonurus luzoniensis</i>	0.37	397	<i>Terminalia tomentosa</i>	0.73, 0.76, 0.77 +
368	<i>Sterculia ceramica</i>	0.27	398	<i>Ternstroemia megacarpa</i>	0.53
369	<i>Sterculia foetida</i>	0.47 *	399	<i>Tetrameles nudiflora</i>	0.3
370	<i>Sterculia urens</i>	0.67	400	<i>Tetramerista glabra</i>	0.61
371	<i>Sterculia vitiensis</i>	0.31	401	<i>Thespesia populnea</i>	0.52
372	<i>Stereospermum suaveolens</i>	0.62	402	<i>Toona calantas</i>	0.29
373	<i>Strombosia philippinensis</i>	0.71	403	<i>Trema orientalis</i>	0.31
374	<i>Strychnos potatorum</i>	0.88	404	<i>Trichospermum richii</i>	0.32
375	<i>Swietenia macrophylla</i>	0.49, 0.53 +	405	<i>Tristania decorticata</i>	0.91
376	<i>Swintonia foxworthyi</i>	0.62	406	<i>Tristania micrantha</i>	0.89
377	<i>Swintonia spp.</i>	0.61	407	<i>Tristania spp.</i>	0.8
378	<i>Sycopsis dunni</i>	0.63	408	<i>Turpinia ovalifolia</i>	0.36
379	<i>Syzygium cumini</i>	0.7	409	<i>Vateria indica</i>	0.47 *
380	<i>Syzygium luzoniense</i>	0.63	410	<i>Vatica mangachapoi</i>	0.65
381	<i>Syzygium nitidum</i>	0.74	411	<i>Vatica obscura</i>	1.04 *
382	<i>Syzygium simile</i>	0.56	412	<i>Vatica pachyphylla</i>	0.78
383	<i>Syzygium spp.</i>	0.69, 0.76 +	413	<i>Vatica spp.</i>	0.69
384	<i>Tamarindus indica</i>	0.75	414	<i>Vitex parviflora</i>	0.7
385	<i>Tectona grandis</i>	0.50, 0.55 +	415	<i>Vitex peduncularis</i>	0.96

Table No 6.8 Density of Wood

416	<i>Teijsmanniodendron ahernianum</i>	0.9	424	<i>Vitex spp.</i>	0.65
417	<i>Terminalia arjuna</i>	0.68	425	<i>Vitex turczaninowii</i>	0.49
418	<i>Terminalia belerica</i>	0.72	426	<i>Wallaceodendron celebicum</i>	0.55, 0.57 +
419	<i>Terminalia catappa</i>	0.52	427	<i>Weinmannia luzoniensis</i>	0.49
420	<i>Wrightia tinctoria</i>	0.75	428	<i>Zanthoxylum rhetsa</i>	0.33
421	<i>Xanthophyllum excelsum</i>	0.63	429	<i>Zizyphus spp.</i>	0.76
422	<i>Xanthostemon verdugonianus</i>	1.04	430	<i>Zizyphus talanai</i>	0.53
423	<i>Xylia xylocarpa</i>	0.73, 0.81 +	431	<i>Zizyphus xylopyra</i>	0.85

6.6 Carbon Sequestration& Mitigation:

6.6.1 Carbon sequestration:

Carbon sequestration is the process involved in carbon capture and the long-term storage of atmospheric carbon dioxide or other forms of carbon to mitigate or defer global warming. It has been proposed as a way to slow the atmospheric and marine accumulation of greenhouse gases, which are released by burning fossil fuels.

Carbon dioxide (CO₂) is naturally captured from the atmosphere through biological, chemical, and physical processes.

Carbon dioxide may be captured as a pure by-product in processes related to petroleum refining or from flue gases from power generation. CO₂ sequestration includes the storage part of carbon capture and storage, which refers to large-scale, artificial capture and sequestration of industrially produced CO₂ using subsurface saline aquifers, reservoirs, ocean water, aging oil fields, or other carbon sinks.

Increasing yields and efficiency generally reduces emissions as well, since more food results from the same or less effort. Techniques include more accurate use of fertilizers, less soil disturbance, better irrigation, and crop strains bred for locally beneficial traits and increased yields.

Replacing more energy intensive farming operations can also reduce emissions. Reduced or no-till farming requires less machine use and burns correspondingly less fuel per acre. However, no-till usually increases use of weed-control chemicals and the residue now left

on the soil surface is more likely to release its CO₂ to the atmosphere as it decays, reducing the net carbon reduction.

In practice, most farming operations that incorporate post-harvest crop residues, wastes and byproducts back into the soil provide a carbon storage benefit. This is particularly the case for Practices such as field burning of stubble – rather than releasing almost all of the stored CO₂ to the atmosphere; tillage incorporates the biomass back into the soil.

Carbon Sequestration as it relates to Forestry, the following steps are suggested:

- Planting of Species of long rotation period in order to enhance carbon storage for a longer period.
- The crop should not be harvested if the bio mass growth is faster i.e. first growing species to be favoured to slow growing species. When growth is retired the species may be harvested.
- The timber should be utilized in structures / house hold articles than use as fuel.
- Leaf litters, Twigs may be allowed to convert to compost and goes back to soil than use as fuel which immediately releases CO₂ to atmosphere.
- Steps to be taken to improve soil organic content than losing carbon to atmosphere as CO₂.

Enhancing carbon removal:

All crops absorb CO₂ during growth and release it after harvest. The goal of agricultural carbon removal is to use the crop and its relation to the carbon cycle to permanently sequester carbon within the soil. This is done by selecting farming methods that return biomass to the soil and enhance the conditions in which the carbon within the plants will be reduced to its elemental nature and stored in a stable state. Methods for accomplishing this include:

- Use cover crops such as grasses and weeds as temporary cover between planting seasons
- Concentrate livestock in small paddocks for days at a time so they graze lightly but evenly. This encourages roots to grow deeper into the soil. Stock also till the soil with their hooves, grinding old grass and manures into the soil.
- Cover bare paddocks with hay or dead vegetation. This protects soil from the sun and allows the soil to hold more water and be more attractive to carbon-capturing microbes.
- Restore degraded land, which slows carbon release while returning the land to agriculture or other use.

Agricultural sequestration practices may have positive effects on soil, air, and water quality, be beneficial to wildlife, and expand food production. On degraded croplands, an increase

of 1 ton of soil carbon pool may increase crop yield by 20 to 40 kilograms per hectare of wheat, 10 to 20 kg/ ha for maize, and 0.5 to 1 kg/ha for cowpeas.

The effects of soil sequestration can be reversed. If the soil is disrupted or tillage practices are abandoned, the soil becomes a net source of greenhouse gases. Typically after 15 to 30 years of sequestration, soil becomes saturated and ceases to absorb carbon. This implies that there is a global limit to the amount of carbon that soil can hold.

Many factors affect the costs of carbon sequestration including soil quality, transaction costs and various externalities such as leakage and unforeseen environmental damage. Because reduction of atmospheric CO₂ is a long-term concern, farmers can be reluctant to adopt more expensive agricultural techniques when there is not a clear crop, soil, or economic benefit.

6.6.2 Forest Type Wise Carbon Stock:

Table No 6.9 Forest type wise Carbon Stock of Nayagarh Division.

Forest Type	Area in Ha	Growing Stock in Cum per ha	Total Growing Stock (in 10 ³ Cum	Density T/ Cum	Total Carbon in 10 ³ ton	CO ₂ Equivalent in Ton 10 ³
2B/C ₃ Odisha Tropical Semi Evergreen Forest	42891.85	100.35	3012.938	0.7	1175.05	4308.50
3C/C _{1d} Peninsular (Coastal) Sal Forest & Peninsular low level Sal Forest.	2001.09	100.35	140.5666	0.7	54.82	201.01
5B/C _{1c} Dry Peninsular Sal	11952.26	95.54	799.3432	0.7	311.74	1143.06
5B/C ₂ Northern dry mixed forest	27714.81	90.73	1760.195	0.7	686.48	2517.08
Total			5713.043	0.7	2228.09	8169.65

The Carbon stock in Nayagarh Division has been estimated to be 2228.09x10³ Ton which is equivalent to 8169.65x10³ tons of Carbon Dioxide.

6.6.3 Mitigation Measures:

It is a common knowledge that Green House Gases are the cause of Global Warming. The entire world is greatly concerned to increase of GHG specially the CO₂. Photosynthesis is the simplest method to reduce the GHG in the atmosphere. The mitigation measures that can be practiced by a Forester are

- Increase tree cover by woody vegetation on Blank Areas.
- Enrich the existing forest by plantation and crop density may be maintained above 70%
- Allow Ground Flora to cover the Forest Floor.
- Long term Rotation to be adopted than a short term rotation.
- Reduce Forest Fire and release of CO₂.
- Allow a good humus cover to retain soil fertility and vigour.
- Reduce Fire wood consumption in rural areas through improved Chulla / Fire Place.
- Increase life of wooden materials through seasoning & treatment.

CHAPTER-7

OPTIMIZATION OF FOREST RESOURCE UTILIZATION:

7.1 Recorded Removal of Timber:

In the outgoing plan coupe working has been prescribed less than two Working Circle i.e. Sal Conversion Working Circle and Selection Working Circle. Under Sal Conversion Working Circle One Felling Series was prescribed i.e. Maichheli Felling Series under PB-I (Periodic Block) with 20 years establishment period.

Under Selection Working Circle Six (6) number of felling series namely, Ratadei, Central-1, Central-2, Chadiapalli-1, Chadiapalli- 2 and Nasaghar was suggested. In total 7 number of coupes were worked out every year during Plan period and under Annual Scheme from 2017-18 to 2020-21. The timber produced from coupe area is as furnished at Table No 7.1.

Table No 7.1 Timber Coupe Working – Production of Timber						
Year of Working	No of Coupes	Coupe area in ha	No of Trees marked	Timber produced (in Cum)		
				From Coupe	Other sources	Total
2007-08	7	3765.65	2058	1112.18	195.444	1307.621
2008-09	7	3759.97	2054	1231.301	1006.54	2237.841
2009-10	7	3085.8	1804	1438.875	423.57	1862.445
2010-11	7	2261.66	1428	1214.3	449.26	1663.56
2011-12	7	2340.47	1606	1268.993	444.49	1713.483
2012-13	7	1882.12	1361	1186.76	401.13	1587.89
2013-14	7	3342.4	2000	1432.686	2003.24	3435.926
2014-15	7(6 coupe worked)	3635.92	1236	907.081	1600.505	2507.586
2015-16	7	2408.9	1050	714.794	512.964	1227.758
2016-17	7 (6 coupe worked)	2267.67	703	626.113	206.854	832.967
2017-18	Timber Coupe not worked					
2018-19	7	4124.87	500	445.382	472.67	918.052
2019-20	6 (5 coupe worked)	3072.18	774	798.735	328.6	1127.335
Total	80	35947.61	16574	12377.197	8045.267	20422.464

7.2 Recorded Removal of Fuel wood:

From the coupes elaborated above Fire wood was also obtained. The quantum of fire wood is as follows (table No 7.2)

Table No 7.2 Production of Firewood in Nayagarh Division							
Year of Working	Coupe No	Area of the Coupe in ha	No of Trees marked	Fire wood in Stacks (12'x 3'x3')			F.W. in M.Ton *
				Coupe	Other source	Total	
2007-08	7	3765.65	2058	154	506	660	990
2008-09	7	3759.97	2054	306.5	842.01	1148.51	1723
2009-10	7	3085.8	1804	391	1238.22	1629.22	2444
2010-11	7	2261.66	1428	382	557.36	939.36	1409
2011-12	7	2340.47	1606	581	241.22	822.22	1233
2012-13	7	1882.12	1361	439	163.5	602.5	904
2013-14	7	3342.4	2000	432	1240.66	1672.66	2509
2014-15	7	3635.92	1236	446	543	989	1484
2015-16	7	2408.9	1050	216	187	403	605
2016-17	5	2267.67	703	211	156.77	367.77	552
2017-18	Timber Coupe Not Worked						
2018-19	7	4124.87	500	37	400.13	437.13	656
2019-20	6 (5 coupe worked)	3072.18	774	81	73.42	154.42	232
Total	80	35947.61	16574	3676.5	6149.29	9825.79	14739

NB: 1 Stack of 12'x3'x3'= 1.5 M. Ton

7.3 Recorded Removal of Bamboo / Rattans:

Nayagarh is rich in Bamboo forest. In the out going plan there was Seventeen Cutting Series covering an area of 61151.15 ha. Bamboo working is being taken up by OFDC Ltd. Both Commercial Bamboo (CB) and Industrial Bamboo (IB) are being harvested from the Forests. Salia Bamboo and Daba bamboo are being harvested. The year wise production is furnished below (Table No 7.3)

Table No 7.3 Bamboo working and Production of bamboo				
Year of Working	Coupe no	Area allotted / Worked	Bamboo Produced (in SU)	
			IB	CB
2007-08	A	17213.3	2584.95	5110
2008-09	B	14402.63	2181.97	7427
2009-10	C	13537.07	2005.88	5417
2010-11	D	15998.25	1734.09	4040
2011-12	A	17213.3	1916.81	7412
2012-13	B	14402.63	428.14	56213
2013-14	C	13537.07	1151.52	23771
2014-15	D	15998.25	471.02	18956
2015-16	A	17213.3	--	16780 SB & 3636 NO
2016-17	B	14402.63	--	95773 SB & 2782 DB
2017-18	C	13537.07	--	76600 SB & 53 DB
2018-19	D	15998.25	--	73470 SB & 648 DB
2019-20	A	17213.3	--	15097 SB

(1 SU= 2400 Running meter bamboo= 50 bundles , For Long bamboo i.e. CB 350 number of bamboo = 1 SU; 1SU = 1 ton at Green Stage)

7.4 Recorded removal of locally important NTFPs including MAPs:

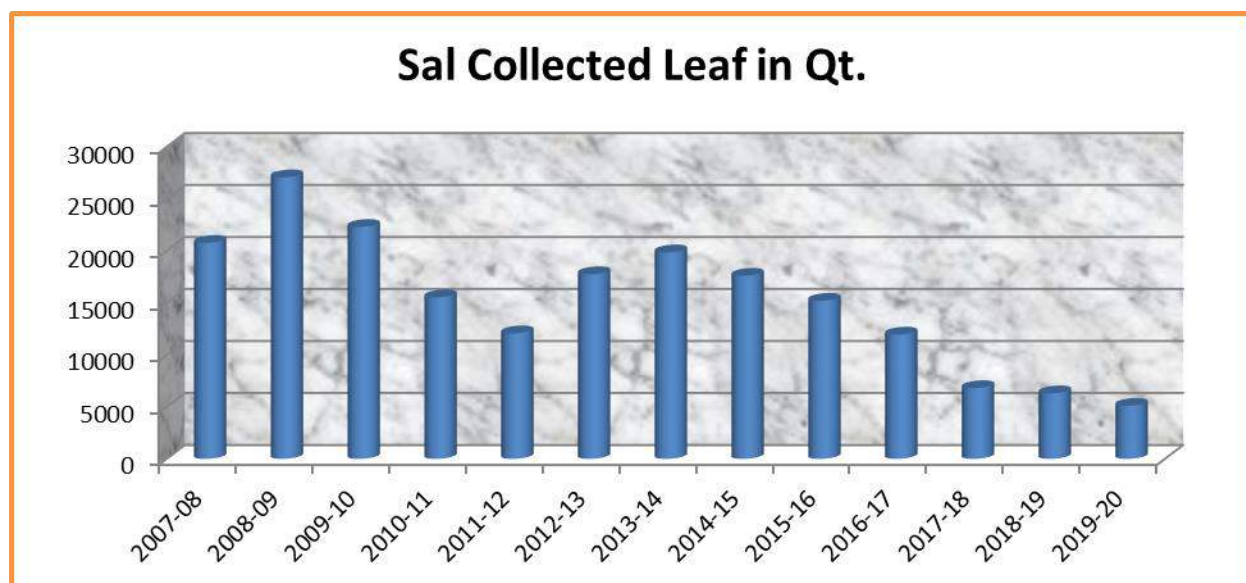
Most of the available NTFP & MAP are now collected by the registered collectors under Gram Panchyat jurisdiction. Records of removal of NTFP except Sal leaf are not available. Kenduleaf is also produced in this tract. Sal leaf collection target / achievement & royalty collected by the Division are furnished in Table No 7.4 below.

Table No 7.4 Production of Sal Leaf & royalty Collected.			
Year	Sal Leaf allotted in Qts	Actually Produced in Qts	Royalty Collected.
2007-08	35000	20765.8	9,27,066
2008-09	35000	27068	10,48,155
2009-10	33250	22300	6,02,956
2010-11	33250	15527	5,66,839
2011-12	35000	12070	6,06,988
2012-13	27000	17750	5,72,091
2013-14	24700	19851	4,24,790

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2014-15	25000	17600	2,47,796
2015-16	25000	15200	2,15,086
2016-17	25000	11950	73,702
2017-18	25000	6800	1,76,713
2018-19	25000	6300	Royalty waived by the Govt. vide O.O No.2400 dt.04.02.2019
2019-20	25000	5100	

Sal leaf collection pattern is depicted in the graph furnished below.



After use of Paper plates in a large Scale, Collection & use of sal leaf is in a declined trend. This is a good trend from Forest management point of view.

Kendu Leaf is also another Non Timber Forest Produce being managed by Kenduleaf Wing of the Department. The area comes under Phulbani KL Division Daspalla Range. The production of KL and sale price in average is furnished at Table No 7.5

Table No 7.5 Production of Kendu Leaf					
Name of KL Range	Year/ Production in Qtls.				
	2015	2016	2017	2018	2019
Dasapalla (K.L.) Range	1368.00	1410.00	1482.00	1023.60	670.80
Total =	1368.00	1410.00	1482.00	1023.60	670.80



Tble No 7.6 Year/Average Sale Value of Kendu leaf					
Name of KL Range	Year/ Average Sale value in Rs.				
	2015	2016	2017	2018	2019
Dasapalla (K.L.) Range	13423.81	20650.96	14464.00	4914.77	10903.99
	13423.81	20650.96	14464.00	4914.77	10903.99

7.5 Demand & Supply of Timber and important Non- Timber Forest Produce:

7.5.1 Demand of Timber & Fire wood:

No systematic survey has been taken up to assess the demand of timber & firewood in the division. The total number of House hold in the division as per 2011 census is 188225. Due to urbanization, Ujjala Yojana of Govt. of India, about 50% house hold is using alternate source of energy for cooking purpose. The balance house hold i.e. 94112 is depending on Fuel wood. The minimum use of Firewood per house hold per month is 1.00 quintal. Hence for a year at least $94112 \times 12 = 112935$ Ton or say 1.13 lakh Tons of fuel wood is required annually.

In case of Timber, after use on Plywood, Moulded furniture dependency on timber has been greatly reduced. Considering 10% of Family constructing new houses for residential / commercial purpose at least 18822 houses is being constructed every year. Considering minimum use of 5 cum of timber for house construction a minimum use of 94110 cum timber is required. Supply from Forest is nearly 1500 Cum against demand of 94110 Cum of Timber and 1.13 Lakh Tons of Fires wood. The requirement is partly fulfilled through saling of timber and fire wood by OFDC Ltd. There is shortage of timber / fire wood in the division.

7.5.2 Bamboo & Cane demand:

On field study by staff, it is found that there are 30 villages of Bamboo / Cane artisans. 398 family are involved in bamboo / cane articles. The list of villages is at Table No 7.7.

Table No 7.7 List of Bamboo / Cane Artisan Village			
Sl no	Name of range	Name of Artisan Village	No of family engaged in using Bamboo / Cane
1	Nayagarh	Belabani	57
2	Mahipur	Muduranga	7
3	Mahipur	Nuagaon	14
4	Mahipur	Khalamada	32
5	Mahipur	Jiginipada	28
6	Daspalla	Asaniberena	5
7	Daspalla	Bhogabadi	3
8	Daspalla	Jamusahi	12
9	Daspalla	Kayandiha	12
10	Daspalla	Khalisahi	7
11	Daspalla	Kujamendhi	9
12	Daspalla	Kusumagadia	8
13	Daspalla	Kusumakana	3
14	Daspalla	Neliguda	2
15	Daspalla	Podasahi	5
16	Daspalla	Poibadi	4
17	Daspalla	Pokharigochha	11
18	Daspalla	Putubari	6
19	Daspalla	Rangamatia	11
20	Daspalla	Ranikiari	1
21	Daspalla	Sanakulai	1
22	Daspalla	Sasabhuin	1
23	Gania	Gania	11
24	Odagaon	Chemedi	24
25	Odagaon	Rohibanka	13
26	Odagaon	Halandapalli	33
27	Odagaon	Dhanurjayapur	7
28	Odagaon	Jodasahi	58
29	Odagaon	Jamupatana	6
30	Odagaon	Madanmohanpur	7
		Total =	398

On an average their requirement is about 3 bamboos per day per family. Taking 300 days of working the bamboo requirement for artisans is $398 \times 3 \times 300 = 358200$ number per annum. They usually required 1st year bamboo for basket making. They usually depend on near by forest for bamboo.

7.5.3 Timber / Firewood depot:

There are timber and Firewood depot maintained by OFDC Ltd at Dasapalla for Timber & Fire wood and other places for Fire wood. The location of depot is furnished below.

Table No 7.8 List of Private Timber / Firewood Depot in Nayagarh Division.

Sl No	Name of Private Depot.	Name of Proprietor & Address	Quantum of Timber handled annually	Quantity of Firewood sold annually
			(In Average) in cum	(In average) in Ton
1	A.H. Timber Depot	Prop.- Abdul Halim, At/ PO- Sinduria, Dist.- Nayagarh	14.158	Nil
2	N.M. Timber Depot	Prop. Sri Nilamadhab Patra At- Ghaduala, P.O-Sinduria Dist.- Nayagarh	269.007	Nil
3	Kedarnath Timber Depot	Prop. Kedarnath Barad At- Ghaduala,P.O-Sinduria , Dist.- Nayagarh	339.798	Nil
4	Firewood Depot, Sinduria	Prop.- Kadar Mallik At/P.O-Sinduria, Dist- Nayagarh	—	0.5
5	Satapathy Timber Depot	Prop. Sri Bidyadhar Satpathy At- Dianpada,PO- Bhatasahi, Dist.- Nayagarh	16.989	Nil
6	Timber Depot	Prop.- Prasanta Kumar Parida At- Haripur,PO- Gadadharaprasad Ps- Itamati, Dist-Nayagarh	16.989	Nil

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7	Timber Depot	Prop. Susant Kumar Parida S/O-Late Ghanashyam Parida At-Raghunathpur PO-Machhipada,PS/Dist- Nayagarh	8.494	Nil
8	Sai Ram Timber Depot	Prop. Pradeep Nayak S/O-Nilamani Nayak At-Gandhabaran Po-Kajalaipalli, Dist-Nayagarh	8.494	Nil
9	Timber Depot	Prop. Suresh Behera S/O-Dhaneswar Behera At-Suliasahi PO-Lenkudipada PS/Dist-Nayagarh	New	Nil
10	Timber Depot	Prop. Sri Ranjeet Kumar Parida S/O-Late Balabhadra Parida At-Ghantasahi ,PO-Balugaon P.S/ Dist- Nayagarh	New	Nil
11	Maa Bana Durga Timber Depot	Prop. Sri Kumar Bhuian At- Damasahi, P.S-Saranakul Dist-Nayagarh	50.97	Nil
12	Mahapatra Timber Depot	Prop. Hadubandhu Mahapatra S/o -Harihar Mahapatra At-Khairapati,P.O-Ikiri , P.S-Itamati ,Dist- Nayagarh	14.158	Nil
13	Jay Jagannath Timber Depot	Prop-Sri Ladukeswar Sadangi At- Gothaban, P0- Goudaput, Dist.- Nayagarh	22.653	Nil
14	Ladubaba Timber Depot	Prop.- Sri Nilamani Nayak At- Gandhabaran, P0- Sarankul, Dist.- Nayagarh	12.742	Nil
15	Jay Maa Tarini Timber Depot	Prop.- Bhagirathi Palei S/O- Late Damodar Palei At- Sanakhei, P0- Sarankul Dist.- Nayagarh	Not work since last 2 years	Nil

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16	Udayanath Timber Depot	Prop. Sri Ashok Kumar Swain, At- Badabhuin, PO-Godipada PS- Sarankul,Dist.- Nayagarh	18.405	Nil
17	Dasarathi Timber Depot	Prop. Dasarathi Maharana, Mouza- Sunanati At- Sunanati, PO- Itamati Dist.- Nayagarh	9.91	Nil
18	Pindkeswar Timber Depot	Prop. Jyoti Ranjan Pattnaik, S/O- Kailash Chandra Pattnaik, At/ PO- Baulasahi , PS- Sarankul , Dist-Nayagarh	18.405	Nil
19	Maa Kalikajalei Timber Depot	Prop. Santosh Kumar Sutar, S/O- Gobardhan Sutar, At- Panchumu,PO- Bhaliadihi, PS- Sarankul, Dist.- Nayagarh	9.91	Nil
20	Gayatri Timber Depot	Prop. Smt. Gayatri Pattnaik W/O-Santosh Pattnaik At-Haripur, P.S-Saranakul , Dist- Nayagarh	12.742	Nil
21	Maa Tarini Timber Depot	Prop. Biswajit Sahoo S/O-Ramachandra Sahoo At/PO-Raganipatna , Dist-Nayagarh	8.494	Nil
22	Subhalaxmi Timber Depot	Prop. Prasan Kumar Das S/O-Late Krushna Chandra Das AT/PO-Sikharpur PS-Sarankul ,Dist-Nayagarh	8.494	Nil
23	Bhola Sankar Timber Depot	Prop. Sri Biswanath Senapati At/PO- Singarapalli, Dist-Nayagarh	11.326	Nil
24	Sibasakti Enterprises	Prop.-Sri Deepak Kumar Choudhury, At/PO- Odagaon , Dist.- Nayagarh	27.183	Nil

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25	Maa Khambeswari Timber Depot	Prop.- Kailash Chandra Senapati At/PO- Singarapalli PS- Odagaon, Dist.- Nayagarh	7.079	Nil
26	Jagannath Timber Depot	Prop. Narayan Pradhan, S/O- Godabari Pradhan, At/ PO- Singarapalli, Dist.- Nayagarh	12.742	Nil
27	M/S Baba Chandeswar Timber Depot	Prop. Padu Pradhan, S/O- Late Dambaru Pradhan, At/PO- Rohibanka, PS- Odagaon, Dist.- Nayagarh	14.158	Nil
28	Banadurga Timber Depot	Prop. Sanjaya Kumar Lenka S/O-Banambar Lenka At/P.O-Baunsagadia P.S-Odagaon, Dist- Nayagarh	8.494	Nil
29	Mahavir Timber Depot	Prop. Sri Bijay Kumar Nahak S/O-Budhia Nahak At- Ragadimada PO-Bausagadia Dist-Nayagarh	33.98	Nil
30	Sri Raghunath Timber Depot	Prop. Smt. Surekha Sahoo W/O-Jagannath Sahoo At-Patanasahi ,Odagaon P.S-Odagaon ,Dist- Nayagarh	8.494	Nil
31	Maa Tarini Timber Depot	Prop. Sri Rabindra Sahoo At- Mahipur(Patulisahi), PO-Mahipur ,PS-Nuagaon Dist.- Nayagarh	22.653	Nil
32	RK Timber Depot	Prop.- Ratnakar Pradhan S/O- Dasarathi Pradhan At/PO- Mahipur, PS-Nuagaon Dist.- Nayagarh	7.079	Nil
33	Rajalaxmi Timber Depot	Prop. Kulamani Sahoo, S/O- Hajari sahuo At/ PO- Mahipur (Pokhara), Dist.- Nayagarh	11.326	Nil

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34	Maa Ramachandi Timber Depot	Prop. Prafulla Kumar Muduli, S/O- Budi Muduli, At- Brajasundarpur, PO- Badagotha, PS- Nuagaon, Dist.- Nayagarh	9.91	Nil
35	Dibyajyoti Timber Depot	Prop. Krushna Ch. Maharana S/o-Narayan Maharana At/P.O-Udayapur P.S-Nuagaon, Dist-Nayagarh	14.158	Nil
36	Mahavir Timber Depot	Prop. Manoranjan Pradhan S/O-Adhikari PradhanAt/PO- Khamarasahi PS-DaspallaDist-Nayagarh	New	Nil
37	Maa Mangala Timber Depot	Prop. Smt. Snehalata Sahoo At/PO- Khalisahi, Dist-Nayagarh	28.316	Nil
38	Gugulu Timber Depot	Prop-Prasanta Kumar Pradhan At/PO-Badabanpur Via-Khandapada, Dist.-Nayagarh	8.494	Nil
39	Maa Bhanumati Timber Depot	Prop. Kedar Rout, S/O- Arjuna Rout At- Ghanasalia, PO- Sidhamula PS- Khandapada ,Dist.- Nayagarh	7.079	Nil
40	M/S Sai Timber Depot	Prop. Sri Batakrushna Das S/O-Makar Das At- Nuapalli P.O-Bhagabanpur P.S-Fhategarh, Dist-Nayagarh	Nil	Nil
41	Mahavir Timber Depot	Prop. Sri Chittaranjan Parida S/O-Bhagirathi Parida At- Ghanasalia, P.O- Sidhamula P.S-Khandapada Dist-Nayagarh	8.494	Nil

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42	Royal Timber Depot	Prop. Sri Susil Ku. Rout S/O-Srikanta Rout At-Ghanasalia ,P.O- Sidhamula P.S-Khandapada, Dist-Nayagarh	7.079	Nil
43	Mahaveer Timber Depot	Prop. Sri Manoj Ku. Pradhan S/O-Nabakishore Pradhan At/P.O-BadaBanpur P.S-Khandapada Dist-Nayagarh	Nil	Nil
44	Maa Purnabasi Timber Depot	Prop. Kartik Sahoo S/o- Bhima Sahoo At/P.O- Baigunia, P.S-Fhategarh	7.079	Nil
45	Timber Depot At-Arakhapalli	Prop. Plaban Rath S/O-Rama Chandra Rath At/PO-Nimani,PS-Fhategarh Dist-Nayagarh	New	Nil
46	Maa Dakhinakali Timber Depot	Prop.- Sri Sudhansu Kumar Behera At- Dankarisahi, PO-Rasanga PS- Gania, Dist.- Nayagarh	7.079	Nil
47	Jaleswora Timber Depot	Depot, Madhupur Prop- Sri Pankaj Pradhan At- Madhupur, PO- Dihagaon ,Dist-Nayagarh	15.574	Nil
48	Chandan Timber Depot	Prop.-Sri Abhimanyu Sahoo At -Khalisara, PO- Balaram Prasad PS-Gania ,Dist-Nayagarh	8.494	Nil

7.5.4 Saw Mill:

There is one Licensed Saw Mill in the Division namely Narayani Saw Mill, Badabhuin, Bhapur in Khandapada Range. People / traders used to saw their timber at Cuttack / Berhampur alos where Saw mills exist.

There is a private licenced Saw mill as detailed below (Table No 7.9)

Table No 7.9 Name of Saw mills forest produce received and disposal in cft.					
SL No.	Name of the Saw Mill/ Depot	Year	Received	Disposal	Balance
1	Narayan Saw Mill, Badabhuin	2016-17	10500	10500	0
		2017-18	12250	12000	250
		2018-19	18250	17500	500
		2019-20	19500	18500	1000
		2020-21	20000	19000	1000

7.6 Import & Export of Wood & Wood Products:

There is no record of Import / Export of timber in this division.

The General sale value of Timber as per OFDC Ltd rate is furnished at **Annexure-IX**

7.7 Import & Export of NTFPs:

Non-timber forest products available inside forest area can be classified under various heads. (a) Fiber and flosses; (b) grass, bamboo and canes; (c) edible MFPs; (d) essential oil including those from grasses; (e) medicinal plants; (f) tans and dyes; (g) gums and resins; (h) leaves, fruits and seeds. Some of these are very useful to the local population for meeting their subsistence consumption need while other is of commercial importance. The ethno botanical resources not only provide the three basic needs of life, i.e. food, shelter and clothing but also strengthen the economic status of the forest dwellers. These resources provide incentives to rural poor for maintaining the sustainability of forest ecosystem and help to preserve biological diversity and traditional knowledge. The important NTFP's are Sal Leaf, myrobolans, honey, wax, resin, mahua flowers, mahula seeds, kusum seeds, Sal seeds, lac, tamarind and different types of other fruits and seeds. It is noted that except a few, most of the NTFPs are restricted to a particular season and they are not common to all seasons. Normally, the tribal women along with their children collect the NTFPs in different pockets of district. Apart from local consumption, NTFPs are exported to different parts of India. There are a large number of medicinal fruits, seeds, roots and barks that are collected and exported. Most of the non timber forest products are transported away from the area due to lack of processing facilities locally, resulting in loss of value that could have been added to them by village and cottage industries.

7.10 NTFP items collected and send to outside the State.				
Sl No	Local name	Botanical name	Family	Parts usually collected.
1	Aonla	<i>Phyllanthus emblica</i>	Euphorbiaceae	Fruits
2	Bahada	<i>Terminalia bellirica</i>	Combretaceae	Fruits
3	Bhuineema	<i>Andrographis paniculata</i>	Acanthaceae	Whole plant
4	Char	<i>Buchanania lanzan</i>	Anacardiaceae	Seeds
5	Datepalm	<i>Phoenix sylvestris</i>	Palmae	Leaves
6	Dhatki	<i>Woodfordia fruticosa</i>	Lythraceae	flower
7	Harida	<i>Terminalia chebula</i>	Combretaceae	Fruits
8	Kochila	<i>Strychnos nux- vomica</i>	Loganiaceae	Fruits
9	Mahula	<i>Madhuca indica</i>	Sapotaceae	Flowers
10	Sal	<i>Shorea robusta</i>	Dipterocarpaceae	Leaf
11	Siali	<i>Bauhinia vahlii</i>	Caesalpiniaceae	Leaf / fiber
12	Tentuli	<i>Tamarindus indica</i>	Caesalpiniaceae	Fruits

The NTFP items are sold in local markets. No Pricing Committee report is available fixing the minimum price for NTFP items. The market price as collected from local Hat (Market) is as at Table No 7.11

Table 7.11 Value of NTFP				
Sl No	Name of product	Unit	Sale Price in Rs	Source of information.
1	Mahula	Per Kg	50/-	Weekly Market
2	Kochila	Per Kg	19/-	
3	Char	Per Kg	120/-	
4	Kusuma	Per Kg	15/-	
6	M. Kendu	Per Kg	12/-	
7	Anantamula	Per Kg	90/-	
8	Fenfena	Per Kg	300/-	
9	Dombhurulu	Per Kg	15/-	
10	Piasal	Per Kg	18/-	
11	Sal Leaf	Per Kg	30/-	
12	Patalgaruda	Per Kg	40/-	
13	Ramdantuni	Per Kg	80/-	
14	Tentuli	Per Kg	30/-	
15	Gaichira	Per Kg	800/-	

Table 7.11 Value of NTFP				
Sl No	Name of product	Unit	Sale Price in Rs	Source of information.
16	Ratna	Per Kg	15/-	
17	Anla	Per Kg	90/-	
18	Harida	Per Kg	8/-	
19	Bahada	Per Kg	12/-	
20	Resin	Per k.g	100	
21	Honey	Per ltr	400/-	

7.8 Removal of Fodder:

Grazing in forests is a common sight. Rearing of Goat is extensively adopted in villages. They usually feed on forests. The ground floor of forest is highly disturbed and there is lack of grasses for herbivorous in forest. There is also lopping of trees for feeding to goats. It has a very adverse effect on plant growth. Physically there is no removal of fodders for cattle / domestic animals by removal by way of grazing are rampant.

7.9 Valuation of Products:

As per the NTFP Policy 2002, most of the NTFP items are being regulated by Gram Panchyat. There are no records on collection of NTFP in various Panchyat / Blocks. It is not practically possible to quantify the products being collected and its valuation, effect on family income of this division. The NTFP Policy is attached as **Annexure-X**.

CHAPTER-8

MAINTENANCE & ENHANCEMENT OF SOCIAL, ECONOMIC, CULTURAL AND SPIRITUAL BENEFITS

8.1 Number of JFM Committees and areas protected by them:

The process of Joint Forest Management initiated during Social Forestry Project in 1985. Under Social Forestry Project, The Village Forest so created assigned to Village Forest Committee for its management under Village Forest Rule -1985. Subsequently Forest Protection Committee was constituted under Resolution 1988 and protection of forest fringe area was assigned. Afterwards a comprehensive JFM Resolution came up during 1993 with elaborated provisions. Vana Samrakshyana Samiti – VSS developed / Constituted under the provisions of Resolution. Afterwards Forest Development Agency (FDA) – a common forum of VSS developed under National Afforestation Program (NAP) from 2002 onwards. There after OFSDP sector operated in 11 divisions with full scale participatory approach from 2006. With a view to consolidate all developments in joint forest management and address legal matters those came up in the management process, JFM Resolution 2011 formulated (**Annexure-XI**). Subsequently amendment has been made to provisions of JFM Resolution 2011 vide Notification No 9182/ F&E dated 1st June 2015 and 2019 (copy at **Annexure-XIA and XIB**)

8.1.1 VSS (Vana Surakshya Samiti) Constituted.

Under the provisions of Joint Forest Management Resolution, 2011 ; 336 number of VSS (Vana Surakshya Samiti) has been constituted in the division. The list of VSS and area assigned to them is furnished at **Table No 8.1 (A), (B), (C), (D), (E),)F) & (G).**

Table No 8.1(A) List of VSS (Daspalla Range)							
Sl No	Name of VSS	Name of Village	Area assigned in Ha				
			RF	PRF	DPF	Rev. Forest	Total
	Daspalla Range						
1	Jagannath VSS,	Tumudibida	-	-	-	50.00	50.00
2	Maa Banadurga VSS,	Tangisahi	100.00	-	-	-	100.00
3	Banderi VSS,	Pokharigochha	100.00	-	-	-	100.00
4	Maa Kalapatata VSS,	Beberi	100.00	-	-	-	100.00
5	Bijaynagar VSS,	Bijayanagar	80.00	-	-	-	80.00
6	Sereniganda VSS,	Sereniganda	200.00	-	-	-	200.00
7	Maa Kalabanderi VSS,	Saliagochha	100.00	-	-	-	100.00
8	Balimunda VSS,	Barapalli	100.00	-	-	-	100.00
9	Maa Gramadevati VSS,	Bulunda	270.00	-	-	-	270.00
10	Maa Banderi thatkurani VSS,	Badakameti	80.00	-	-	-	80.00
11	Rupajhari VSS,	Rupajhari	100.00	-	-	-	100.00
12	Maa Pitalsandha VSS,	Kutibari	200.00	-	-	-	200.00
13	Maa Bhairabi VSS,	Hanadiha	150.00	-	-	-	150.00
14	Maa Banderi VSS,	Gochha	200.00	-	-	-	200.00
15	Maa Banadevi VSS,	Satajhari	200.00	-	-	-	200.00
16	Nandini VSS,	Lembugochha	100.00	-	-	-	100.00
17	Kandhanuasahi VSS,	Kandhanuasahi	150.00	-	-	-	150.00
18	Maa Pitabali VSS,	Munduli	100.00	-	-	-	100.00
19	Maa Bhairabi VSS,	Kutibari	100.00	-	-	-	100.00
20	Sri Birupakhyeswar VSS,	Boni	-	50.00	-	-	50.00
21	Badakurubari VSS,	Badkurubari	100.00	-	-	-	100.00
22	Tilabadi VSS,	Tilabadi	100.00	-	-	-	100.00
23	Mitukuli VSS,	Mitukuli	80.00	-	-	-	80.00
24	Sanakurubari VSS,	Sanakurubari	80.00	-	-	-	80.00
25	Kandhaniji Andhrakote VSS,	Andharkote	100.00	-	-	-	100.00
26	Jamusahi VSS,	Jamusahi	180.00	-	-	-	180.00
27	Raisar VSS,	Raisar	180.00	-	-	-	180.00
28	Tipadar VSS,	Tipadar	180.00	-	-	-	180.0
29	Kanapaju VSS,	Kanapaju	180.00	-	-	-	180.00
30	Maa Kalinjari VSS,	Pipalpadar	150.00	-	-	-	150.00
31	Pitabali VSS,	Putubari	50.00	-	-	-	50.00
32	Maa Giritoni VSS,	Barasahi	50.00	-	-	-	50.00
33	Arasahi VSS,	Arasahi	50.00	-	-	-	50.00
34	Maa Mangala VSS,	Pankua	50.00	-	-	-	50.00

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35	Bateni VSS,	Bateni	50.00	-	-	-	50.00
36	Ananta Khola VSS	Kukuprasad	80.00	-	-	-	80.00
37	Sri Sri Baladev Jew VSS,	Puruna Daspalla	150.00	-	-	-	150.00
38	Gouda Baghuabareni VSS	Gouda Baghuabareni	30.00	-		20.00	50.00
Total Daspalla Range			4270.0	50.00	0.0	70.00	4390.00

Table No 8.1 (B) List of VSS (Gania Range)

Sl No	Name of VSS	Name of Village	Area assigned in ha				
			RF	PRF	DPF	Rev. Forest	Total
	Gania Range						
1	Maa Bankamunda VSS,	Nuapada	160.00	-	-	-	160.00
2	Maa Mangala VSS,	Mahukana	240.00	-	-	-	240.00
3	Laxminarayan VSS,	Gobardhanapur	40.00	-	-	-	40.00
4	Tangeri VSS,	Gambharikhola	30.00	-	-	-	30.00
5	Guriabari VSS,	Guriabari	-	-		115.87	115.87
6	Maa Brahmanidevi VSS,	Arundipathara	40.50	-	-	-	40.50
7	Jhuntamara VSS,	Jhuntamara	40.00	-	-	-	40.00
8	Nenderijhari VSS,	Nenderijhari	180.00	-	-	-	180.00
9	Maa Pitulisandha VSS,	Nardigochha	125.00	-	-	-	125.00
10	Maa Bankamunda VSS,	Khairapankalas ahi	-	-	20.00	60.24	80.24
11	Maa Pitabali VSS,	Talasahi	-	-	25.00	56.00	81.00
12	Maa Badarahul Dihagaon VSS,	Janisahi	-	-	30.00	-	30.00
13	Maa Mangala VSS,	Suankhala	-	-	37.50	108.00	145.50
14	Anjanasuta VSS,	Mahantipalli Madhyakhanda	40.00	-	-	139.12	179.12
15	Maa Vanaspati VSS	Pandarsingh	25.00	-	-	-	25.00
16	Mahaveer VSS	Khalisara	32.00	-	-	-	32.00
17	Maa Bauti VSS,	Gopalprasad	47.00	-	-	-	47.00
18	Sri Sri Raghunath Jew VSS	Chhadamula	-	-	-	90.00	90.00
19	Dhuamada VSS	Dhuamada	-	-	-	84.00	84.00
20	Maa Baradayini VSS	Nachhipur	84.00	-	-		84.00
21	Maa Badaraula VSS	Maradabadi	70.00	-	-	-	70.00
22	Maa Pitabali VSS	Sardhapur		86.00	-	-	86.00

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23	Maa Bhairabi VSS	Basantapur	70.00				70.00
24	Pitalasandha VSS	Makaraprasad	111.00				111.00
25	Maa Brahmanidevi VSS	Narayanprasad a				28.00	28.00
26	Maa Bhuiyani VSS	Bhagamunda	50.00				50.00
27	Baba Biswanath VSS	Indipata	92.00				92.00
28	Radhamadhaba VSS	Patanada	68.00				68.00
	Gania Range Total		1544.50	86.00	112.50	681.23	2424.23

Table No 8.1(C) List of VSS (Khandapara Range)

Sl No	Name of VSS	Name of Village	Area assigned in Ha				
			RF	PRF	DPF	Rev. Forest	Total
Khandapara Range							
1	Maa Dumunai VSS,	Gopalprasad	20.60				20.60
2	Nakadein VSS,	Nakadein	17.20				17.20
3	Bandhabimaleswar VSS,	Khandapada	108.00				108.00
4	Umadei VSS	Khandapada	150.00				150.00
5	Sri Jagannath VSS,	Kenduapalli				20.00	20.00
6	Jagannath VSS,	Ratakhandi				20.00	20.00
7	Maa Mahisasuni VSS,	Golapokhari	41.00				41.00
8	Maa Ramachandi VSS,	Serajanga	200.00				200.00
9	Sapua VSS,	Sapua	100.00				100.00
10	Rugabadu VSS,	Rugabadu	30.00				30.00
11	Luharkhani VSS,	Luharkhani	60.00				60.00
12	Ramachandra Pur VSS,	Ramachandrapur	120.00				120.00
13	Raimba VSS,	Raimba	150.00				150.00
14	Krushnapalli VSS,	Krushnapalli	100.00				100.00
15	Maa Sindurei VSS,	Madhupur	100.00				100.00
16	Sulia Thakurani VSS,	Datapokhari	100.00				100.00
17	Maa Mangala VSS,	Nagajhara	80.00				80.00
18	Mahisasuni VSS,	Kaithapalli	80.00				80.00
19	Petapadhan VSS,	Sanakhajuria	100.00				100.00
20	Gramadevati VSS,	Kunjabirharipur	80.00				80.00
21	Maa Brahmanidevi VSS,	Nuagaon	100.00				100.00
22	Brahmanidevi VSS,	Banjhapalli	80.00				80.00
23	Maa Brahmanidevi VSS,	Kutunisira	100.00				100.00

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24	Maa Banadurga VSS,	B.Khajuria	100.00				100.00
25	Maa Kalapata VSS,	Petapalli	100.00				100.00
26	Brahmanidevi VSS,	Bhramarabaraprasad	80.00				80.00
27	Maa Brahmanidevi VSS,	Anlamada				10.00	10.00
28	Trinath Jew VSS,	Guriabari	30.00				30.00
29	Maa Mangala VSS,	Panasapadar	30.00				30.00
30	Sri Raghunath Jew VSS,	Koska	70.00				70.00
31	Maa Bhuiani VSS,	Bhanrapalli	20.00				20.00
32	Nilamadhab VSS,	Koduanpalli	70.00				70.00
33	Nilachakra VSS,	Chaitanpur				43.80	43.80
34	Devi Subhadra VSS,	I.Ghodamari				30.00	30.00
35	Jagannath VSS,	Mangarajpur	95.00				95.00
36	Taladhwaja VSS,	Kanasing -Ka & Kha	98.00				98.00
37	Darpadalan VSS,	Kunjabelli.	50.00			23.00	73.00
38	Maa Ramachandi VSS,	Podasahi	63.20				63.20
39	Maa Brahmanidevi VSS,	Kaithapokhari	40.00				40.00
40	Bajarangi VSS,	Kumbharapada	80.00				80.00
41	Balabhadra jew VSS,	Khadagaprasad	40.00				40.00
42	Nilamadhab VSS,	Ghodangapalli	30.00				30.00
43	Maa Budhabudhi VSS,	Pathara	17.70				17.70
44	Maa Basundhari VSS,	Singipur	10.00				10.00
45	Maa Pitabali VSS,	Kusumada	10.00				10.00
46	Jagabalia VSS,	Gopinathpur				170.95	170.95
47	Patitapabana VSS,	Kumundi				78.00	78.00
48	Bhuinanithkurani VSS,	Mahulaberena				50.00	50.00
49	Chakrasudarshan VSS,	Pithakhai	39.00			38.82	77.82
50	Maa Mangala VSS,	Balabhadraprasad	75.00				75.00
51	Maa Bhatarika VSS,	Marada	129.00			10.40	139.40
52	Sri Gopinath VSS,	Fategarh 'A'	90.00			34.12	124.12
53	Chakratirtha VSS,	Talamarada	14.00			64.00	78.00
54	Darubrahma VSS,	Kandhamirigi	100.00				100.00
55	Nirmalya Pasara VSS,	Balaramprasad	150.00				150.00
56	Swapneswar VSS,	Rakama	194.114			5.886	200.00
57	Mahodadhi VSS,	Natabarpur	49.00				49.00
58	Rajabiswabasu VSS,	Hatiapalli				30.00	30.00
59	Raja Indradyumna VSS,	Kalatangi				45.06	45.06
60	Nilachala VSS,	Bijaynagar	45.00			10.40	55.40

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61	Maa Banadurga VSS,	Solapokhari	95.00				95.00
62	Maa Ramachandi VSS,	Saradhapur	100.00				100.00
63	Shri Shri Raghunath VSS,	Giridipalli	80.00				80.00
64	Maa Banadurga VSS,	Bedanki				26.60	26.60
65	Maa Bauti VSS,	Rakesia	92.70				92.70
66	Jogijogiani VSS.	Analapata	150.00				150.00
67	Bandarasuni VSS,	Kunjabanprasad	50.00				50.00
68	Sri Jagannath VSS,	Durgapur & Salabanisahi	154.00				154.00
69	Darubrahma VSS,	Nuapalli	112.00				112.00
70	Grigobaradhan VSS	Ramachadrprasad				12.00	12.00
71	Maa Bramhani Devi VSS,	Dhanchangada				38.56	38.56
72	Maa Ramachandi VSS	Baraput	70.00				70.00
73	Maa Bhuiani VSS	Singibadi	100.00				100.00
74	Bhagabata Jew VSS	Gaudapatana	36.00				36.00
75	Maa Mangala VSS, Ratanpur	Harijansahi(Khalisahi)	44.00				44.00
Khandapara Range Total			4919.514	0	0	761.598	5681.112

Table No 8.1 (D) List of VSS (Mahipur Range)

Sl No	Name of VSS	Name of Village	Area assigned in Ha				
			RF	PRF	DPF	Rev. Forest	Total
	Mahipur Range						
1	Jayadurga VSS,	Maskabari	80.00	-	-	-	80.00
2	Maa Pitabali VSS,	Baradakhamana	100.00	-	-	-	100.00
3	Maa Ramachandi VSS,	Jayapalli	100.00	-	-	-	100.00
4	Maa Bagdevi VSS,	Kandhakhalamada	120.00	-	-	-	120.00
5	Maa Brahmanidevi VSS,	Bhuinragadi	130.00	-	-	-	130.00
6	Maa Bandurga VSS,	Chadakamara	150.00	-	-	-	150.00
7	Kersing VSS,	Kersing	100.00	-	-	-	100.00
8	Kaptapalli VSS,	Kaptapalli	100.00	-	-	-	100.00
9	Sima VSS,	Sima	-	-	-	110.00	110.00
10	Pobala VSS,	Pobala	50.00	-	-	-	50.00
11	Panchupandav VSS,	Bhaliapadar	200.00	-	-	-	200.00
12	Brahmanidevi VSS,	Balisahi	103.00	-	-	-	103.00
13	Maa Mangala VSS,	Ambajhari	98.00	-	-	-	98.00

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14	Sri Sri Raghunathjew VSS,	Lunisara	105.00	-	-	-	105.00
15	Maa Bankamunda VSS,	Jagannathprasad	68.50	-	-	-	68.50
16	Maa Mangala VSS,	Sikrida	36.00	-	-	-	36.00
17	Maa Banadurga VSS,	Mahitama	200.00	-	-	-	200.00
18	Maa Tampeswar VSS,	Pokasunga	100.00	-	-	-	100.00
19	Maa Mangala VSS,	Kantiamba	100.00	-	-	-	100.00
20	Kosalanga VSS,	Kosalanga	180.00	-	-	-	180.00
21	Angisingi VSS,	Angisingi	180.00	-	-	-	180.00
22	Sri Sri Ladukeswar VSS,	Adipada	160.00	-	-	-	160.00
23	Maa Karagadu VSS,	Kasikiari	-	-	-	29.00	29.00
24	Maa Mangala VSS,	Katchapalli	106.00	-	-	-	106.00
25	Maa Matiani VSS,	Raniguma	130.50	-	-	-	130.50
26	Maa Sunadei VSS,	Baradihi	183.80	-	-	-	183.80
27	Maa Salarei VSS,	Nuasahi	132.00	-	-	-	132.00
28	Maa Chandrakala VSS,	Maniakote	112.00	-	-	-	112.00
29	Maa Dhobasara VSS,	Muriamba	117.00	-	-	-	117.00
30	Maa Kalalinga VSS,	Badibari	168.50	-	-	-	168.50
31	Duarasuni VSS,	Atharaganda	35.00	-	-	-	35.00
32	Balunkeswar Mahadeva VSS,	Sampada (East)	199.00	-	-	-	199.00
33	Maa Sindurapati VSS,	Sampada (West)	190.00	-	-	-	190.00
34	Maa Thangunidevi VSS,	Nelibari	56.80	-	-	14.27	71.07
35	Maa Chakrabauti VSS,	Radhanathpur	110.30	-	-	43.50	153.80
36	Maa Kaindei VSS,	Karadapalli	88.15	-	-	13.25	101.40
37	Maa Sunadei VSS (C)	Gundurabari & Gayalamada	120.00	-	-	-	120.00
38	Maa Sunadei VSS(A)	Raktapata, Tuniapada, Ragadimada	130.00	-	-	-	130.00
39	Maa Mangala VSS,	Andharakhani	40.00	-	-	-	40.00
40	Maa Sunadei VSS	Minagadia & Belabani	200.00	-	-	-	200.00
41	Gopaljew VSS,	Sikharagochha	200.00	-	-	-	200.00

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42	Maa Sulia Thakurani VSS,	Maichheli	84.00	-	-	22.89	106.89
43	Sri Sri Dadhibamanjew VSS,	Mahipur	53.70	-	-	19.57	73.27
44	Maa Banadurga VSS,	Kanjama	50.00	-	-	-	50.00
45	Maa Ramachandi VSS,	Sampada	58.00	-	-	-	58.00
46	Maa Andharbauti VSS	Dimiripadar	164.00	-	-	36.00	200.00
47	Maa Brahmani Devi VSS,	Kaliamba	50.00	-	-	-	50.00
48	Sri Sri Raghunathjew VSS,	Ragadisahi	-	-	-	32.00	32.00
49	Brahmani Devi VSS	Lingiribadi	100.00	-	-	-	100.00
50	Bankamunda VSS	Achhupada	21.00	-	-	-	21.00
51	Khalamada VSS	Khalamada	120.00	-	-	-	120.00
52	Maa Sulia Thakurani VSS,	Mahipur	254.00				254.00
Mahipur Range Total			5734.25	0.0	0.0	320.48	6054.73

Table No 8.1 (E) List of VSS (Nayagarh Range)

Sl No	Name of VSS	Name of Village	Area assigned in Ha				
			RF	PRF	DPF	Rev. Forest	Total
	Nayagarh Range						
1	Patharakata VSS,	Nabaghanapur	145.05	-	-	-	145.05
2	Sulia VSS,(3)	Machhipada	200.00	-	-	-	200.00
3	Nilakantheswar VSS,	Saradhapur	145.00	-	-	-	145.00
4	Maa Sulia Meriakhai VSS,	Saradhapur, Budhijhari	208.00	-	-	-	208.00
5	Muktapur VSS,	Muktapur	50.00	-	-	-	50.00
6	Maa Gramadevati VSS,	Rajanapalli	200.00	-	-	-	200.00
7	Thanapati VSS,	Dhipamal	200.00	-	-	-	200.00
8	Maa Bansudhari VSS,	Chakapathara	200.00	-	-	-	200.00
9	Gopinathpur VSS,	Gopinathpur	200.00	-	-	-	200.00
10	Banamalipur VSS,	Banamalipur	200.00	-	-	-	200.00
11	Muthagadia VSS,	Muthagadia	25.00	-	-	-	25.00
12	Kaithagadia VSS,	Kaithagadia	47.00	-	-	-	47.00
13	Raghunathpur VSS,	Raghunathpur	25.00	-	-	-	25.00
14	Lenkudipada VSS,	Lenkudipada	40.00	-	-	-	40.00

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15	Aswathapada VSS,	Aswathapada	30.00	-	-	-	30.00
16	Khuntubandha VSS,	Khuntubandha	65.00	-	-	-	65.00
17	Nadiali VSS,	Nadiali	75.00	-	-	-	75.00
18	Sidheswar dev VSS,	Bhatasahi	100.00	-	-	-	100.00
19	Rameswar Jew, VSS,	Nuapalli	100.00	-	-	-	100.00
20	Dianpada VSS,	Dianapada	89.00	-	-	-	89.00
21	Lekhanpur, VSS,	Lekhanpur	50.00	-	-	-	50.00
22	Maa Duarasuni VSS,	Petapalli & Rohisahi	200.00	-	-	-	200.00
23	Raghunathjew VSS,	Dhenkana	200.00	-	-	-	200.00
24	Maa Dakhinakali VSS,	Balavadrapur	200.00	-	-	-	200.00
25	Dhabalei VSS,	Dhabalei	20.00	-	-	-	20.00
26	Pallisasan VSS,	Pallisasan	25.00	-	-	-	25.00
27	Biradisahi VSS,	Biradisahi	50.00	-	-	-	50.00
28	Godialli VSS,	Godialli	25.00	-	-	-	25.00
29	Padmadeipur VSS,	Padmadeipur	35.00	-	-	-	35.00
30	Hariharpur VSS,	Hariharpur	40.00	-	-	-	40.00
31	Karadabani VSS,	Karadabani	25.00	-	-	-	25.00
32	Barapalla VSS,	Barapalla	30.00	-	-	-	30.00
33	Piasalia VSS,	Piasalia	20.00	-	-	-	20.00
34	Ladukeshwarpur VSS,	Ladukeshwarpur	20.00	-	-	-	20.00
35	Kanakata VSS,	Kanakata	15.00	-	-	-	15.00
36	Udayapur VSS,	Udayapur	25.00	-	-	-	25.00
37	Sialikhol VSS,	Sialikhol	25.00	-	-	-	25.00
38	Sipai Asurudhipa VSS,	Asurudhipa	30.00	-	-	-	30.00
39	Hinjalagadia VSS,	Hinjalagadia	30.00	-	-	-	30.00
40	Maa Mahisamardini VSS,	Jamusahi	100.00	-	-	-	100.00
41	Maa Indukatha Bhuinani VSS,	Dhodapalli	100.00	-	-	-	100.00
42	Sri Sri Dadhibaman Jew VSS,	Laxmiprasad	100.00	-	-	-	100.00
43	Maa Gramadevati VSS,	Tentuliapalli	-	100.00	-	-	100.00
44	Maa Mahisasuni VSS,	Krushnaprasad	100.00	-	-	-	100.00
45	Balunkeswar VSS,	Ranipada	-	100.00	-	-	100.00
46	Brahmanidevi VSS,	Hiradeipur	100.00	-	-	-	100.00
47	Badarauli VSS,	Gudupangi	100.00	-	-	-	100.00
48	Ananta Basudev VSS,	Deuli	100.00	-	-	-	100.00
49	Brahmanidevi VSS,	Dhipamal (Nuasahi)	50.00	-	-	-	50.00
50	Maa Banadurga VSS,	Gochhabari	100.00	-	-	-	100.00

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51	Maa Ghantalei VSS,	Sandhamara	137.00	-	-	-	137.00
52	Maa Bramhani Devi VSS,	khanguri	77.00	-	-	-	77.00
53	Maa Lilabati VSS	Dhamanei Brundabanapur	50.00	-	-	-	50.00
54	Maa Vanadurga VSS	Pathuripada	60.00	-	-	-	60.00
Nayagarh Range Total			4583.05	200.00	0.0	0.0	4783.05

Table No 8.1 (F) List of VSS (Odogaoon Range)

Sl No	Name of VSS	Name of Village	Area assigned in ha				Total
			RF	PRF	DPF	Rev. Forest	
	Odogaoon Range						
1	Biranchinarayan VSS,	Hatiasila	210.00	-	-	-	210.00
2	Duarasuni VSS,	Nuagaon	165.00	-	-	-	165.00
3	Baurithakurani Sulia R.F. VSS,	Ambapada	152.00	-	-	-	152.00
4	Maa Mangala VSS,	Badhulipur	69.00	-	-	-	69.00
5	Sadhusantha VSS,	Landabadu	-	-	205.06	-	205.06
6	Maa Andharabauti VSS,	Banthapur	200.00	-	-	-	200.00
7	Chemedi VSS,	Chemedi	200.00	-	-	-	200.00
8	Kanduridevi VSS,	Haladapalli	100.00	-	-	-	100.00
9	Nrusinghanath VSS,	Nrushinghaprasad	200.00	-	-	-	200.00
10	Maa Mangala VSS,	Jayamangalprasad	140.00	-	-	-	140.00
11	Duruda VSS,	Duruda	100.00	-	-	-	100.00
12	Maa Banadurga VSS,	Luni	200.00	-	-	-	200.00
13	Gupteswar VSS,	Khangarapalli	80.50	-	-	-	80.50
14	Maa Brahmanidevi VSS,	Sundijhola	200.00	-	-	-	200.00
15	Maa Ramachandi VSS,	Jodasahi	200.00	-	-	-	200.00
16	Gramadevati VSS,	Nepal	200.00	-	-	-	200.00
17	Radhakrishna VSS,	Podasahi	21.00	-	-	-	21.00
18	Maa Kaliasandha VSS,	Balabhadrapur	100.00	-	-	10.00	110.00
19	Bhagabat jew VSS,	Kanamareisahi	100.00	-	-	40.00	140.00
20	Maa Mangala VSS,	Jeypore	38.00	-	-	-	38.00
21	Maa Mangala VSS,	Maliajhola	60.00	-	-	-	60.00

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22	Maa Banadurga VSS,	Jamujhola	70.00	-	-	-	70.00
23	Maa Brahmanidevi VSS,	Kepeti	26.00	-	-	-	26.00
24	Maa Kareisuni VSS,	Podasahi	100.00	-	-	-	100.00
25	Maa Kanakdurga VSS,	Ostia	100.00	-	-	-	100.00
26	Maa Gramadevati VSS,	Dhanurjaypur	100.00	-	-	-	100.00
27	Maa Banadurga VSS,	Makarapalli	-	200.00	-	-	200.00
28	Maa Gramadevati VSS,	Todigadia	50.00	-	-	-	50.00
29	Maa Brahmanidevi VSS,	Beladwar	40.00	-	-	-	40.00
30	Balunkeswar Nabapallav VSS,	Balisinsa	90.00	-	-	-	90.00
31	Dutikeswar VSS,	Jamupatna	61.00	-	-	55.00	116.00
32	Maa Khambeswari VSS,	Singarpalli	116.00	-	-	-	116.00
33	Bhagabatjew VSS,	Nathiapalli	-	-	47.00	-	47.00
34	Maa Thakurani VSS,	Totasahi	-	-	50.00	-	50.00
35	Panchupandavi VSS,	Nauriagada	-	-	63.00	-	63.00
36	Radhakrishna VSS,	Hanumantia	-	-	37.00	-	37.00
37	Maa Bhagabati VSS,	Luharakhani	-	-	50.00	-	50.00
38	Maa Kanakdurga VSS,	Kaliamba	-	-	-	119.60	119.60
39	Basundhara VSS	Bahadajhola	90.00	-	-	-	90.00
40	Maa Mangala VSS	Maredi	26.00	-	-	-	26.00
41	Similitaila VSS	Godipatna				16.00	16.00
Odogaon Range Total			3604.50	200.00	452.06	240.60	4497.16

Table No 8.1(G) List of VSS Panchirda Range

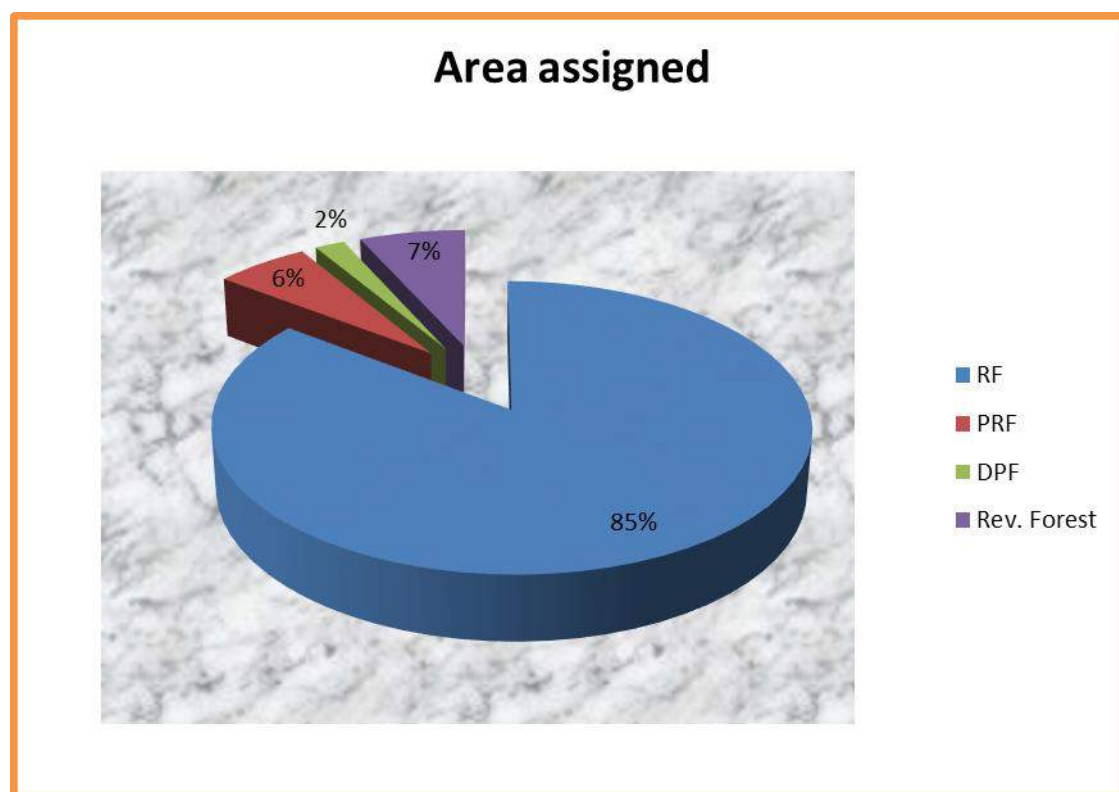
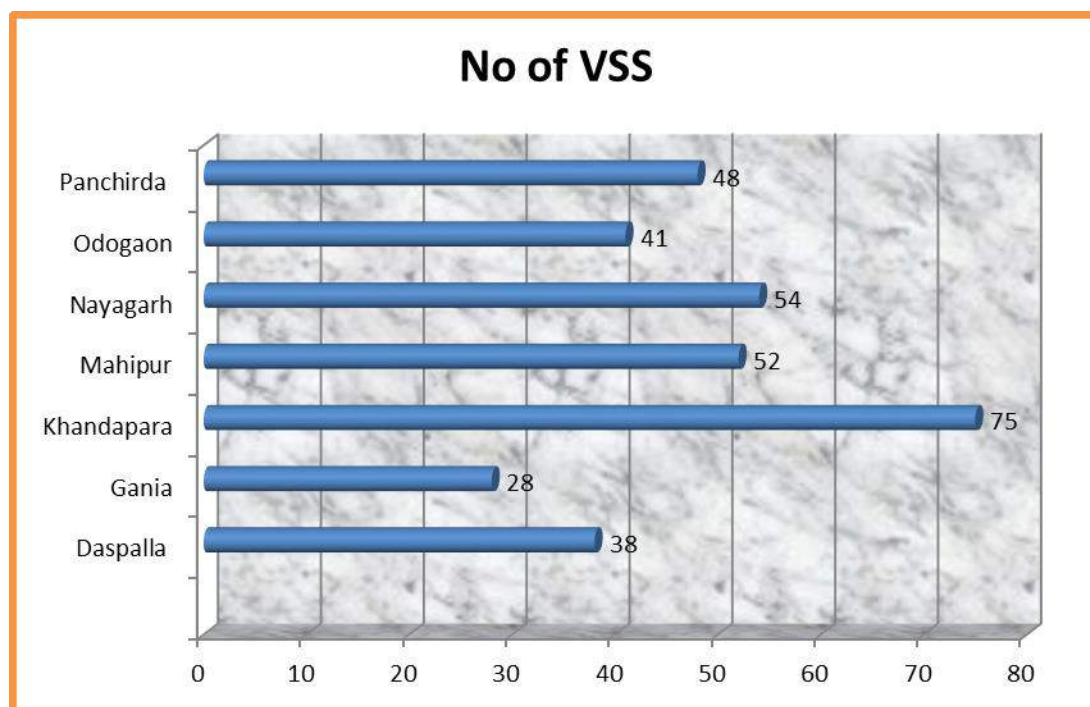
Table No 8.1(G) List of VSS Panchirda Range							
			Forest area assigned in Ha				
Sl No	Name of VSS	Name of Village	RF	PRF	DPF	Rev. Forest	Total
Panchirda Range							
1	Maa Sukarbudhi VSS,	B.Khairapati	-	200.00	-	-	200.00
2	Maa Bagdevi VSS,	Badatulubi	200.00	-	-	-	200.00
3	Dalkhai VSS,	Dayanajhari	200.00	-	-	-	200.00
4	Maa Ghodadei VSS,	Lunisahi	200.00	-	-	-	200.00
5	Baghadei VSS,	Dengajhari.	200.00	-	-	-	200.00
6	Sidheswar VSS,	Kakalama	-	-	-	200.00	200.00
7	Pandarasuni VSS,	Jagannathprasad	200.00	-	-	-	200.00
8	Maa Jharadei VSS,	Pankalabari	200.00	-	-	-	200.00
9	Maa Banadurga VSS,	Jakeda	200.00	-	-	-	200.00
10	Nilakantheswar VSS,	Gothabana	100.00	-	-	-	100.00
11	Maa Biraja VSS,	Saliajhari	100.00	-	-	-	100.00
12	Gayatri VSS,	Nuapalli	100.00	-	-	-	100.00
13	Maa Gayalasing VSS,	Bandhasahi	100.00	-	-	-	100.00
14	Andhara Bauti VSS,	Bhobasara	100.00	-	-	-	100.00
15	Maa Samuka VSS,	Dhabalei	100.00	-	-	-	100.00
16	Maa Ramachandi VSS,	Malisahi	100.00	-	-	-	100.00
17	Gramadevati VSS,	Dadhera	50.00	-	-	-	50.00
18	Mukteswar VSS,	Damasahi	200.00	-	-	-	200.00
19	Brahmanidevi VSS,	Godimada	80.00	-	-	-	80.00
20	Ghodadevi VSS,	Ladukeswarprasad	80.00	-	-	-	80.00
21	Maa Mahamai VSS,	Rankadeuli	100.00	-	-	-	100.00
22	Brahmanidevi VSS,	Badabhuin	100.00	-	-	-	100.00
23	Maa Hadadei VSS,	Sanakutuni	100.00	-	-	-	100.00
24	Maa Kalikakajalai VSS,	Kunjabanapalli	100.00	-	-	-	100.00
25	Maa Mahulei VSS,	Kajalaipalli	150.00	-	-	-	150.00
26	Maa Ramachandi VSS,	Punipada & Belaragadi	-	100.00	-	-	100.00
27	Pataleswar VSS,	Badhiasahi	180.00	-	-	-	180.00
28	Radhakrishna VSS,	Panibhandara	180.00	-	-	-	180.00
29	Maa Khambeswari VSS,	Dhusuma	180.00	-	-	-	180.00
30	Maa Mangala VSS,	Khailarpatna	-	125.00	-	-	125.00

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31	Maa Kajalei VSS,	Gandhabaran	135.00	-	-	-	135.00
32	Maa Ramachandi VSS,	Bhaliadihi	180.00	-	-	-	180.00
33	Maa Brahmanidevi VSS,	Golagaon	180.00	-	-	-	180.00
34	Banambarjew VSS,	Kurumundali	-	150.00	-	-	150.00
35	Maa Mangala VSS,	Angisingi	100.00	80.00	-	-	180.00
36	Sri Sri Pindikesh VSS,	Baulasahi	-	-	75.00	-	75.00
37	Maa Yagneswari VSS,	Sikharpur	200.00	-	-	-	200.00
38	Maa Sukarabudhi VSS,	Biruda	-	125.00	-	-	125.00
39	Maa Sukarabudhi VSS,	Tentuliapalli	-	100.00	-	-	100.00
40	Maa Sukalbudhi VSS,	Nachhipur	-	125.00	-	-	125.00
41	Maa Kalunibudhi VSS,	Jamusahi	-	50.00	-	-	50.00
42	Maa Mahisasuni VSS,	Gopalapur	-	30.00	-	-	30.00
43	Maa Kamalabhuinani VSS,	Adabandha	-	40.00	-	-	40.00
44	Maa Kaintei VSS,	Barasahi	-	200.00	-	-	200.00
45	Maa Gadeisuni VSS,	Darpanarayanpur	-	150.00	-	-	150.00
46	Maa Brahmanidevi VSS,	Gochha	200.00	-	-	-	200.00
47	Gopinath Jew VSS,	Badakutuni	200.00	-	-	-	200.00
48	Maa Barabari VSS,	Simili, Khalisahi, Masanijhola	150.00	-	-	-	150.00
Panchirda Range Total			4945.00	1475.0	75.00	200.00	6695.00
G.Total			29600.814	2011.0	639.56	2273.908	34525.282

Table No 8.2 : Abstract

Range	No of VSS	Area assigned in Ha					Percentage
		RF	PRF	DPF	Rev. Forest	Total	
Daspalla	38	4270.0000	50.0000	0.0000	70.0000	4390.0000	12.72
Gania	28	1544.5000	86.0000	112.500	681.2300	2424.2300	7.02
Khandapara	75	4919.5140	0.0000	0.0000	761.5980	5681.1120	16.45
Mahipur	52	5734.2500	0.0000	0.0000	320.4800	6054.7300	17.54
Nayagarh	54	4583.0500	200.0000	0.0000	0.0000	4783.0500	13.85
Odogaon	41	3604.5000	200.0000	452.060	240.6000	4497.1600	13.03
Panchirda	48	4945.0000	1475.0000	75.0000	200.0000	6695.0000	19.39
Div. Total	336	29600.8140	2011.0000	639.560	2273.908	34525.282	100.00



8.1.2 Functioning of Village Forest Committee (VFC).

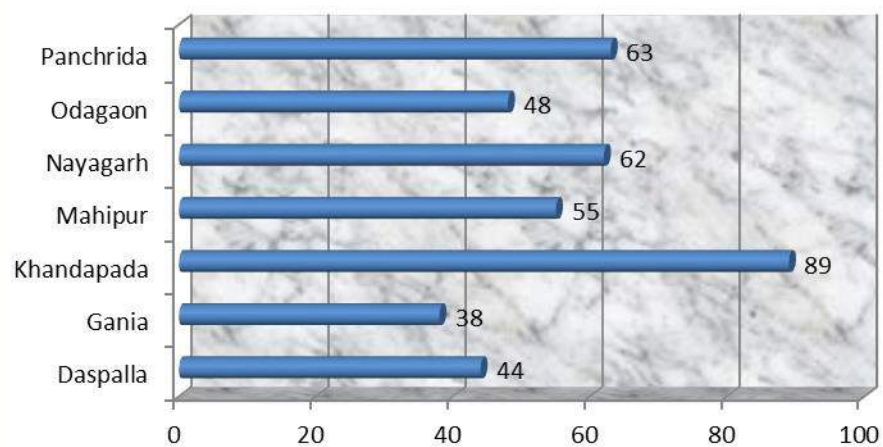
Plantations have been raised in this division during Social Forestry Project during 1985 onwards till 1995 which has been declared as village forest under section 30 of the Odisha Forest Act, 1972. The detail list of Village Forest is furnished at Table No 2.1.4 (Chapter-2) All total there are 63 VFC and Village Forest under their management is 579.45 ha.

Table No 8.3 Functioning of VFC		
Range	No of VFC	Area assigned in ha
Daspalla	6	70.97
Gania	10	106.55
Khandapada	14	106.34
Mahipur	3	6.3
Nayagarh	8	71.56
Odagaon	7	62.2
Panchrida	15	155.53
Div. Total	63	579.45

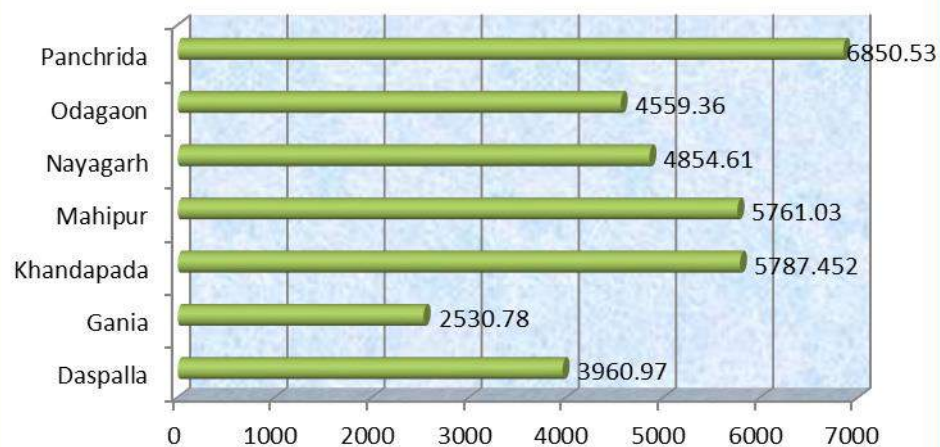
8.1.3 Total JFM (VSS & VFC) functioning in the Division:

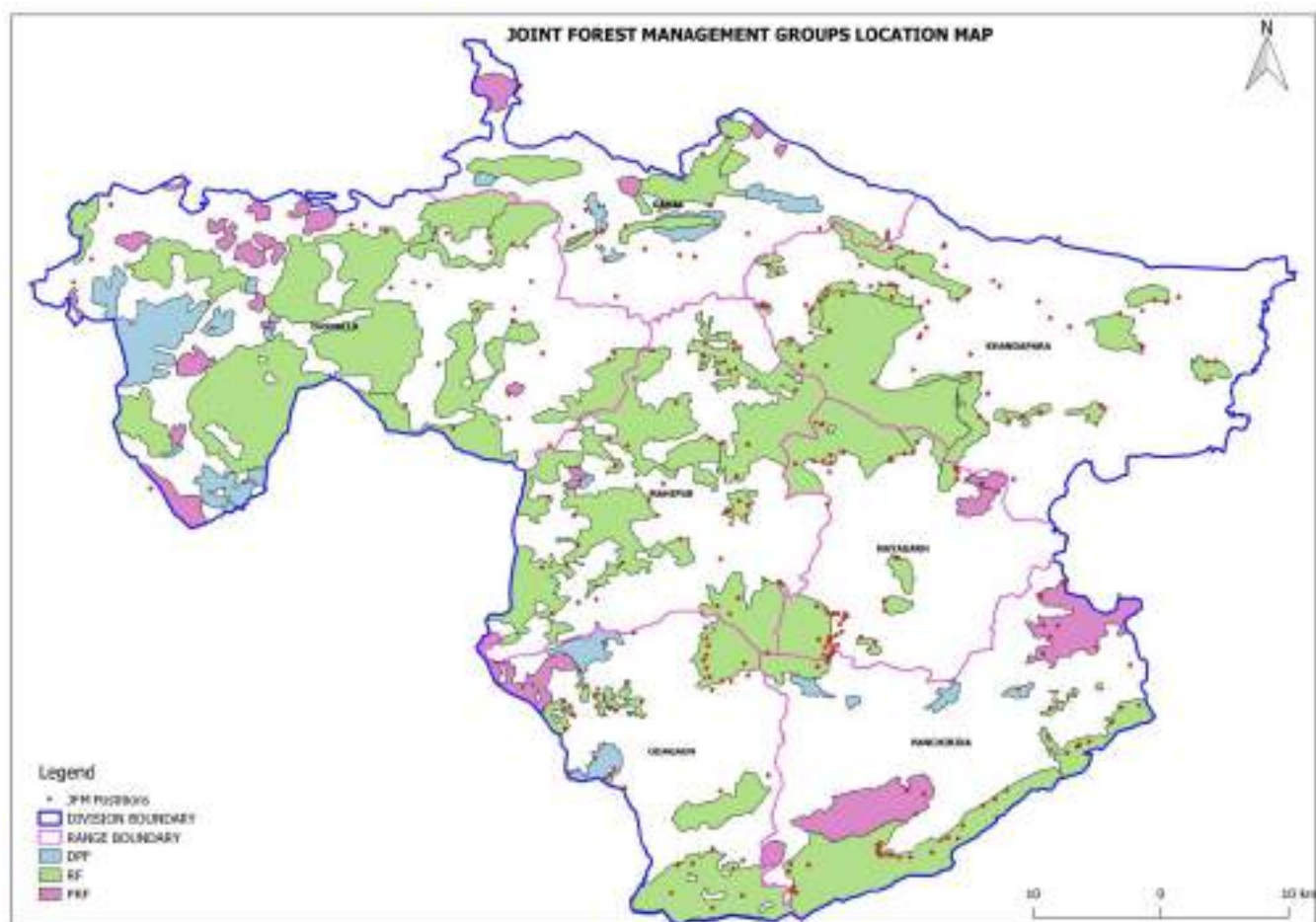
Table No 8.4 Total JFM (VSS & VFC) functioning in the Division						
Range	No of VSS	Area assigned in ha	No of VFC	Area assigned in ha	Total No (VSS & VFC)	Area assigned in ha
Daspalla	38	4390.0000	6	70.97	44	4460.970
Gania	28	2424.2300	10	106.55	38	2530.780
Khandapada	75	5681.1120	14	106.34	89	5787.452
Mahipur	52	6054.7300	3	6.3	55	6061.030
Nayagarh	54	4783.0500	8	71.56	62	4854.610
Odagaon	41	4497.1600	7	62.2	48	4559.360
Panchrida	48	6695.0000	15	155.53	63	6850.530
Div. Total	336	34525.2820	63	579.45	399	35104.732

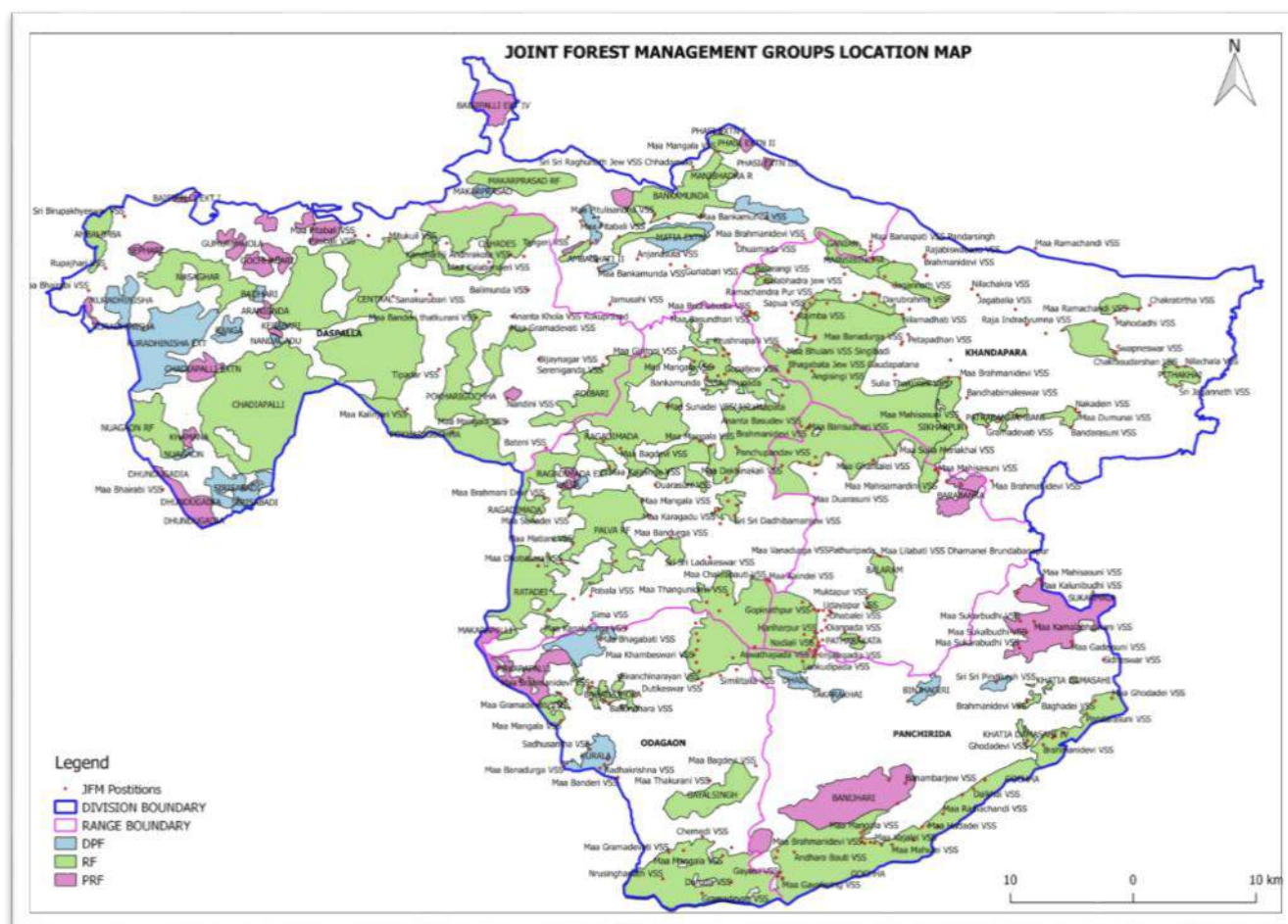
JFM C (No)



Area assigned in Ha







8.2 Status of empowerment of JFMCs:

The empowerment of JFMC is at a medium to higher level. The Villagers are taking interest in Protection & Management of Forest assigned to them. Under National Afforestation Program, the involvement of VSS is of Participation level-V i.e.

- i) They resolve what operation to be taken up along with work program.
- ii) They prepare the Micro plan and work accordingly.
- iii) Funds directly transferred from MoEF&CC to FDA at Division Level. There after it is transferred to VSS account.
- iv) They withdraw and furnish account directly to the Secretary of FDA i.e. Divisional Forest Officer.
- v) The account is audited by Chartered Accountant & passed by the General Body of the VSS.

- vi) Training camps being organized to disseminate knowledge to VSS on forest management and allow them to become technically sound to manage plantations / Forest/ wildlife etc

The VSS functions as an independent decision taking body. In case VFC, the functioning requires augmentation to come over to a participation level of IV / V.

8.2.1 Odisha Forestry sector Development Project Phase-II

Odisha Forestry Sector Development Project **Phase-II** is an externally aided project with the financial assistance of Japan International Cooperation Agency (JICA) being implemented since 2017. OFSDP-II will cover 1200 Vana Suraksha Samitis (VSSs) from 50 Field Management Units (Forest Ranges) from 12 Territorial Divisions in 10 Districts of Odisha and 2 Wildlife Divisions in phases (300 VSSs in first Batch, 400 VSSs in second Batch, 350 VSSs in third Batch and 150 VSSs in fourth Batch). This project will be implemented for 10 years starting from 2017-18 to 2026-27. Odisha Forestry Sector Development Project-II is to enhance forest ecosystem along with sustainable livelihood of local people by improving sustainable forest management, sustainable biodiversity conservation and community development, thereby contributing to harmonization between environmental conservation and socio-economic development in the Project area in Odisha.

Project Goal

The envisaged approach to achieve the overall goal in a sustained manner under the project includes restoration of degraded forests and augmentation of forest resources through people's participation; securing sustainable forest management by improving community participation; capacity building of community organizations and other stakeholders; conservation and scientific management of the biodiversity; promote Alternative Income Generation Activities, promotion to inter-sectoral convergence for better livelihood and improvement of income of the targeted forest dependent communities. The households living in the project villages are largely from Schedule Tribe and Schedule caste Category and highly dependent on forest for their livelihood. Under the above circumstances, project has a mandate to enhance and strengthen livelihood of forest fringe communities, who are largely depend upon forest.

Project Approach

a) Micro Plan

To be developed as a Community Development Plan by Strengthening convergence, Selection of village, formation of VSS, formation of Women Working Group , formation Executive Committee (EC), Formation of Working Group.

b) IGA Support to Self Help Groups (SHGs)

Enhanced Support for cluster business development and partnership ecosystem

c) Cluster development:

The cluster development approach of LRC aims to support the trajectory growth of the SHGs. It will not only achieve the scale, but will help in leveraging support services and make the value addition efforts sustainable.

d) Economies of scale:

This approach is expected to achieve the required volume through aggregation, which will not only make the primary producer a player in the value chain, but also give an edge to add value and negotiate at a higher and remunerative market.

e) Pro-poor Value Chain Maximization:

This approach will strive maximize value chain of products across sectors, keeping SHGs and its members in the centre so that the primary producer gain from the value chain maximization.

8.2.2 Gender Mainstreaming Creating Models for CMRV

Community Based Measurement, Reporting, Verification, system for Sustainable Forest Management for Odisha.

Project Objective

- Restore degraded forest and augment forest resources
- Secure sustainable forest management by improving forest administration, community organizations and other stakeholders
- Conservation and scientific management of the biodiversity
- Promoting inter-sectoral convergence
- Improve income of target forest dependents and their livelihood options.
- To promote vibrant product clusters.
- To promote pro-poor value chain maximization.

- To facilitate Collective marketing and processing.
- To build the capacity of the stakeholders.
- To manage funds mandated under OFSDP-II and provide Business Development Services including R&D.

Project Strategy

The duration of the Project is 10 years, starting from 2017-18 to 2026-27 in consideration of capabilities of stakeholders and time required to conduct activities in sustainable manners. 10 years comprises of (i) Preparation Period, (ii) Implementation Period, and (iii) Phase-out Period.

Sustainable Forest Management

Sustainable forest management in JFM mode includes Assisted Natural Regeneration (ANR), Block Plantation, Soil and Moisture Conservation measures and Fire Protection measures. Under non JFM mode, the works proposed are consolidation and demarcation of forest boundaries, construction of High Tech Nurseries and ex- situ SMC works. In order to improve the tree cover outside the forest area, Farm-forestry activities will be taken up over 10000 Ha of land and 10000 beneficiaries selected through the VSS within their village area.

8.3 Labour welfare:

For uplift of labours, occasional health camps, Skill up-gradation training camps are being conducted by the department. Now LPG connection, Gas Stove, LED bulb and water filter are being distributed in various villages of the division. The range wise distribution is furnished below

Table No 8.5 Labour welfare measures in the division						
Name of the Range	Chairs	Tarpolin	Mike set	Water pump Set	Street Light	Utensils Set
Nayagarh						1
Mahipur			1	2		2
Dasapalla						2
Gania				1		2
Khandapada	5					6
Odagaon	1	1		1	1	3
Panchirida						1

8.3.1 Socio Economic Study:

No Socio Economic study has been conducted by the Forest department to ascertain economic status of villages and effect of Forest on improvement of Socio Economic status. The Economic study conducted in the State during 2014-15 by Planning & Coordination Department is at **Annexure-XII**.

Steps will be taken for implementation and monitoring of People Biodiversity Register (PBR) formulation as well as Access of Benefiting sharing Regulation.

8.4 Use of indigenous knowledge:

The people in Odisha were more traditional in nature believing the faith and practices of their local communities. They happened to manage their livelihood through agriculture and maintained an indigenous life with their own knowledge system. They used to maintain the long-standing traditions from their ancestors and spread the knowledge in different spheres of livelihood. Such socially generated knowledge is popularly called as local knowledge. The on-going practice of using such knowledge for indigenous communities established the belief that such knowledge used in traditional manner was fruitful for the people. In course of time such personalized knowledge took the shape of Indigenous Knowledge (IK) which was confined to a particular community and locality and specific knowledge seekers find the effective use of such traditional knowledge for indigenous people and are interested to preserve the knowledge for the communities. It is an established fact that India has long and strong racial, cultural and ethnic groups that generate a traditional knowledge system for its people.

The ethnic minorities, rural and tribal populations, women and other disadvantaged communities in India who are deprived of economic, political and social benefits are more dependable upon such knowledge system for their livelihood. With the modernization of the present society, the needs of those disadvantaged populations were brought to the limelight and their knowledge system was given the importance. Similar phenomenon is gaining ground in other countries in the world where the local knowledge of the communities are treated as the real knowledge for survival. The concept of indigenous knowledge gained its worldwide recognition through the United Nations Conference on Environment and Education in 1992, World Conservation Strategy of International Union and Conservations of Natural Resources in 1980, Brundtland Commission, and World Commission on Environment and Development, 1987. These events recognized the

existence of indigenous knowledge in every country, society, culture. Since India has a long history and much enriched culture there is abundant reservoir of indigenous knowledge in every part of the country. Similarly Odisha is a historical land having enriched cultural heritage which has varied communities and immense resources. Its flora and fauna are vast and varied in nature. The State has a large number of tribal communities who appear to live on their own knowledge system.

8.4.1 Concept and Definitions of Indigenous Knowledge:

The term indigenous knowledge has different connotations such as, traditional knowledge, local knowledge, community knowledge, rural people's knowledge, farmer's knowledge. Although the concept has different forms the meaning appears to be synonymous. Indigenous knowledge is the traditional knowledge of the local community existing within and developed around the specific conditions of women and men indigenous to a particular geographical area. The concept and expansion of its scope in that the term indigenous knowledge is not confined to tribal groups or the original inhabitants of an area. It is not confined to the rural people rather any community possessing indigenous knowledge- rural or urban, settled or nomadic, original inhabitants and migrants. Indigenous knowledge is referred to not only to the knowledge of indigenous people but also the intellectual property of other communities. There are many facets involved in the indigenous knowledge such as, information of the communities, beliefs on religious faiths, tools of using in agriculture, materials in house construction work, experimentation in farming and healthcare, natural resources in flora and fauna, human resources and expertise in skilled artisans, education and learning and communication of information.

Indigenous knowledge is found in people's memories and activities and is expressed in the form of stories, songs, folklores, proverbs, dance myths, cultural values, beliefs, rituals, community laws, local language and taxonomy, agricultural practices, equipments, materials, plant species, and animal breeds. Significance of Indigenous Knowledge Indigenous knowledge is primarily inherited from the ancestors through generations of the community. Such knowledge stands as the main source of utilization and management of resources. It is not only a self centered knowledge but a collecting knowledge, the collection of phenomena and experiences which the older people also. Such knowledge is confined to few people who shared influenced others in a restricted manner. In a particular tribal society Jani is the master of all religious ideas and practices. Other people are imparted to know the religious ideas and practices by Jani which is ultimately used for individual welfare of the common people. The knowledge with personal perseverance of

Jani is self centred. On the other hand that common knowledge is about the general livelihood pattern of that community which is more or less to all in the society. Those are very practical knowledge which is primarily earned his livelihood. The making of household artifacts, knowledge about cultivation, health care etc. are major arena of the indigenous knowledge development. Indigenous Knowledge is primarily referred to the long standing traditions, belief and practices of certain regional, local and indigenous communities. The people in older times were more spiritual, religious, God- fearing and believing in virtuous livelihood. They believed that their living will be happy and prosperous if they work in a systematic manner with certain beliefs and practices. Such beliefs of a locality bear fruits for their existence. Indigenous Traditional Knowledge is developed and adopted continuously to a changing environment and passed on from generation to generation. The livelihood of rural population mainly depends on certain experience based knowledge which is essential for their survival. Such knowledge system has embraced many areas of the people activities such as health, education, agriculture, animal husbandry, handicrafts, religion, culture and tradition of a local community. The people in those days used to practice such knowledge for sustainable development. The knowledge is basically used to cure diseases of human as well as animal and to develop nutrition, to bring out better agricultural systems in farming, to improve the arts and craft, and to maintain the religious practices and astrological beliefs. Indigenous knowledge is embedded in community practices, institutions, relationships and rituals. It provides the basis for problem solving strategies for the communities.

8.4.2 Sources of Indigenous Traditional Knowledge:

The sources of the traditional knowledge mainly derived from the human experiences, beliefs and practices which are collected from several sources. There are also semi-recorded information such as manuscripts, photographs, and folk literature and grey literature. Ancient people had developed the Vedas, Puranas, religious books, grey literature, ethno-botanical texts and archaeological deposits which were the sources of knowledge for those people. Those sources give detail account of the life of the ancient people and the method of living in a prosperous way. Again those sources also give information about biotechniques, medicinal knowledge, breeding techniques, agricultural farming systems, healthcare techniques, religious and astrological guidelines and cultural artifacts. Some of the indigenous traditional knowledge is available in written form in primary, secondary and tertiary sources of information. But most of the indigenous traditional knowledge are undocumented and are available orally or in memory of the group of the community of a region or area. Indigenous Traditional Knowledge in this

region is widely scatted and fragile and there is a need to integrate those distributed sources of information in concrete form. Although religious books which give a lot of information about indigenous traditional knowledge are least used in present time. There is greater need to accumulate and acquire to collect information and make documentation of such knowledge. While tribal communities frequently use such knowledge which is essential to trace the sources of information of indigenous traditional knowledge among tribal communities.

8.4.3 Documenting the Indigenous Knowledge:

The origin of indigenous knowledge can be traced back to the ancient period. People used such knowledge from generation to generation for their livelihood in an unaccounted manner. There are no such written documents for recording and dissemination of such knowledge. Such knowledge system is essential for development. It must be gathered and documented for a particular community. Collection and storage of indigenous knowledge should be supplemented with adequate dissemination and exchange among interested parties. A systematic approach requires to be taken up to document such knowledge in Nayagarh area / area adjacent to Similipal hill range.

8.5 Extent of Cultural / Sacred groves:

There are many sacred groves in this locality. A Comprehensive study has been made by field staff and list of Sacred Groves have been enlisted below.

Table No 8.6 List of Sacred Groves- Nayagarh Division.

Sl. No.	Name of Sacred Groove	Section	Beat	Name of the Worshipping God / Goddess	Latitude (N)	Longitude (E)	Area in Ha.
Daspalla Range							
1	Chadeyapalli	Chadeyapa Ili	Chadeyapa Ili	Goddess Maa Patakhanda Thakurani			0.2
2	Pokharigochha	Pokharigochha	Pokharigochha	God Trinath Thakura	20.2649	84.7511	0.25
3	Kulurukumpa	Chadeyapa Ili	Kulurukumpa	Goddess Maa Banderidevi Thakurani			
4	Dasapalla	Takara	Takara	Goddess Maa Pitalasandha, Kutibari	20° 22' 60"	84° 46' 38"	0.25
5	Dasapalla	Sakini	Sakini	Goddess Maa Tareni, Beberi	20.2825	84.7669	0.25
Gania Range							

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6	Lendrijhari	Gania	Adakata	Goddess Maa Bankamunda	20.3994	84.9452	0.2
7	Naradigochha	Gania	Adakata	Goddess Maa Pitabali Thakurani	20.4062	84.9206	0.1
8	Arakhataila	Madhyakhanda	Nachhipur	Goddess Maa Budhi Thakurani	20.3895	84.8744	0.1
9	Jhuntamara	Madhyakhanda	Nachhipur	Goddess Maa Baghuradei Thakurani	20.3904	84.8973	0.15
10	Makaraprasad	Madhyakhanda	Ghugudipada	Goddess Pitala Sandha Thakurani	20.4200	84.7812	0.1
11	Siligadi	Madhyakhanda	Ghugudipada	Goddess Brahmani dei Thakurani	20.4179	84.8750	0.2
Mahipur Range							
12	Kosalanga, Hatimunda RF, C/1	Mahitama	Kosalanga	Goddess Maa Khandadurga	20° 15' 47.10"	85° 01' 28.20"	0.2
13	Ragadimada RF, C/7	Mahitama	Korada	Goddess Maa Kotaniganda	20° 16' 09.79"	84° 54' 54.74"	0.2
14	Palva Rf	Gumi	Dimiria	Goddess Maa Hiradei	20° 12' 17.66"	84° 52' 04.90"	0.2
15	Hatimunda RF	Mahitama	Korada	Goddess Maa Sidheswari	20° 17' 50.90"	84° 57' 31.00"	0.2
16	Ragadimada RF, C/8	Mahitama	Korada	Goddess Maa Kalapata	20° 16' 52.32"	84° 55' 29.33"	0.2
Nayagarh Range							
17	Chakapathara	Khedapada	Gochhabari	God Sri Nilakantheswar	20.2484	85.0494	0.2
18	Dhipamala	Khedapada	Chahali	Goddess Maa Gramadebati Thakurani,			0.2
19	Rajanapalli	Khedapada	Chahali	Goddess Maa Kalunchandi	20.2219	85.0347	0.01
Odagaon Range							
20	Sulia RF C/8	Bahadajhola	Ambapada	Maa Bauti Thakurani, Ralabagada	20.0895	84.9608	0.3
Panchirida Range							
21	Gochha	Godipada	Gochha	Goddess Ramachandi	19.9599	85.0997	0.01
22	Nihalaprasad	Godipada	Gaudaput	Goddess Banadurga	19.9515	85.0376	0.005
23	Bhobasara	Godipada	Gaudaput	Goddess Andharabauti Thakurani	19.9191	85.0164	0.005
Division Total 23 no							3.53

8.5.1 Strategies for sustainable management of sacred groves:

In order to conserve them and to form a biological continuation following strategies are suggested.

- Specific biodiversity conservation corps should be formed and they should be trained to document the biodiversity of the sacred groves in People Biodiversity Register.
- Mobilization and group formation with the support of the respective panchayat, panchayat level sacred groves conservation committee should be formed.
- Besides, groves specific sacred grove management committee should be formed involving representatives of all the stakeholders.
- Technical support to local communities is essential for the sustainable management of sacred groves.
- Strategies and action for ex-situ conservation, operational procedures for multiplication of native wild plants of sacred groves and planting through vegetative propagation and micro-propagation need to be developed.
- Local communities should be trained to raise nurseries of rare, endemic and threatened taxa of sacred grove and shall be planted in the restoration of degraded lands.
- If sacred groves need to be protected, village communities should be provided with alternatives for fulfilling fuel and fodder to asset households that are currently depending on sacred groves.
- Local VSS / VFC may be involved in management of Sacred Groves.

8.6 Eco-tourism areas and activities:

Odisha is the land of famed forests, mountains, valleys, waterfalls, gorges, soaring peaks with stunning wildlife in their own natural habitats. The important wildlife in State are Elephants, Tigers, Leopards, Hyena, Sambar, Spotted Deer, Wild Boar, Giant Squirrel, Crocodile, Jungle Cats, Hornbills, many migratory birds etc. A total of 110 species of reptiles including three crocodilian species, 20 species of amphibians, 479 species of birds, 86 species of mammals have been recorded so far in the State. For Nature tourists looking to experience wild landscapes in a sustainable way, from Camping to Eco-Resorts, from trekking to birding, from sightseeing to boating, Odisha offers something for everyone and the only thing surpasses the beauty of the State. There is scope for Eco tourism in Nayagarh Division in coordination with Mahanadi Wildlife Division.

Mahanadi Gorge Wildlife Sanctuary, Baisipali Sanctuary spreading on both sides of River Mahanadi hosts some of the attractive tourism destinations with night stay facilities in luxurious Swiss Tents. Tikarpada Nature Camp (TIPPS) on the bank of the magnificent Satkosia Gorge gives you the experience far beyond your imagination. Boat ride on the Satkosia Gorge of River Mahanadi in between the forested mountains is an unearthly experience. Jungle Trek, Birding, Sports, Star Gazing etc on the bank of River Mahanadi.

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

i) Rajagiri of Village Sandhamara:

Rajgiri waterfall is situated deep inside the Khandapada forest range. From Malisahi village, the distance of waterfall is 9 kms. Initial 6 kms is a narrow route through jungle which is approachable by two-wheeler only. Rest 3 kms one needs to trek on the hill & the trekking is enormously tough. The source of the waterfall is at the extreme top of the hill & there are many places on the hill where you can find water dropping down from a higher distance to give it the shape of waterfall.



ii) Baramul:

This small village is prominent due to the magnificent Mahadi gorge on the banks of which it is situated. From Sunakania hills up to Barmul, the course of the river is known as the Satakosia Ganda (Gorge), having a water spread of about 22 km. Barmul, 110 km from Bhubaneswar, is an ideal place for an outing. Satakosia Gorge is a biological refuge and is considered as an important biographical stepping stone in the link between forest species of Central and South India. Satakosia has significant genetic and ecological importance as is the wet portion of the Deccan Zone



iii) Sidhamula:

The Gokulananda Tourism Center is situated on the bank of river Mahanadi at Sidhamula. This tourism center consists of Gokulananda temple, an attached picnic area. The temple is on the top of the hill. It is founded by late Sri Baba Swami Ram Laxman Dash Maharaja. It is nice to watch the panoramic view of the hill and flowing water of Mahanadi from the hill as well as from Sidhamula bridge. The hill is full of tall trees and medicinal plants. There is nearly 1 km of plane surface full of greenery on bottom of the hill on the bank of river Mahanadi suitable for cooking as well as playing games which attracts most of the local and nearby district tourists to this place.



iv) Chhamundia

Satkosia can be approached from Chhamundia, a 30 km drive from Gania in Nayagarh district and 120 km from Bhubaneswar. At Badmul near Chhamundia, the Mahanadi Wildlife Division has constructed an observatory tower where one gets a panoramic view of the spectacular gorge and the Amazonian expanse of the Mahanadi. Eight km from Badmul lays Kuturi, where the Habitat Development for Natural Breeding Centre for animals is located. Established by the division, the sanctuary has a water tank, salt lick, fodder style grass, Napier grass and orchard. Full protection is provided to the wild animals who visit the centre. There are also tree top manchans and a cottage for the tourists to view the movement of wild animals at night. The part of the sanctuary situated on the northern part of the Mahanadi includes Mahanadi Reserve Forests (RF) of Nayagarh District.



iv) Kuanria Dam

Kuanria Dam site coupled with Deer Park is also fascinating people of the locality. It can be developed to Eco- Tourism site in future.



vi) Ratnaganda.

The Ratnaganda Waterfalls is located 18 km from Dasphalla in Nayagarh district, Orrisa. It is a beautiful waterfall that is tucked away in nature's paradise. The waterfall comes cascading down in between the Dense Forest of the district making a scene breathtakingly beautiful. The Ratnaganda waterfall is a popular picnic spot and frequented by locals and tourists alike. There is a lot of space around the Waterfall that is ideal for picnickers. The best time to visit the waterfalls is during the post-monsoon months, when due to the heavy rainfall the waterfall plummets with abundant water.



vii) Mahabir Khol,

Mahaveer Khol, a small hill at the north of Dashapalla is believed to be the original place of God Mahaveer. Swapna Mahaveer is being worshipped here since 1983. It is a fine religious place as well as a very good spot for picnic and for visit. A 3-day-long Jajna is held here every year during Bisub Sankranti where thousands of people gather.

viii) Jogijogini, Jogi Jogiani Boudha Pitha.

This is a Boudha Pitha in Khandapara area of the district. It is within dense forest and immense potential for eco tourism.



ix) Simili.



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Besides the above sites there are other important sites that can be developed as eco-tourist sites in the division. These are a) Beladwars, b) Sadhusantha and c) Bhorangapata.

INFORMATION ON ECOTOURISM SITES OF NAYAGARH DIVISION

Sl. No.	Name of the Ecotourism Site	Forest Block	Year wise no of tourists visited				Landscape significance	Waterscape significance	Wildlife significance
			2018	2019	2020	2021			
1	Rajgir Eco-tourism Spot	Hatimunda RF C/9	250	400	450	1200	Religious Spot	Waterfall	Peacock, Mongoose, Wild Boar, Barking Deer
2	Balangi Bandha Park	Balram RF	1000	1100	1500	3000	Eco-tourism Spot		Cycas nayagarhensis, Wild Boar, Barking Deer
3	Sampada Mega Nursery	Hatimunda RF C/20	40	35	150	185	Nursery Tourism& Eco tourism		Wild Boar, Barking Deer
4	<i>Samuka</i>	Gayalsingh RF C/3	1500	2200	2300	2700	Peak Hills	Water fall	Fox, Spotted Deer, Mongoose
5	Ralaba	Sulia RF C/8	400	500	700	1200	Religious Spot, Ecotourism		Barking Deer, Wild Boar
6	Simili	Gochha RF C/14	4000	8000	15000	25000	Gorgeous Peak with Water Fall	Stream, Ecotourism	Bison, Parcupine, Rabbit, Spotted Deer, Barking Deer, Wild Boar
7	Samuka	Sulia C/7	200	280	300	320	-	Stream, Ecotourism	Barking Deer, Wild Boar, Rabbit

8.7 Social Customs (As relates to Forests):

The culture of Nayagarh is a composite culture of heterogeneous faiths, with the presence of a good number of Semitic and Islamic followers. The aboriginal 'Savaras' and Kandhas are the indigenous people of Nayagarh District. The Aryans came later. The Brahmins are mostly the outsiders, invited by the Khatriya rulers to be engaged as priests in the temples and for other holy rites. The archeological remains with their inscriptions, temples, churches, mosques, forts, folk dances, art, sculptures, handicrafts and festivals of this district displays its rich cultural heritage.

8.7.1 Raghunath Temple:

Raghunath Temple at Odohaon reminds the people regarding "*Banbas of Shree Ram*" and people always recollect the importance of Forest.

8.7.2 Timber for Car festival (Jagannath Temple Puri)- Rituals there of :

The world famous Ratha Yatra (Chariot Festival) of Lord Jagannath at Puri is one of the most important festivals of Odisha. The festival celebrates the trinity of Jagannatha, Balabhadra and Subhadra and is held annually between June-July. The festival comprises of many stages such as ritual cleansing, isolation, decoration, procession, transit halt and return to the main sanctum. Each stage is steeped in meaning and mythology. The species used for the rathas comprise of dry-deciduous species - Phasi (*Anogeissus accuminata*), Dhaura (*Anogeissus latifolia*), Imli (*Tamarindus indica*), Moist deciduous species such as Asan (*Terminalia tomentosa*), Simili (*Bombax ceiba*), Sal (*Shorea robusta*), Kansa (*Hymenodictyon orixense*), Moi (*Lannea coromondalica*), Paladhua (*Erythrina indica*), Mahalimba (*Ailanthus excelsa*), Gambhari (*Gmelina arborea*), and Moist evergreen species Kadamba (*Neolamarckia cadamba*), Kalachua (*Diospyros sylvatica*). These timbers are mostly collected from Nayagarh Division / District. For Selection and felling of trees, a ritual is being conducted by Priests (Sabayat) from Puri coming with "Agyan mala" of Lord Jagannath.

8.7.3 Seed festival:

The indigenous seeds festival had been organized by **Nirman**, a non-governmental organization working in the field of agriculture and organic farming in Odisha. The festival showed the possibility of a pesticides-free environment.

The aim of Seed festival was conservation of seeds, farming systems and on enhancing crop diversity, to improve food and nutrition security. There was also exchange of seeds, experience and knowledge on farming practices. This is occasionally celebrated.

8.8 Status of Compliance of Forest Right Act (FRA):

In total 3,061 individual claims have been settled covering 6,153.2 acre of forest area. Records are maintained in this regard at Division level with latitude and longitude. The legal status of the forest land is maintained and the extent of individual area is too small to demarcate in the map. Similarly, ten numbers of community forest rights covering 6.7064 acres have been settled under FRA, 2006.

Table No 8.7 Implementation of Forest Right Act, 2006			
Sl. No	Description	Individual	Community
1	Name of the Dist./Sub-Division	Nayagarh	
2	No. of village in the District	1516	
		Individual	Community
2(A)	No. of villages fully covered so far (Total)	4302	204
3	No. of Gram Sabha meeting held	1516	-
4	No. of Gram Sabha meeting held subsequently	-	-
5	No. of FRCs constituted by Gram Sabha	1516	214
6	No. of claims received by FRCs	4302	-
7	No. of claims verified by FRCs & sent to Gram Sabha	4302	-
GRAM SABHA LEVEL			
8	No. of claims approved by Gram Sabha & sent to SDLC	3432	
9	Area involved (in acres)P	-	
10	No. of families	13	
11	No. of claims rejected by Gram Sabha	-	
12	No. of claims remanded to FRCs	-	
12(A)	No. of Gram Sabha confirming completion of recognition on claims so far (Total)	-	

SUB-DIVISIONAL COMMITTEE LEVEL			
13	No. of claims approved by SDLC (Sub-Division wise) & sent to DLC	3939	
14	Area involved (in acres)	1918.49	
15	No. of families	13	
16	No. of claims rejected by SDLC	104	
17	No. of claims remanded to Gram Sabha		
17(A)	No. of Sub-Division confirming completion of Recognition on claims so far (Total)		
DISTRICT LEVEL COMMITTEE LEVEL			
18	No. of claims approved by DLC for title	3061	
19	Area involved (in acres)	6153.52	
20	No. of families	13	
21	No. of claims rejected by DLC	5	
22	No. of claims remanded by SDLC	66	
23	No. of certificate of titles distributed	2434	
24	Area in acres	4740.60	
25	No. of certificate of titles distributed to PTG	-	-
26	Area in acres	-	-
27	No. of claims uploaded in Web Site (MOTA)	-	-
N.B.- ALL CLAIMS SETTLED IN FAVOUR OF SCHIDULED TRIBE			

In total 3,061 individual claims have been settled covering 6,153.2 acre of forest area. Records are maintained in this regard at Division level with latitude and longitude. The legal status of the forest land is maintained and the extent of individual area is too small to demarcate in the map. Similarly, ten numbers of community forest rights covering 6.7064 acres have been settled under FRA, 2006.

8.8.1 Area diverted for Critical infrastructure under FRA, 2006.

Under provisions of RFA, 2006 forest land can be allowed for construction of various projects under community development with certain conditions. The purposes are (a) schools; (b) dispensary or hospital; (c) anganwadis; (d) fair price shops; (e) electric and telecommunication lines; (j) 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; (/) roads; and (m) community centres. The following projects have been allowed under FRA Provisions. (Table No 8.8).

Table No 8.8 Land Diverted for Non Forestry Purpose under FRA,2006					
SL No	Year	Name of the Project	Name of theTahsil	Area Diverted in Ha.	Name & Status of Forest Land
1	2015	P.W.D Road to Jogijogiani.	Khandapada	0.7	Guriabari & Sapua RF
2	2016	SH-I to Kanigiri	Nuagaon	0.51	Hatimunda RF
3	2017	Kaptapalli to Makarapalli	Nuagaon	0.378	Ratadei RF
4	2017	Jayamangala Prasada to Dhanurjayapur	Odagaon	0.85	Gochha RF
5	2017	Kaptapalli to Makarapalli	Nuagaon	0.51	Makarapalli PRF
6	2017	RD Road to Goudacharapalli	Nuagaon	0.854	Hatimunda RF
7	2018	Bhandaribari to Dengabari	Nuagaon	0.595	Ratadei RF
8	2020	224/900 to Km. 231/900 of N.H.-57 Kanjamba	Nuagaon	0.8094	Revenue Forest Land
9	2020	Construction of Podasahi to Banthapur Road	Odagaon	0.78	Gochha RF
10	2020	Construction of Nihalprasad to Nandigiri Road	Odagaon	0.72	Gochha RF
Total 10 Projects				6.7064	

(NB: Out of 6.7064ha, 5.8970ha is under purview of this Working Plan Management)

8.8.2 Area Diverted under Forest (Conservation) Act, 1980.

For various development Projects like Expansion of Road, Railway Project Forest land has been diverted for Non Forestry Use. The details of project for which forest land has been diverted under Forest (Conservation) Act, 1980 is furnished below (**Table No 8.9**).

**Table No 8.9 Forest Land Diverted for Non Forestry Purpose under Forest (Conservation)
Act,1980**

Sl No.	Name of the Govt. Managed Project & User Agency	Location	Forest area of diversion (in ha.)	Name of the Forest Block	Purpose of Diversion
1	Modanala MIP	Modanala of Khandapada Range	1.58	Shikharpur RF	Construction of Modanala MIP
2	Executive Engineer, Rural Works Division, Nayagarh.	P.W.D Road to Jogijogiani.	0.7	Guriabari & Sapua RF	Improvement of Road
3	Kuanria MIP	At Kuanria of Daspalla Range	91.77	Chhadesh RF	Construction of Kuanria MIP
			290.23	Pokharigochha RF	
4	Executive Engineer, RWD-II, Nayagarh.	SH-I to Kanigiri	0.51	Makarprasad PRF	Construction of Road and CD works.
5	Executive Engineer, Rural Works Division-II, Nayagarh.	Kaptapalli to Makarapalli	0.378	Makarapalli PRF	Improvement of Road.
6	Executive Engineer, Rural Works Division, Nayagarh.	Jayamangala Prasada to Dhanurjayapur	0.85	Gochha RF	Improvement of Road.
7	Executive Engineer, Rural Works Division-II, Nayagarh.	Kaptapalli to Makarapalli	0.51	Makarapalli PRF	Construction of Road
8	-do-	RD Road to Goudacharapalli	0.854	Hatimunda RF	-do-
9	Block Development Officer, Nuagaon.	Bhandaribari to Dengabari	0.595	Ratadei RF	Development of Foot Path
10	Executive Engineer, NH Division, Bhubaneswar	224/90 to Km. 231/900 of N.H. – 57 Kanjiamba	0.8094	Rev. Forest	Construcion of Road

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11	Block Development Officer, Odagaon	Podasahi to Banthapur Road	0.78	Rev. Forest	Construction of Poda sahi Banthapur Road
12	Block Development Officer, Odagaon	Nihalprasad to Nandigiri Road	0.72	Rev. Forest	Construction of Nihalprasad to Nandigiri Road
13	Brutanga MIP	Daspalla, Mahipur, Khandapada, Nayagarh, Odagaon	1524.959	Central RF, Nasgharar RF, Baisipalli -PRF Ext-II, Pokharigochha RF, Panchupandav RF, Hatimunda RF, Sulia RF, Sapua RF, Guriabari RF, Sikharapur RF, Maichheli RF, Gambhariganda PRF	construction of Brutanga MIP
14	765KV D/C Line Anugul-Srikakulam	Nayagarh to Daspalla	13.59	Patrabani-Jamubani RF & barabanka PRF, Sikharapur RF, Patharakata RF, Balisinsa-Badhulipur RF	construction of transmission line 765KV D/C Line
15	B.G Rail Project	Khurda Road-Bolangir New B.G Rail Project	33.808	Balram RF, Chhadesh, RF, Maichheli RF, Hatimunda RF Chhadesh RF	Construction of Railway Line
16	Bhalujhar MIP		4.44	Gochha RF	Construction of Bhalujhar MIP
17	Kaliamba MIP		12.991	Kaliamba Rev. Forest	Construction of Kaliamba MIP
Div. Total Forest Land Diverted			1980.0744		

(NB: The area diverted under FC Act Rev. Forest- 15.3004 ha and from RF/ PRF /DPF within working plan purview – 1964.7740 ha)

8.8.3 Degraded forest area in the division identified for preparation of land bank for compensatory afforestation-

Land BankFor Compensatory Afforestation								
Sl No	Name of the Tahasil	Name of the Range	Name of Mouza	Khata No.	Plot No.	Area (Ac.)	Area in Ha.	Kissam
1	Daspalla	Daspalla	Sriram Chandrapur	247	3	2.00	0.81	Gramya Jungle
2			Sareniganda	70	385	10.00	4.05	Gramya Jungle
3			Bebori	11	8	29.25	11.84	Gramya Jungle
4	Khandapada	Khandapada	Banamalipur	751	2115	1.03	0.42	Gramya Jungle
5			Banamalipur	751	2490/278 2	0.68	0.28	Gramya Jungle
6			Ramachandra Prasad	172	252	2.08	0.84	Jungle -II
7			Bahada	285	996	0.97	0.39	Gramya Jungle
8			Bahada	285	996/1068	0.17	0.07	Gramya Jungle
9			Darada	207 (AAA)	901	3.28	1.33	Patharabani
10			Darada	285 (Rakshita)	372	0.36	0.15	Gramya Jungle
11		Khandapada	Jagannathprasad	855(AAA)	3447	12.48	5.05	Parabat-II
12			Jagannathprasad	855(AAA)	3806	12.80	5.18	Parabat-II
13			Jagannathprasad	855(AAA)	1014	20.12	8.14	Parabat-II

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14			Mahulapada	401 (AAA)	1504	8.06	3.26	Parbat-III (Jhumpurimundi a)
15			Mahulapada	402 (AAA)	1836	105.87	42.84	Parbat-III (Jhumpurimundi a)
16			Mahulapada	403 (AAA)	1811	6.31	2.55	Parbat -II
17		Khandapada	Mahulapada	404 (AAA)	1812	16.06	6.50	Parbat -II
18			Golapokhari	58	5	0.76	0.31	Jungle
19			Golapokhari	58	49	0.28	0.11	Jungle
20			Golapokhari	58	50	1.10	0.45	Jungle
21			Golapokhari	58	62	11.00	4.45	Jungle
22			Golapokhari	58	81	0.62	0.25	Jungle
23			Golapokhari	58	95	0.41	0.17	Jungle
24			Golapokhari	58	116	0.63	0.25	Jungle
25			Golapokhari	58	119	0.64	0.26	Jungle
26	Khandapada	Khandapada	Golapokhari	58	145	0.04	0.02	Jungle
27			Golapokhari	58	194	0.10	0.04	Jungle
28			Golapokhari	58	222	4.26	1.72	Jungle
29			Golapokhari	58	225	0.53	0.21	Jungle
30			Golapokhari	58	233	0.19	0.08	Jungle
31			Golapokhari	58	234	0.89	0.36	Jungle
32			Golapokhari	58	241	0.27	0.11	Jungle

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33			Golapokhari	58	244	0.24	0.10	Jungle
34			Golapokhari	58	258	0.22	0.09	Jungle
35			Golapokhari	58	266	0.08	0.03	Jungle
36			Golapokhari	58	278	0.83	0.34	Jungle
37			Banjhapalli	59	289	3.00	1.21	Gramya Jungle
38			Krushnapalli	4	47	7.69	3.11	Jungle
39			Krushnapalli	4	48	7.06	2.86	Jungle
40		Khandapada	Nuagaon	182	791	10.00	4.05	Jungle
41			Nuagaon	182	792	8.00	3.24	Jungle
42			Nuagohiripada	14	8	0.41	0.17	Jungle -II
43			Nuagohiripada	14	9	0.09	0.04	Jungle -II
44			Nuagohiripada	14	10	0.36	0.15	Jungle -II
45			Nuagohiripada	14	11	0.32	0.13	Jungle -II
46			Nuagohiripada	14	12	0.40	0.16	Jungle -II
47			Nuagohiripada	14	13	0.40	0.16	Jungle -II
48		Khandapada	Madhabereni	547	2359	1.88	0.76	Jungle
49			Madhabereni	547	2351	0.80	0.32	Jungle
50			Budhijharibada	25	154	1.00	0.40	Jungle
51			Budhijharibada	25	155	1.00	0.40	Jungle
52	Bhapur	Khandapada	Dhanchangada	333	1451	39.47	15.97	Jungle-II
53			Khalatangi	320	1204/183	21.66	8.77	Parbat-II

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					5			
54			Mahulaberena	294	1036	80.56	32.60	Parbat-II
55			Kasia	3	128	40.50	16.39	Parbat-II
56			Kasia	3	132	37.88	15.33	Parbat-II
57			Kasia	3	133	34.69	14.04	Parbat-II
58			Kasia	3	136	42.56	17.22	Parbat-II
59			Kasia	3	157	42.62	17.25	Parbat-II
60			Sadhumundia	16	59	38.12	15.43	Parbat
61			Sadhumundia	16	61	30.87	12.49	Parbat
62			Sadhumundia	16	70	26.14	10.58	Parbat
63	Gania	Gania	Chhadamula	159	2	16.50	6.68	Gramya Jungle
64			Mahukana	62	13	0.75	0.30	Patita
65			Mahukana	65	188	1.24	0.50	Gramya Jungle
66			Mahukana	65	375	1.57	0.64	Gramya Jungle
67			Kandajilinda	24	212	81.12	32.83	Parbat - I
68			Malatiput	248	345	2.00	0.81	Parbat - I
69			Kakudikhola	149	726	1.00	0.40	Jungle - II
70	Nayagarh	Nayagarh	Nayagarh	1259	2281/279 7	1.60	0.65	Jungle - II
71			Nayagarh	1262	2280	4.60	1.86	Jungle - II
72			Nayagarh	1262	579	10.00	4.05	Jungle - II

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73			Gabadihi	93	177	3.18	1.29	Jungle - II
74			Gabadihi	93	83	1.89	0.76	Gramya Jungle
75			Saradhapur	606	1160	11.45	4.63	Gramya Jungle
76			Saradhapur	606	1158	10.05	4.07	Gramya Jungle
77	Ranpur	Ranapur / Panchirida	Nihalprasad	209	352	7.30	2.95	Gochar
78		Panchirida	Jagannathprasad	147	168	40.56	16.41	Gramya Jungle
79			Jagannathprasad	147	93	10.69	4.33	Gramya Jungle
80			Jagannathprasad	147	89	49.69	20.11	Gramya Jungle
81			Jagannathprasad	147	97	24.19	9.79	Gramya Jungle
82			Jagannathprasad	147	91	0.88	0.36	Gramya Jungle
83			Jagannathprasad	147	104	3.25	1.32	Gramya Jungle
84			Jagannathprasad	147	107	1.83	0.74	Gramya Jungle
85			Jagannathprasad	147	2	23.91	9.68	Gramya Jungle
						1041.34	421.42	

8.9 Other Rights and Concessions:

Besides various rights & concessions given under Joint Forest Management Resolution, Forest Rights Act, 2006 and Reserved Forest Notifications, there is no other rights & concessions allowed in favour of people of this division.

8.10 Dependency of Local People on NTFPs:

The important NTFP collected from forests of Nayagarh division are Sal leaf, Siali Leaf, Siali fiber, Myrobalance (Harida, Bahada and Aonla), Honey, Mahula, Kochla, Kendu, Cane etc. The collection is decreasing year after year as it is not remunerative due to poor

abundance. On an average NTFP contributes up to 10% of tribal people's income in this region.

8.11 Other aspects:

Nayagarh Division own responsibility for supplying Timber for construction of Chariot (Ratha) for Lord Jagannath Temple, Puri and Lord Lingaraj Temple Bhubaneswar. Due to non availability of Specified timber, private devotees are providing timbers from their land. More people is required to be motivated for donating trees for construction of Chariot. People may also be motivated to plant trees in their land to meet the demand of such Timber in a long term basis. Motivation & Devotional aspect may be jointly explored and massive tree planting of desired species is to be taken up.

CHAPTER-9

Adequacy of Policy, Legal and Institutional Framework

9.1 Existing policy and legal framework and their compliance:

For management of Forests, regulation of forest produce, protection of Wildlife, For collection & use of NTFP various Acts, Rules and Regulation, policy have been framed by the Central Government and State Government. These are

- i) The Odisha Forest Act, 1972 and rules thereof;
- ii) The Wildlife (Protection) Act, 1972 and Rules thereof;
- iii) The Environment (Protection) Act, 1986 and Rule 1986,
- iv) The Air (Prevention & Control of Pollution) Act, 1981,
- v) The Water (Prevention & Control of Pollution) Act, 1981
- vi) The Forest (Conservation) Act, 1980 & Rules.
- vii) The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 & Rules,
- viii) EIA, Notification, 2006
- ix) NTFP Collection Policy-2000
- x) Orissa Gram Panchayats (Minor Forest Produce Administration) Rules 2002,
- xi) The Orissa Kendu Leaves (Control of Trade) Act, 1961 and Rules.

These rules and regulations are duly being implemented by the Forest Department for better management of Forests.

9.2 Status of approved working plan and compliance:

9.2.1 Past Working Plan:

Nayagarh Division is functioning since 1947. The approved working plans of past era and its author is furnished below.

Table No 9.1 Past working Plan relating to Nayagarh Forests.			
Sl No	Working plan	Period	Remark
1	Working Plan of Nayagarh State by Mr. H.F.Mooney, IFS	1941-1961	
2	Working Plan of Daspalla State by Mr. H.F.Mooney, IFS	1938 to 1953	
3	Working plan, Working Plan for Khandpada State (1936 to 1966):	1936-1966	
4	Working Plan by C.L.MOHAPATRA for Nayagarh Division.	1960-61 to 1979-80	Consolidated Plan for the Division.
5	WORKING PLAN BY SRI N.C.BAL	1983-84 to 2002-03.	
6	Working Plan By Sri Sudarsan Behera	2007-08 to 2016-17	
7	Annual Working Schemes	2017-18, 2018-19, 2019-20 & 2020-21	Annual Working Scheme.

9.2.2 Details of Revised Plan:

This revised working Plan comprising all the Reserved Forests (RF), Proposed Reserved Forests (PRF), Demarcated Protected Forests (DPF), Protected Forests (PF) and Village Forests (VF) of the Division. On event of its approval it will be for the period from 2021 to 2031 (For 10 years) i.e. from **1st April, 2021 to 31st March, 2031**. In course of preparation of Plan modern techniques has been adopted to estimate the Growing Stock, Carbon sequestration and Crop density. The village forests of the erstwhile Social Forestry Project have been included in this plan to have a better management of forests created under participatory approach.

9.3 Number of forest offences:

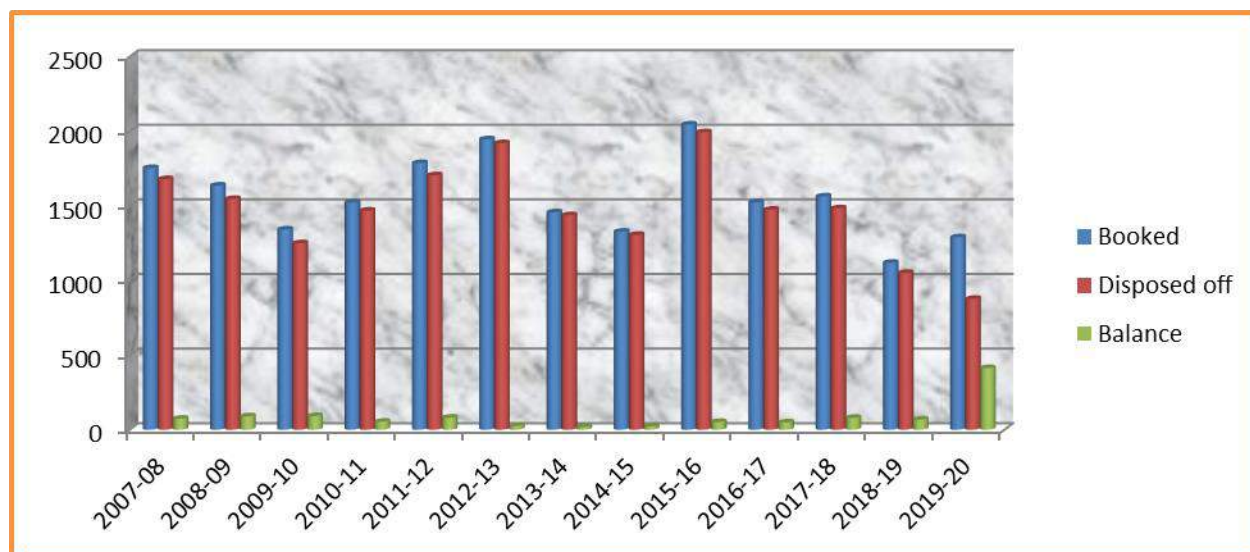
The Forest Offences are mainly classified into three category i.e.

- (i) For Violation of the Odisha Forest Act, 1972 & Rules framed thereof.
- (ii) For Violation of the Wildlife (Protection) Act, 1972 & Rules framed thereof.
- (iii) For the Forest (Conservation) Act, 1980.

9.3.1 Forest Offence for Violation of the Odisha Forest Act, 1972 & Rules framed thereof.

The most of the cases booked in the division are under Odisha Forest Act, 1972 & Rules thereof. The number of cases booked / disposed up and balance cases pending for disposal are as furnished at Table No 9.2

Table No: 9.2 Cases Booked under OFA,1972 and Status									
Year	No. of cases booked			No. of cases disposed			Balance		
	OR	UD	Total	OR	UD	Total	OR	UD	Total
2007-08	1190	564	1754	1116	564	1680	74	0	74
2008-09	1009	628	1637	920	627	1547	89	1	90
2009-10	947	395	1342	855	395	1250	92	0	92
2010-11	1007	516	1523	953	516	1469	54	0	54
2011-12	1223	564	1787	1142	564	1706	81	0	81
2012-13	1294	653	1947	1268	653	1921	26	0	26
2013-14	1096	361	1457	1077	361	1438	19	0	19
2014-15	1010	318	1328	988	318	1306	22	0	22
2015-16	1646	400	2046	1614	380	1994	32	20	52
2016-17	1089	435	1524	1052	423	1475	37	12	49
2017-18	1008	556	1564	948	536	1484	60	20	80
2018-19	716	403	1119	666	385	1051	50	18	68
2019-20	840	450	1290	488	389	877	352	61	413
TOTAL	14075	6243	20318	13087	6111	19198	988	132	1120



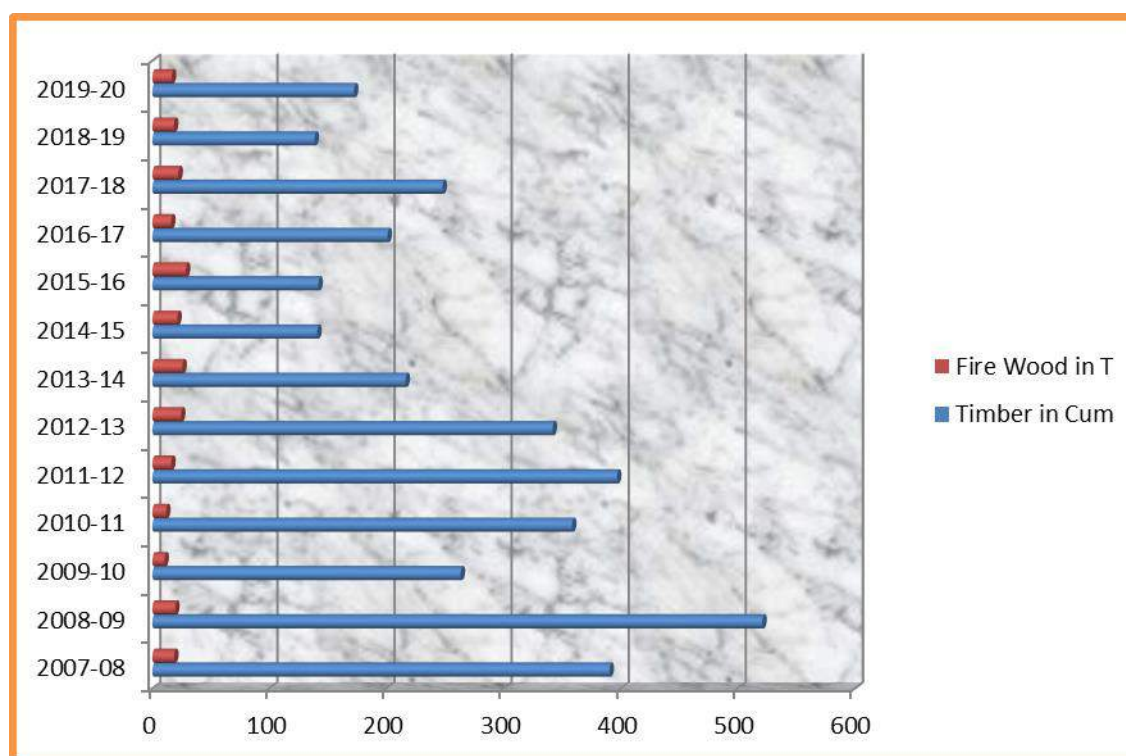
From the above table it is observed that the cases disposal is quite satisfactory.

9.3.2 Number of cases booked / quantum of Forest Produce involved:

The quantum of various forest produce seized and compounding fees realized is furnished below at **Table No 9.3**

Table No 9.3 Number of cases booked / quantum of Forest Produce involved

Table No 9.3 Number of cases booked / quantum of Forest Produce involved						
Year	Total Cases (OR+UD)	Quantum of Forest Produce Seized / involved				Compounding Fees Realized in lakh
		Timber in Cum	FW in MT	Others		
				Poles	Bamboo	
2007-08	1754	390.42	18.5513	1594	20	0.78
2008-09	1637	520.912	19.482	2496	150	0.80
2009-10	1342	263.258	10.2928	1609	142	1.00
2010-11	1523	358.403	11.685	1150	89	1.60
2011-12	1787	396.767	16.0356	1944	148	2.96
2012-13	1947	341.824	24.4208	1379	208	3.77
2013-14	1457	216.223	25.5643	663	316	3.87
2014-15	1328	140.756	21.3005	406	53	3.54
2015-16	2046	141.752	28.6088	1145	500	6.57
2016-17	1524	200.853	15.9165	455	359	4.53
2017-18	1564	247.791	22.2202	819	50	4.98
2018-19	1119	138.456	18.3755	531	20	3.59
2019-20	1290	172.17	16.5548	1549	20	4.02
TOTAL	20318	3529.585	249.0081	15740	2075	42.00



From the above facts, it is revealed that the disposals of booked cases are at a good position. Similarly, it is observed that the smuggling of Timber and Firewood is in a declined trend which is attributed to

- (i) Decreasing dependency on Timber and Firewood due to alternatives available at affordable price.
- (ii) Involvement of VSS in protection & management of forests is also factor in reduced forest cases.
- (iii) Decrease in availability quality timber in forest fringes.
- (iv) People are earning their lively hood by engaging in other activities than depending on Forest Produce.

9.3.3 Number of Cases sends to court / To Authorized Officer & disposal position:

Numbers of Cases send to court / To Authorized Officer & disposal position is furnished at **Table No 9.4**

Table No 9.4 Number of Cases send to court / To Authorized Officer & disposal position					
Year	Number of OR Cases	Cases send to		Disposal Position	
		Judicial Court	Authorized Court	Judicial Court	Authorized Court
2009-10	996	495	70	Not Available	70
2010-11	1009	226	58		54
2011-12	1219	177	55		39
2012-13	1297	219	23		20
2013-14	1017	55	19		17
2014-15	1004	63	24		22
2015-16	1648	22	18		13
2016-17	1083	14	20		13
2017-18	1010	23	24		4
2018-19	714	63	8		1
2019-20	217	96	19		3

The cases booked and sent to Judicial trial requires to be closely motitored for effective disposal.

9.3.4 Forest Offence for Violation of the Wildlife (Protection) Act, 1972 & Rules thereof.

The number of cases involved in violation of Wildlife Protection Act, 1972 & Rules thereof and its disposal is furnished in Table No 9.5

Table No 9.5 No of Wildlife case booked from 2008-09 to 2019-20				
Sl. No.	Year	Wild life case Booked	Cases Forwarded	Cases Dropped
1	2008-09	7	4	3
2	2009-10	8	5	3
3	2010-11	5	5	-
4	2011-12	9	3	6
5	2012-13	7	1	6
6	2013-14	6	3	3
7	2014-15	5	4	1
8	2015-16	7	3	3
9	2016-17	9	5	4
10	2017-18	22	8	14
11	2018-19	18	5	13
12	2019-20	26	16	10

(NB: There are number of UD cases involving Wildlife and have been dropped after inquiry by DFO, Nayagarh / Asst. Conservator of Forests, Nayagarh.)

9.3.5 Cases booked for Violation of Forest (Conservation) Act, 1980

There is no case of violation under Forest (Conservation) Act, 1980.

9.4 Status of research and development:

No research activities have been taken up by this Division. There are no Research plots in the division maintained by State Silviculturist, Bhubaneswar.

9.5 Human resource capacity building efforts:

For Human Resource Capacity Building, circle level training camps have been organized under CAMPA to improve working skill. Training on following subject matter is being conducted under various training program for Foresters, Deputy Range Officer & Range Officers.

- i. On Forest (Conservation) Act, 1980 and various amendments & guidelines issued by MoEF& CC, New Delhi.
- ii. Joint Forest Management Resolution, 2011, 2015, 2019 & various stages of Development of Participatory Forest management since 1985.
- iii. Forest Rights Act, 2006 its implication & procedure involved for settlement of Rights.
- iv. National Working Plan Code 2014, various techniques developed for tree enumeration, growing stock estimation, Carbon sequestration, Study of Regeneration Status. REED⁺ etc.

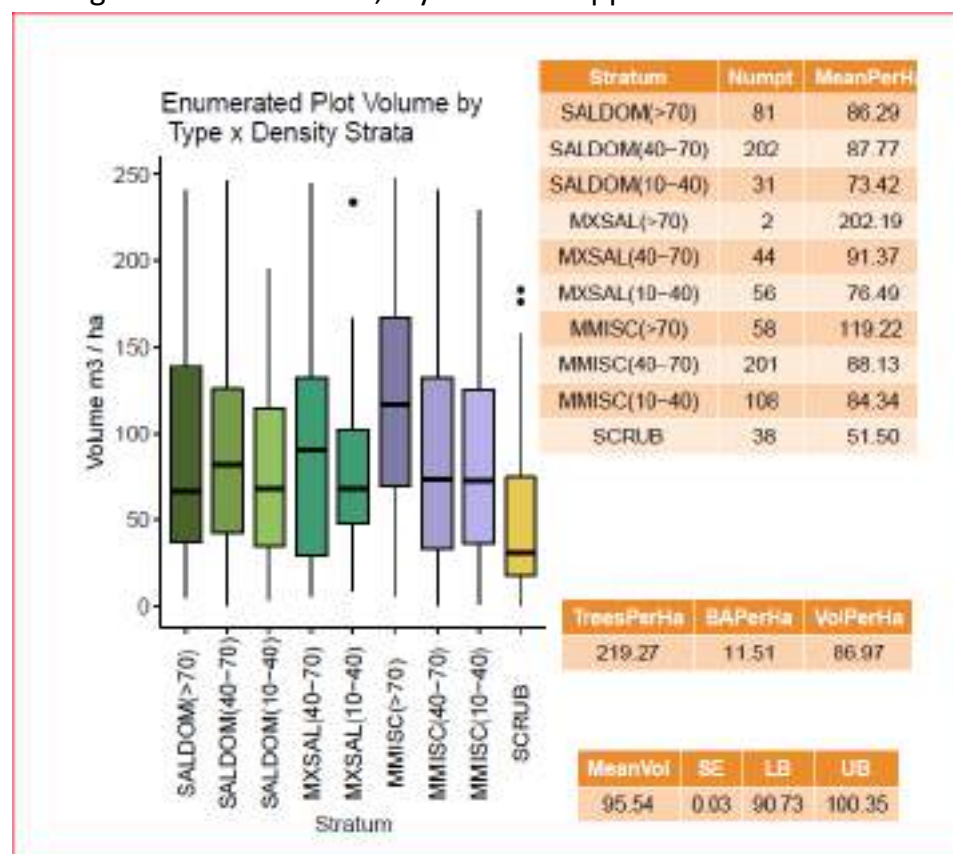
Besides short duration training course, workshops, symposium, the Foresters & Forest Guards are undergoing training at Forest Training institutes at Angul, Champua and Bhubaneswar. Various training camps organized during 2019 is furnished at **Table No 9.6**

Table No 9.6 List of Training course imparted to Staff / Others.					
Year	Sl No	Name of Training Program	Duration	Participants	Number of Participants
2015	1	Forest Fire Training	1 Day	Division & Range Level Staffs	36
2015	2	Weapon Training (CAMPA APO 2014-15)	2 Days	Division & Range Level Staffs, Police Officials	82
2016	3	Estimation of Tiger	1 Day	Division & Range Level Staffs	68
2019	4	Biodiversity Management	4 Hr	Division & Range Level Staffs, Collector BDO, GPEO, All line Departments	70
2019	5	GEO Tagging	4 Hr	Division & Range Level Staffs, BDO, GPEO, All line Departments	70
2019	6	Cammera Trapping	1 Day	Division & Range Level Staffs	
2019	7	Decision Support System in Disaster Mgt.	2 Day	Division & Range Level Staffs	
2019	8	Snake Rescue Training	1 Day	Division & Range Level Staffs	
2019	9	GIS Training	1 Day	Division Staff, Frs, FGs, DEOs	30

2020	10	Estimation on Water Bird Technique, Asset Mapping, Biodiversity Mgt. Training	2 Day	Division & Range Level Staffs	70
2020	11	Training on 3rd Party Evaluation of VSS	1 Day	Division & Range Level Staffs	78
2020	12	Biodiversity Management	1 Day	Division Staff, Frs, FGs	30

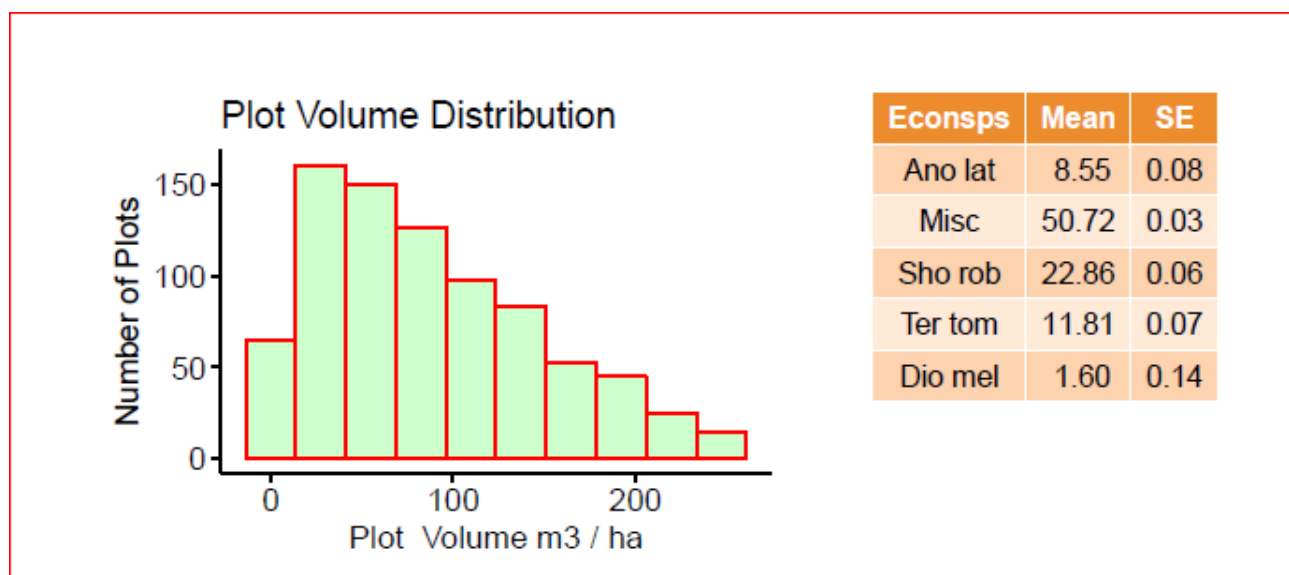
9.6 Forest Resource Accounting:

During Last Plan Period, systematic approach has been developed and adopted for



accounting Forest Resource of the Division. For preparation of working plan tree enumeration was done basing on sample point method. The enumeration data was uploaded on specific web site. On analysis of the data various parameter have been calculated. The Odisha Space application Centre, Bhubaneswar has also preparing digital

maps, barious GIS lauers on Soil, Slope, Vegetation, and Plantation. The FSI has also publishing on Forest Tree cover in the state. Analysis of Sample point tree enumeration indicates stock position, Growing Stock. The inference after analysis is given below.



A systematic approach is being developed to have forest resource accounting which will be very helpful in observing the changes in tree cover, regeneration and subsequent establishment in a particular region.

9.7 Budgetary allocations to the forestry sector:

Budgetary allocation under different budget sub head is furnished below (Table No 9.7) which gives an indication about investment of resources in forestry sector.

Year	State Plan	Non Plan	Central Plan	CSP/CSS	FDA	CAMPA APO	Others	Total
2007-08	37.43	188.70	0.55	6.12	0.96	0.00	26.94	260.71
2008-09	63.12	105.85	3.25	13.37	34.39	0.00	13.81	233.79
2009-10	119.65	84.40	1.70	0.00	24.09	396.34	0.60	626.78
2010-11	126.82	58.72	1.25	14.47	69.93	236.29	0.00	507.48
2011-12	157.52	59.21	7.33	1.41	24.06	308.76	0.00	558.29
2012-13	239.43	59.05	6.02	13.35	36.28	416.70	0.00	770.83
2013-14	212.13	320.24	19.24	1.47	10.08	580.12	0.00	1143.29
2014-15	35.39	429.37	2.86	4.32	36.71	1063.83	0.00	1572.48
2015-16	536.46	102.76	4.70	0.00	57.00	1491.60	0.00	2192.51
2016-17	353.09	76.89	28.67	0.00	9.70	1046.13	0.00	1514.49
2017-18	185.02	31.20	0.00	5.73	14.22	1271.67	0.00	1507.83
2018-19	340.23	36.67	0.00	31.06	27.61	0.00	0.00	435.57
2019-20	286.95	38.39	0.00	27.90	53.44	1035.27	0.00	1441.94

9.7.1 Requirement of daily wage man power & the rates of past and present wages-

The rates of past & present wage rates					
Sl No	Notification (Date / Month / Year)	Wage Rate (in Rs.)			
		Unskilled	Semi Skilled	Skilled	High Skilled
1	13.12.1995	30.00	36.00	42.00	48.00
2	29.04.1999	40.00	48.00	56.00	64.00
3	14.02.2002	50.00	60.00	70.00	80.00
4	15.02.2006	75.00	85.00	90.00	100.00
5	14.07.2009	90.00	103.00	116.00	129.00
6	06.10.2012	150.00	170.00	190.00	205.00
7	30.04.2015	200.00	220.00	240.00	260.00
8	04/2017	213.50	233.50	253.50	273.50
9	11/2018	280.00	320.00	370.00	430.00
10	05/2019	286.30	326.30	376.30	436.30
11	11/2019	298.00	338.00	388.00	448.00
12	07/2020	303.40	343.40	393.40	453.40

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13	10/2020	308.00	348.00	398.00	458.00
14	05/2021	311.00	351.00	401.00	461.00
15	11/2021	315.00	355.00	405.00	465.00

Requirement of daily wage man power during the present working plan period.

Sl No	Year	Requirement of Daily wage Man power
1	2021-22	748210
2	2022-23	785600
3	2023-24	824000
4	2024-25	866000
5	2025-26	909000
6	2026-27	954000
7	2027-28	1002000
8	2028-29	1050000
9	2029-30	1105000
10	2030-31	1160000

9.8 Existence of monitoring, assessment and reporting mechanism:

For monitoring the implementation of various programs and assessment of success rate, standard monitoring mechanism has been developed in the Forest department. Online transmission of progress report, pay bills & payments, payment of wages to labour through Bank accounts are being implemented. All payments pertaining to CAMPA, MGNREGS, and FDA are 100% through bank accounts.

9.9 Public awareness and education:

Public awareness on various Forest & Environment matters is regularly being conducted by the division. World Wet lands Day, World Forestry day, Earth Day, World Environment Day, Elephant Day, Vanamahotsava week, Mass tree Planting Program, Wildlife Week are being celebrated at Division Level & Range Level. The usual features associated are

- Essay, Drawing, Debate, Paragraph writing Competitions being conducted involving School Children, Eco-clubs etc.
- Awareness through Rally, Nature camps etc are being conducted.
- Eco clubs are being promoted and various leaflets distributed among school children.
- Display of hoardings at public places to educate people,
- Conducting Meetings followed by Tree Planting Program,
- VSS members / NGO are motivated against Forest Fire.

Some of the events taken up by this division is furnished below (Table No 9.8)

9.10 Adequate manpower in forest division:

The Sanction cadre strength of Nayagarh Division is 209. As on 31.03.2020 the staff in position is as furnished in Table No 9.9

Table No 9.9 - Sanctioned Cadre Strength and Present Position. (As on 31.03.2020)

Sl No	Name of Cadre	Sanctioned Strength	Persons in Position	Vacancy	Remark
1	Divisional Forest Officer	1	1	Nil	
2	Asst. Conservator of Forests (Enforcement & Crime controll)	1	1	Nil	
3	Asst. Conservator of Forests (Afforestation, firm forest & communication)	1	1	Nil	
4	Asst. Conservator of Forests (Admn., Plan programme & eco-tourism)	1	0	1	
5	Forest Ranger (Range)	7	6	1	
6	Forest Ranger (Affn.)	1	0	1	
7	Forest Ranger (Enf.)	1	0	1	
8	Dy. Ranger Spl. Striking force - 1 Vulnerable Range as 2nd officer = 6	7	4	3	
9	Forester (Section)	24	24	Nil	
10	Forester (Affn.)	16	12	4	
11	Forester (Enf.)	3	0	3	
12	Forest Guard (Beat)	96	68	28	
13	Forest Guard (Check Gate)	19	0	19	
14	Forest Guard (Affn.)	6	0	6	
15	Head Clerk	1	0	1	
16	Jr. Acctn.	8	5	3	
17	Jr. Steno	1	0	1	
18	Jr. Clerk	9	3	6	
19	Driver	2	2	Nil	
20	Mali	1	0	1	
21	Dak Runner	2	1	1	
22	Office Choukidar	1	0	1	
Total =		209	128	81	

Form the above table it is seen that Staff position is not good. The vacancy at the Cutting edge i.e. at Forester /Forest Guard level needs to be filled up for a better protection & management.

The division has been constituted since 1947. The Divisional Forest Officers and their period on incumbency is furnished at **Annexure-XIII**

Besides the regular staff, there are squads, fire fighting squads, elephant trackers to assist the regular staff in the field. Considering the workload, various schemes under implementation, it is felt that more ministerial and technical staffs at grass root level (Forest Guards and Foresters) are required to be deployed for better management of forest & wildlife. It is also felt to have full-fledged computer cell and GIS Cell to monitor the work, prepare maps and study the growth of plantations through satellite imagery.

CHAPTER-10

Five Year Plans

10. General Trends in Forestry investment :

From 1947 to 2017, the Indian economy was premised on the concept of planning. This was carried through the **Five-Year Plans**, developed, executed, and monitored by the Planning Commission (1951-2014) and the NITI Aayog (2015-2017). With the prime minister as the ex-officio chairman, the commission has a nominated deputy chairman, who holds the rank of a cabinet minister. The Twelfth Plan completed its term in March 2017. Prior to the Fourth Plan, the allocation of state resources was based on schematic patterns rather than a transparent and objective mechanism, which led to the adoption of the Gadgil formula in 1969. Revised versions of the formula have been used since then to determine the allocation of central assistance for state plans. The new government elected in 2014, has announced the dissolution of the Planning Commission, and its replacement by a think tank called the NITI Aayog (an acronym for National Institution for Transforming India).

10.1 First Five year Plan: (1951-1956)

The First Five-Year Plan was one of the most important, because it had a great role in the launching of Indian development after Independence. Thus, it strongly supported agriculture production and also launched the industrialization of the country (but less than the Second Plan, which focused on heavy industries). It built a particular system of mixed economy, with a great role for the public sector (with an emerging welfare state), as well as a growing private sector.

The first Indian Prime Minister, Jawaharlal Nehru, presented the First Five-Year Plan to the Parliament of India and needed urgent attention. The First Five-year Plan was launched in 1951 which mainly focused in development of the primary sector. The First Five-Year Plan was based on the Harrod–Domar model with few modifications.

The total planned budget of Rs.2069 crore (2378 crore later) was allocated to seven broad areas:

- i. Irrigation and energy (27.2%),
- ii. Agriculture and community development (17.4%),
- iii. Transport and communications (24%),
- iv. Industry (8.4%),

- v. Social services (16.6%),
- vi. Rehabilitation of landless farmers (4.1%),
- vii. Other sectors and services (2.5%).

The most important feature of this phase was active role of state in all economic sectors. Such a role was justified at that time because immediately after independence, India was facing basic problems—deficiency of capital and low capacity to save.

The target growth rate was 2.1% annual gross domestic product (GDP) growth; the achieved growth rate was 3.6% the net domestic product went up by 15%. The monsoon was good and there were relatively high crop yields, boosting exchange reserves and the per capita income, which increased by 8%. National income increased more than the per capita income due to rapid population growth. Many irrigation projects were initiated during this period, including the Bhakra, Hirakud, Mettur Dam and Damodar Valley dams. The World Health Organization (WHO), with the Indian government, addressed children's health and reduced infant mortality, indirectly contributing to population growth.

At the end of the plan period in 1956, five Indian Institutes of Technology (IITs) were started as major technical institutions. The University Grants Commission (UGC) was set up to take care of funding and take measures to strengthen the higher education in the country. Contracts were signed to start five steel plants, which came into existence in the middle of the Second Five-Year Plan. The plan was quasi-successful for the government.

On forest Sector:

The focus was on the Rehabilitation of Degraded Forests (RDF) and the creation of plantations of economically important species. The budget allocation in the first five year plan was Rs.9.6 crores for forest development. The forest land under private ownership was brought under the State control. The State plans provide Rs.104 lakhs for development of forest communications. Grazing in the forests yielded about Rs. 95 lakhs of revenue annually. More important still, it provides fodder for about 13 million cattle, 3 million buffaloes and 9 million other animals and thus plays a vital role in the agricultural economy. Various tribes inhabit in the forest areas. The welfare of the tribals and advancement of backward classes have given due importance in this plan. The Indian Board of Wildlife constituted in 1952 and has done constructive work for preservation of wildlife of the country.

10.2 Second Five Year Plan: (1956-1961)

The Second Plan focused on the development of the public sector and "rapid Industrialization". The plan followed the Mahalanobis model, an economic development model developed by the Indian statistician Prasanta Chandra Mahalanobis in 1953. The plan attempted to determine the optimal allocation of investment between productive sectors in order to maximize long-run economic growth. It used the prevalent state-of-the-art techniques of operations research and optimization as well as the novel applications of statistical models developed at the Indian Statistical Institute. The plan assumed a closed economy in which the main trading activity would be centered on importing capital goods.

Hydroelectric power projects and five steel plants at Bhilai, Durgapur, and Rourkela were established with the help of Russia, Britain (the U.K) and West Germany respectively. Coal production was increased. More railway lines were added in the north east.

The Tata Institute of Fundamental Research and Atomic Energy Commission of India were established as research institutes. In 1957, a talent search and scholarship program was begun to find talented young students to train for work in nuclear power.

The total amount allocated under the Second Five-Year Plan in India was Rs.48 billion. This amount was allocated among various sectors: power and irrigation, social services, communications and transport, and miscellaneous. The second plan was a period of rising prices. The country also faced foreign exchange crisis. The rapid growth in population slowed down the growth in the per capita income.

The target growth rate was 4.5% and the actual growth rate was 4.27%.

The plan was criticized by classical liberal economist B.R. Shenoy who noted that the plan's "dependence on deficit financing to promote heavy industrialization was a recipe for trouble". Shenoy argued that state control of the economy would undermine a young democracy. India faced an external payments crisis in 1957, which is viewed as confirmation of Shenoy's argument.

On Forest Sector:

The main principles governing the management of forest resources and their continued development were also laid down by the Forest Policy Resolution, 1952. Wherever necessary work on the schemes initiated during the Second Five Year Plan programme will include proposals or measures for :

- Afforestation and improvement of poorer areas in the forests and extension forestry.
- Formation of plantations of species of commercial and industrial value.
- Promotion of methods for increased production and availability of timber and other forest produce in immediate future.
- Conservation of Wildlife.
- Increased scope for forest research.
- Increased provision of technical personnel and
- Central Coordination and guidance in the implementation of forest development, schemes all over the country.

The total provision for forest development in the 2nd plan was about 27 crores. The Central Government paid special attention to research, education, demonstration, coordination and the States carried out the forest development projects. A provision of Rs.20 crores was made in the Plan for soil conservation. A provision of Rs.65 lakhs was too made in the second Plan for survey, classifying and mapping of about 10 million acres of land in areas, which present special problems.

10.3 Third Five Year Plan (1961-1966)

The Third Five-year Plan stressed agriculture and improvement in the production of wheat, but the brief Sino-Indian War of 1962 exposed weaknesses in the economy and shifted the focus towards the defense industry and the Indian Army. In 1965–1966, India fought a War with Pakistan. There was also a severe drought in 1965. The war led to inflation and the priority was shifted to price stabilization. The construction of dams continued. Many cement and fertilizer plants were also built. Punjab began producing an abundance of wheat.

Many primary schools were started in rural areas. In an effort to bring democracy to the grass-root level, Panchayat elections were started and the states were given more development responsibilities.

State electricity boards and state secondary education boards were formed. States were made responsible for secondary and higher education. State road transportation corporations were formed and local road building became a state responsibility.

The target growth rate was 5.6%, but the actual growth rate was 2.4%.

In the 3rd Five Year Plan it was proposed not only to intensify some of the programme initiated under the 1st and 2nd Plans but also to put special emphasis on measures which

would help meet the long term requirements of the country and ensure more economic and efficient utilization of the available forest products. The Plan provided an outlay of Rs.51 Crores for various development programmes in the states. Some of the important programmes included in Third Plan are:-

- (a) Large scale programme for raising Economic Plantation
- (b) Village & Extension Forestry
- (c) Promotion of methods for increased production
- (d) Development of Forest Roads
- (e) Development of Minor Forest Produce
- (f) Timber treatment (setting up seasoning and preservation plants)
- (g) Survey and Demarcation of forest land

10.4 Plan Holiday (1966-1969)

Due to miserable failure of the Third Plan the government was forced to declare "plan holidays" (from 1966–67, 1967–68, and 1968–69). Three annual plans were drawn during this intervening period. During 1966–67 there was again the problem of drought. Equal priority was given to agriculture, its allied activities, and industrial sector. The government of India declared "Devaluation of Rupee" to increase the exports of the country. The main reasons for plan holidays were the war, lack of resources and increase in inflation.

10.5 Fourth Five Year Plan (1969-1974):

At this time Indira Gandhi was the prime minister. The government nationalised 14 major Indian banks and the Green Revolution in India advanced agriculture. In addition, the situation in East Pakistan (now Bangladesh) was becoming dire as the Indo-Pakistan War of 1971 and Bangladesh Liberation War took funds earmarked for industrial development. India also performed the Smiling Buddha underground nuclear test (Pokhran-1) in Rajasthan on May 18, 1974, partially in response to the United States deployment of the Seventh Fleet in the Bay of Bengal. The fleet had been deployed to warn India against attacking West Pakistan and extending the war. The target growth rate was 5.6%, but the actual growth rate was 3.3%.

On Forest sector:

The main objectives of the proposed plan are

- (a) To increase the productivity of forest

- (b) To link up the forest development with various forest based industries basing on the requirement and to sustain the usable product
- (c) To develop forest as a support to rural economy with aim sustain to livelihood needs of the rural mass.

Special emphasis was laid on measures to meet the long term agricultural and industrial requirement to create multiple large-scale plantations of valuable quick growing species of economic and industrial importance. The management of Wildlife, National Parks and Sanctuaries were given much importance and greatly improved by special training in ecology and conservation.

10.6 Fifth Five Year Plan (1974-1978)

The Fifth Five-Year Plan laid stress on employment, poverty alleviation and justice. The plan also focused on self-reliance in agricultural production and defense. In 1978 the newly elected Morarji Desai government rejected the plan. The Electricity Supply Act was amended in 1975, which enabled the central government to enter into power generation and transmission.

The Indian national highway system was introduced and many roads were widened to accommodate the increasing traffic. Tourism also expanded. The twenty-point programme was launched in 1975. It was followed from 1974 to 1979.

The Minimum Needs Programme (MNP) was introduced in the first year of the Fifth Five-Year Plan (1974–78). The objective of the programme is to provide certain basic minimum needs and thereby improve the living standards of the people. It is prepared and launched by D.P.Dhar. The target growth rate was 4.4% and the actual growth rate was 4.8%.

On Forest Sector:

The primary objectives in this fifth plan was to take up a dynamic programme of production forestry, which aimed at clear felling and creating large scale man made forests with the help of institutional financing. The targets of demand for industrial wood for the perspective period are consistent with the projections of the National Commission on Agriculture. Development of Communications is also necessary in relation to the optimum exploitation of the available forest wealth in inaccessible areas. Special emphasis was given to develop farm forestry and to improve the degraded forests with the aim of increasing the fuel and timber supply in the rural areas. Programme for Social Forestry and Economic Plantations have been given on priority basis. Accordingly, for the remaining two years of

the plan, the provisions made are almost double the out lays provided for in the First Three Years of the Plan. Adequate provision has also been made for “Project Tiger” and for the development of National Park and for strengthening the research programme in the Forestry sector. A network of State Forest Corporations is proposed to be created for the establishment and management of man-made forests and 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 Rolling Plan (1978-1980):

The Janata Party government rejected the Fifth Five-Year Plan and introduced a new Sixth Five-Year Plan (1978–1980). This plan was again rejected by the Indian National Congress government in 1980 and a new Sixth Plan was made. The Rolling Plan consisted of three kinds of plans that were proposed. The First Plan was for the present year which comprised the annual budget and the Second was a plan for a fixed number of years, which may be 3, 4 or 5 years. The Second Plan kept changing as per the requirements of the Indian economy. The Third Plan was a perspective plan for long terms i.e. for 10, 15 or 20 years. Hence there was no fixation of dates for the commencement and termination of the plan in the rolling plans. The main advantage of the rolling plans was that they were flexible and were able to overcome the rigidity of fixed Five-Year Plans by mending targets, the object of the exercise, projections and allocations as per the changing conditions in the country's economy. The main disadvantage of this plan was that if the targets were revised each year, it became difficult to achieve the targets laid down in the five-year period and it turned out to be a complex plan. Also, the frequent revisions resulted in the lack of stability in the economy.

10.8 Sixth five year Plan (1980-1985):

The Sixth Five-Year Plan marked the beginning of economic liberalization. Price controls were eliminated and ration shops were closed. This led to an increase in food prices and an increase in the cost of living. This was the end of Nehruvian socialism. The National Bank for Agriculture and Rural Development was established for development of rural areas on 12 July 1982 by recommendation of the Shivaraman Committee. Family planning was also expanded in order to prevent overpopulation. More prosperous areas of India adopted family planning more rapidly than less prosperous areas, which continued to have a high birth rate. Military Five-Year Plans became coterminous with Planning Commission's plans from this plan onwards.

The Sixth Five-Year Plan was a great success to the Indian economy. The target growth rate was 5.2% and the actual growth rate was 5.7%.

On Forest Sector:

In this plan period emphasis was given to increase the basic biological productivity through proper land and water management was of vital ecological concern. These were concerned with developing technologies to increase, maximize and stabilize wood production per unit area under different management and exploitation methods, improvement in utilization and generation of employment without endangering ecological security. It was also felt that the preservation of genetic and species-diversity is essential for the management of the “Eco-system” and for the sustainable utilization of the resources. This helps in a big way for the future survival and development of the people at large. The necessity for constitution of “Biosphere-Reserves” was also felt imperative. Particular attention will be paid to the extensive cultivation of the leguminous shrubs and trees, which can provide fodder, fuel and fertilizer. Forestry is essential not only for Eco-preservation but also for fuel, human and animal nutrition, timber and raw-materials for industry. Suitable agro-forestry techniques would be fostered and emphasis was given on active involvement of people at local level in formulating and implementing the special schemes.

10.9 Seventh Five Year Plan (1985-1990)

The Seventh Five-Year Plan was led by the Congress Party with Rajiv Gandhi as the prime minister. The plan laid stress on improving the productivity level of industries by upgrading of technology.

The main objectives of the Seventh Five-Year Plan were to establish growth in areas of increasing economic productivity, production of food grains, and generating employment through "Social Justice".

As an outcome of the Sixth Five-Year Plan, there had been steady growth in agriculture, controls on the rate of inflation, and favourable balance of payments which had provided a strong base for the Seventh Five-Year Plan to build on the need for further economic growth. The Seventh Plan had strived towards socialism and energy production at large. The thrust areas of the Seventh Five-Year Plan were: social justice, removal of oppression of the weak, using modern technology, agricultural development, anti-poverty programmes, full supply of food, clothing, and shelter, increasing productivity of small- and large-scale farmers, and making India an independent economy.

Based on a 15-year period of striving towards steady growth, the Seventh Plan was focused on achieving the prerequisites of self-sustaining growth by the year 2000. The plan expected the labour force to grow by 39 million people and employment was expected to grow at the rate of 4% per year.

Under the Seventh Five-Year Plan, India strove to bring about a self-sustained economy in the country with valuable contributions from voluntary agencies and the general populace.

The target growth rate was 5.0% and the actual growth rate was 6.01% and the growth rate of per capita income was 3.7%.

On Forest Sector:

During this plan period it was decided to lay emphasis on Research and Training aspects. The Botanical Survey of India (BSI), Zoological Survey of India (ZSI) was reoriented to deal with the lower forms of life like, Fungi, Algae, Bacteria, Invertebrates etc. Man and Biosphere Programmes were also oriented towards the ecosystem development.

Implementation of the Biosphere Reserves programme was started in the seventh five-year plan with the department of Environment acting as the nodal agency. The conservation programmes in the Reserves was to 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.

The State Sector schemes of Social Forestry including Rural Fuel Wood Plantation was in operation in 157 Districts during the 7th Five Year Plan to cover all fuel-wood deficit areas. A National Wasteland Board has been established, that formulates perspective Plans and programmes for the management and development of wastelands in the country.

10.10 Annual Plan (1990-1992)

The Eighth Plan could not take off in 1990 due to the fast changing economic situation at the centre and the years 1990–91 and 1991–92 were treated as Annual Plans. The Eighth Plan was finally formulated for the period 1992–1997.

10.11 Eighth Five Year Plan (1992-97)

1989–91 was a period of economic instability in India and hence no Five-Year Plan was implemented. Between 1990 and 1992, there were only Annual Plans. In 1991, India faced a crisis in foreign exchange (forex) reserves, left with reserves of only about US\$1 billion. Thus, under pressure, the country took the risk of reforming the socialist economy. P.V.

Narasimha Rao was the ninth prime minister of the Republic of India and head of Congress Party, and led one of the most important administrations in India's modern history, overseeing a major economic transformation and several incidents affecting national security. At that time Dr. Manmohan Singh (later prime minister of India) launched India's free market reforms that brought the nearly bankrupt nation back from the edge. It was the beginning of liberalization, privatization and globalization (LPG) in India.

Modernization of industries was a major highlight of the Eighth Plan. Under this plan, the gradual opening of the Indian economy was undertaken to correct the burgeoning deficit and foreign debt. Meanwhile, India became a member of the World Trade Organization on 1 January 1995. The major objectives included, controlling population growth, poverty reduction, employment generation, strengthening the infrastructure, institutional building, tourism management, human resource development, involvement of Panchayati raj, Nagar Palikas, NGOs, decentralization and people's participation.

Energy was given priority with 26.6% of the outlay.

The target growth rate was 5.6% and the actual growth rate was 6.8%.

To achieve the target of an average of 5.6% per annum, investment of 23.2% of the gross domestic product was required. The incremental capital ratio is 4.1. The saving for investment was to come from domestic sources and foreign sources, with the rate of domestic saving at 21.6% of gross domestic production and of foreign saving at 1.6% of gross domestic production.

On Forestry Sector:

During this plan period the following objectives were laid down. These are

- To protect the natural environment
- To regenerate, restore the degraded ecosystems, increase their productivity and to generate employment through these activities.
- To encourage and decentralize control over nature and natural resources.
- To develop and share between understanding of nature and natural processes.
- To formulate a national policy for environment and an appropriate institutional and legal frame work in support of the policy.
- To ensure and coordinate integrated governmental action aimed at conserving nature and sustainable use of natural resources on latest scientific modalities.

- To make individuals and institutions more accountable to the people for their action impinging on environment and eco system.
- To monitor the state of environment.

10.12 Nineth Five year Plan (1997-2002)

The Ninth Five-Year Plan came after 50 years of Indian Independence. Atal Bihari Vajpayee was the prime minister of India during the Ninth Plan. The Ninth Plan tried primarily to use the latent and unexplored economic potential of the country to promote economic and social growth. It offered strong support to the social spheres of the country in an effort to achieve the complete elimination of poverty. The satisfactory implementation of the Eighth Five-Year Plan also ensured the states' ability to proceed on the path of faster development. The Ninth Five-Year Plan also saw joint efforts from the public and the private sectors in ensuring economic development of the country. In addition, the Ninth Five-Year Plan saw contributions towards development from the general public as well as governmental agencies in both the rural and urban areas of the country. New implementation measures in the form of Special Action Plans (SAPs) were evolved during the Ninth Plan to fulfill targets within the stipulated time with adequate resources. The SAPs covered the areas of social infrastructure, agriculture, information technology and Water policy.

Budget

The Ninth Five-Year Plan had a total public sector plan outlay of 859,200 crore (US\$120 billion). The Ninth Five-Year Plan also saw a hike of 48% in terms of plan expenditure and 33% in terms of the plan outlay in comparison to that of the Eighth Five-Year Plan. In the total outlay, the share of the center was approximately 57% while it was 43% for the states and the union territories.

The Ninth Five-Year Plan focused on the relationship between the rapid economic growth and the quality of life for the people of the country. The prime focus of this plan was to increase growth in the country with an emphasis on social justice and equity. The Ninth Five-Year Plan placed considerable importance on combining growth oriented policies with the mission of achieving the desired objective of improving policies which would work towards the improvement of the poor in the country. The Ninth Plan also aimed at correcting the historical inequalities which were still prevalent in the society.

Objectives

The main objective of the Ninth Five-Year Plan was to correct historical inequalities and increase the economic growth in the country. Other aspects which constituted the Ninth Five-Year Plan were:

- Population control.
- Generating employment by giving priority to agriculture and rural development.
- Reduction of poverty.
- Ensuring proper availability of food and water for the poor.
- Availability of primary health care facilities and other basic necessities.
- Primary education to all children in the country.
- Empowering the socially disadvantaged classes like Scheduled castes, Scheduled tribes and other backward classes.
- Developing self-reliance in terms of agriculture.
- Acceleration in the growth rate of the economy with the help of stable prices.

Strategies

- Structural transformations and developments in the Indian economy.
- New initiatives and initiation of corrective steps to meet the challenges in the economy of the country.
- Efficient use of scarce resources to ensure rapid growth.
- Combination of public and private support to increase employment.
- Enhancing high rates of export to achieve self-reliance.
- Providing services like electricity, telecommunication, railways etc.
- Special plans to empower the socially disadvantaged classes of the country.
- Involvement and participation of Panchayati Raj institutions/bodies and Nagar Palikas in the development process.

Performance

- The Ninth Five-Year Plan achieved a GDP growth rate of 5.4% against a target of 6.5%
- The agriculture industry grew at a rate of 2.1% against the target of 4.2%
- The industrial growth in the country was 4.5% which was higher than that of the target of 3%
- The service industry had a growth rate of 7.8%.
- An average annual growth rate of 6.7% was reached.

The Ninth Five-Year Plan looks through the past weaknesses in order to frame the new measures for the overall socio-economic development of the country. However, for a well-planned economy of any country, there should be a combined participation of the

governmental agencies along with the general population of that nation. A combined effort of public, private, and all levels of government is essential for ensuring the growth of India's economy.

The target growth was 7.1% and the actual growth was 6.8%.

10.13 Tenth Five year Plan (2002-2007)

The main objectives of the Tenth Five-Year Plan:

- Attain 8% GDP growth per year.
- Reduction of poverty rate by 5% by 2007.
- Providing gainful and high-quality employment at least to the addition to the labour force.
- Reduction in gender gaps in literacy and wage rates by at least 50% by 2007.
- 20-point program was introduced.
- Target growth: 8.1% – growth achieved: 7.7%.
- The Tenth Plan was expected to follow a regional approach rather than sectoral approach to bring down regional inequalities.
- Expenditure of 43,825 crore (US\$6.1 billion) for tenth five years.

Out of total plan outlay, 921,291 crore (US\$130 billion) (57.9%) was for central government and 691,009 crore (US\$97 billion) (42.1%) was for states and union territories.

On Forest Sector:

The target of the 10th plan for GDP growth for the period 2002 to 2007, an adequate level of food consumption and other types of consumer goods are to be ensured for the populace along with social service items like education, drinking water facilities and basic sanitation. The main objectives of the Tenth Five Year Plan are

- i) Bringing one third of geographical area under forest cover.
- ii) To address the livelihood needs of the people living adjoining to forest.
- iii) JFM would be given more thrust for the regeneration of the degraded forest.
- iv) Efforts would be taken on protecting the natural forests to have a better carbon trading potential to increase the market avenue for forest protection and management.

- v) To take sincere efforts to reduce the import of the timber and the timber requirement which would be met from the community land, Private farm lands and degraded lands.
- vi) 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).
- vii) The conservation and protection of the medicinal plants are given priority and the Bio-diesels coming from plants like Jatropha, Pongamia etc. would be promoted to encourage the livelihoods opportunity to the rural masses.
- viii) Food for work programme would be extensively implemented in the forest pockets to ensure food security and productive employment.
- ix) Adoption of watershed approach to develop and maintain forest cover.

10.14 Eleventh Five year Plan (2007-2012)

- It was in the period of Manmohan Singh as a prime minister.
- It aimed to increase the enrolment in higher education of 18–23 years of age group by 2011–12.
- It focused on distant education, convergence of formal, non-formal, distant and IT education institutions.
- Rapid and inclusive growth (poverty reduction).
- Emphasis on social sector and delivery of service therein.
- Empowerment through education and skill development.
- Reduction of gender inequality.
- Environmental sustainability.
- To increase the growth rate in agriculture, industry and services to 4%, 10% and 9% respectively.
- Reduce total fertility rate to 2.1.
- Provide clean drinking water for all by 2009.
- Increase agriculture growth to 4%.

10.15 Twelveth Five year Plan (2012-2017)

The Twelfth Five-Year Plan of the Government of India has been decided to achieve a growth rate of 8.2% but the National Development Council (NDC) on 27 December 2012 approved a growth rate of 8% for the Twelfth Plan.

With the deteriorating global situation, the Deputy Chairman of the Planning Commission Montek Singh Ahluwalia has said that achieving an average growth rate of 9 percent in the next five years is not possible. The Final growth target has been set at 8% by the endorsement of the plan at the National Development Council meeting held in New Delhi.

The objectives of the Twelfth Five-Year Plan were:

- To create 50 million new work opportunities in the non farm sector.
 - To remove gender and social gap in school enrolment.
 - To enhance access to higher education.
 - To reduce malnutrition among children aged 0–3 years.
 - To provide electricity to all villages.
 - To ensure that 50% of the rural population have accesses to proper drinking water.
 - **To increase green cover by 1 million hectare every year.**
 - To provide access to banking services to 90% of households.
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CHAPTER-11

Past System of Management

11.1 General history of the Forests:

The forests of this Division were managed as per the prescriptions of three separate Working Plans prepared by Mr. H.F. Mooney, IFS for three Ex-princely states i.e. Khandapara, Nayagarh and Daspalla during Ex-Durbar administration. The first consolidated working plan was prepared by C.L. Mohapatra from 1960-61 to 1979-80. The outgoing plan was prepared by Sri N.C. Bal, OFS (I) for the period from 1983-84 to 2002-03. A resume of the history of forest administration and management is set in the following paragraph

11.1.1 Plans of Ex State Period:

The forests of Nayagarh were under three different princely states namely Nayagarh, Khandapara and Daspalla. These Forests were managed by the then Rulers as per working Plan prepared by Mr. H.F.Mooney, IFS. Nayagarh Ex-State Working Plan was **for the period** 1941-1961, Daspalla Ex State plan was for the period 1938-1953 and Khandapara Ex State Plan for the period 1936-1966. The crop composition, condition of forest and growth pattern was more or less similar. These plans prescribed the following Working Circles.

WC of Nayagarh Ex State Plan	WC of Daspalla Ex State plan	WC of Khandapara Ex State Plan
Selection Working Circle Coppice Working Circle Bamboo Working Circle Teak Working Circle Miscellaneous WC	High Forest Working Circle Coppice Working Circle Bamboo Working Circle Miscellaneous WC	High Forest Working Circle Coppice Working Circle Bamboo Working Circle. The Miscellaneous WC

The working circles i.e. Selection and High Forest were having similar prescriptions. The Sal trees were basically removed. The exploitable girth was 5'. The yield was regulated by number of trees harvested.

In Coppice Working Circle, the silvicultural system prescribed was simple coppice with retention of 8 to 10 reserves of 20 cm diameter per acre to disseminate seeds for natural

regeneration. Rotation was fixed at 30- 40 years depending upon the growth status of the forest.

The Bamboo Working Circle was being worked with a Cutting cycle of four years and annual coupes were of equal area. Definite cutting rules were prescribed. After independence and merger of states, people were allowed to take bamboo for use through out the year.

The forests having Sal and other miscellaneous trees were worked under this Working Circle. Sal and Non sal trees to a specific number were prescribed for removal.

Teak Working Circle: There was no specific areas covered under this circle. It was prescribed to plant up 25 acres (10 Ha.) every year with usual technique in suitable areas from miscellaneous forests with Kanta Bamboo in the valleys of foothills. It was prescribed to plant teak over an area of 500Acs within a period of 20 years.

Result: As Timber was required for development process, Railway track the felling was carried out without considering the sustainability of Forest. Teak was introduced in Sal Forests to enrich the Crop valuation and meet the timber demand.

Past System of Management and their results :

11.2 C.L.Mohapatra's Plan (1960-61 TO 1979-80)

11.2.1 The first consolidated working plan of Nayagarh Forest Division was prepared by Late C.L.Mohapatra, Working Plan Officer, Bhanjanagar for the period from 1960-61 to 1979-80 and it combined the previous working plans for the three Ex-state areas (Nayagarh, Daspalla and Khandapara) into one consolidated working plan for the Reserved Forest blocks of entire Nayagarh Forest Division. This plan had been constituted with 8 working circles.

1. Sal Conversion Working Circle
2. Selection Working Circle
3. Coppice Working Circle
4. Miscellaneous Working Circle.
5. Bamboo Working Circle.
6. Plantation Working Circle
7. Cane Overlapping Working Circle
8. M.F.P. Working Circle.

11.2.2 Sal Conversion (to uniform) Working Circle : This working circle was constituted out of Maichheli – Sampada, Panchupandab, Hatimunda, Palva and Sulia blocks and covered

2662.03 hectares. This area included 1868 .58 hectars of Sal forests, 462.89 hectares of eroded area and 310.56 hectars of miscellaneous forests and all were put under one felling series. Rotation was fixed 120 years with a conversion period of 80 years and regeneration period of 20 years and 4 periodic blocks of 20 years each were allotted. The silvicultural system aimed at natural regeneration from seedling origin as well as coppice shoots. Artificial regeneration with Sal and other useful species was suggested for areas deficient in regeneration and areas with miscellaneous and eroded patches of growth. Clear felling with retention of 15 standards per acre of principal species of 45 to 75 Cm girth was prescribed in PB-I coupes. Improvement marking along with a light thinning was to be done in PB-II areas. Selection-cum-improvement marking was prescribed in PB-III coupes while only thinning was to be done in PB-IV coupes as well as in regenerated PB-I coupes. In the PB-I areas two cleanings in the 2nd and 6th year were to be carried out. Cleaning following the main felling was to be done in PB-II and PB-III coupes.

Result- Since all the trees were clear felled except the standards numbering 15 or so per acre, the regenerated crop consisted mainly of re-growth of coppice because the standards of 45 to 75 cm girth could produce enough viable seeds to regenerate the clear felled area. Most of the PB-I coupes had degraded considerably as the coppice growth did not establish due to biotic interference. A lot of young poles were sacrificed due to want of provision to retain advance growth. The result was that a few clear felled patches have regenerated well with coppice shoots, where as extensive areas were not adequately stocked. At many places coppice re-growth of the miscellaneous species out numbered Sal shoots. Blank patches were also seen here and there. There was no provision for exploitation of the mature standards in PB-IV areas, maintained at the time of clear felling under coppice system of Mr. Mooney's plan.

11.2.3 Selection Working Circle: There were 25 forest blocks included covering an area of 86,637.97 Ha.. The total area was divided in to 16 felling series. Here Selection-cum Improvement felling followed by cleaning was adopted with a felling cycle of 20 years. One set of exploitable diameters was fixed for Nasghar, Ambalimba, Makarprasad, Mahanadi, Barkhola and Sapua felling series and another set for the rest of the area. Thinning and climber cutting were included in main felling. Cleaning as a separate operation following the main felling was prescribed for all felling series except Ambalimba. Thinning in congested area was prescribed to be carried out 10 years prior to the main felling and second thinning was prescribed from 11th year onwards wherever congestion was observed. As usual, protection from fire and closure to grazing was prescribed.

Result: In some areas over felling in pre-exploitable girth class was noticed under improvement marking. Due to prescription of thinning at different stages within one felling cycle, over felling of immature trees took place. In some selection coupes, the number of trees retained was far less than the desired number as per provision. Cleaning and climber cutting were generally neglected though prescribed and this affected the condition of the crop. Artificial plantation in blanks, eroded areas and in hilly terrain in strips was prescribed to supplement or replenish the growing stock but no plantations were taken up. The coupes of Patharaganda felling series and Ambalimba and Barakola blocks could not be worked properly due to absence of exploitable trees

11.2.4 Coppice Working Circle This working circle covered 19 blocks in full and part covering 13139 Ha. This working circle was divided into 20 felling series and coppice with standard system was adopted. Rotation was fixed at 40 years for all felling series except Guriabari where rotation was 60 years with 3 periodic blocks. The P.B-I coupes were to be clear felled leaving standards up to 10 stems per acre of 15 to 25 cm diameter. Selection cum improvement marking was prescribed in other periodic blocks. Regeneration cleaning was prescribed to follow the main felling. A second cleaning was to be done in the 6th year following the main felling in moist Sal crops except in Gayalsingh, Chhadesh and Mainsibindha felling series. Thinning at the 10th and 25th year was prescribed in general but thinning at 20th and 30th year was prescribed in areas which were thinned during the tenure of the Mooney's Plan. Besides, the climber cutting at the time of main marking, cleaning and thinning and a second climber cutting were prescribed in the 16th year. The coupes under regeneration were to be closed to grazing and protected from fire for 10 years.

Result: The execution under this working circle was quite unsatisfactory. Most of the forest blocks (A Class & B Class Forest) were depleted as the coppice growth failed to rejuvenate. Most of the standards disappeared due to illicit felling, heavy biotic pressure, fire and grazing in Patharakata, Similibanka, Dengabahada, Mainsibindha, Chadeibasa and Patraban-Jamubani blocks. There were some coupes of Khatia – Damasahi, Patharakata and Pithakhai which remained un-worked due to insufficient forest growth. Thinning and cleaning could not be done in most of the coupes. Response to coppice was spectacular only in Sapua West felling series, which covered well regenerated patches of Sal. In Sapua East, Sikharpur and Hatimunda felling series, a few coupes have adequate pole crop. In Bahadajhola and Balisinsa felling series, ground floor is almost devoid of vegetative cover and the present

crop consists of young Sal poles and other species with intermittent blank patches. Gayalsingh North and South felling series contain mostly miscellaneous coppice re-growth.

11.2.5 Miscellaneous Working Circle: The total area of 3466.2 ha. under this circle was constituted with the objective of introducing valuable species and five planting series were defined. There was prescription of planting in strips of 10' width at one chain contour interval, in view of the hilly configuration. This was to be completed within a period of 40 years. This working circle covered Poibari, Manibhadra, Gania and Hanumantia Blocks and parts of Rukhi and Balaram blocks. On flat grounds and easier slopes planting in pits of 30 cm³ at a spacing of 9' (18' incase of bamboo) was prescribed. The subsidiary silvicultural operations, such as weeding, cleaning, thinning and climber cutting etc were to be carried out.

Result: No regular plantations were taken up as prescribed in the plan. Hanumantia and Gania blocks got almost complete rest and nothing was done in these two blocks. Hanumantia block was full of exposed rocks and boulders and there was no plant growth. Gania block contained no forest growth except for a few malformed and stunted bamboo clumps. The foothills of Manibhadra block are planted with Teak and Chakundi.

11.2.6 Bamboo Working Circle : This overlapping working circle covered an area of 96844.3 ha. 32 felling series were constituted out of which Jorum felling series later merged in to Athagarh Forest Division. Here yield was prescribed by area and a 4-year cutting cycle was adopted both for Salia and Daba bamboos. 17 felling series were leased out to M/s Titagarh Papermills, namely Hatimunda, Sulia East, Patharganda, Gochha, Gayalsingh North, Gayalisingh South, Central South, Chadeyapally, Sulia West, Ratadei, Palva, Ragadimada, Pokharigochha, Central North, Baisipalli North and Baisipalli South and Mahanadi. 14 felling series namely Poibari, Nuagaon, Nasaghar, Ambalimba, Chhadesh, Makarprasad, Bankamunda, Manibhadra, Gania, Mainsibindha, Barkhola, Sapua North, Sapua South, and Sikharpur were earmarked for meeting the needs of local people.

Result: The working results of this plan revealed that the bamboo management was tending to be unsilvicultural and erratic. Areas within easy reach were over-felled while inaccessible areas remained almost untouched. In individual clumps the felling was generally confined to the periphery leaving a congested core. Some of the clumps have been clear felled. The prescription to retain minimum 10 culms was not adhered. Bamboo forests in Bankamunda, Manibhadra, Mainsibindha, Barkhola, Sikharpur, Gayalsing North and South were very much degraded. Bamboos in Poibari, Chhadesh and Ambalimba diminished in size.

11.2.7 Plantation Working Circle The working circle included 4 categories of planting areas such as (a) Existing teak plantation- 339.5 ha. (b) Miscellaneous and Kanta Bamboo areas to be planted with Teak-1156.7 Ha. (c) Existing Sabaigrass plantation- 49.2 Ha. (d) Eroded areas to be planted or sown with suitable species-4425.2 Ha. There were 17 Planting series formed with a 20 years cycle. Cultural operations including weeding, cleaning and climber cutting were prescribed for the existing plantations. Thinning and teak plantation was prescribed at the 8th, 16th, 26th and 41st years.

Result: The plantation journals were not systematically maintained throughout the plan period. Some plantations were raised without following the prescribed sequence. Cleaning, climber cutting and thinning in existing teak plantation was neglected due to paucity of funds.

11.2.8 Cane Overlapping Working Circle: This working circle consisted of one felling series on a cutting cycle of 5 year and covered an area of 19554.6 ha. After allowing rest for 5 years from 1960-61 to 1964-65, it was prescribed to under plant cane in teak plantations in 5 years and over in age up to 25 acres annually. No regular cane plantations were taken up as prescribed and it was not commercially viable

11.2.9 Minor Forest Produce Working Circle: There were 22 items of MFPs included for management in this working circle. Very little prescriptions of the plan were followed except the leasing out the MFP items in demand. Only Kenduleaf was worked out regularly and since 1973 the trade was nationalized. Kenduleaf working in Daspalla Range is being worked out after nationalization

11.3 Working Plan By Sri N.C.Bal, (OFS – I) (1983-84 to 2002-03)

The Working Plan of Sri N.C. Bal OFS-I, Working Plans Officer- II, Bhanjanagar for the period from 1983-84 to 2002-03. The principal objects of management of forests covered by this working plan were

- (a) To improve the environment by preservation and protection of flora and fauna of the locality
- (b) to derive the indirect benefit from the forest and ensure optimum financial returns
- (c) to provide the requirement of forest produce to the local people and meet the needs of the forest based industries
- (d) to rehabilitate and restore the forest area depleted in the past by over exploitation

(e) to obtain the sustained yield from the forest

(f) to preserve and protect the existing forest stand particularly in hilly tracts

(g) to conserve water, to check soil erosion and prevent ecological degradation

(h) to improve the composition and quality of the crop through suitable scientific operation.

This plan prescribed six working circle namely

1. Sal Conversion Working Circle
2. Selection Working Circle
3. Coppice Working Circle
4. Teak Plantation Working Circle
5. Rehabilitation Working Circle
6. Bamboo (overlapping) Working Circle.

Prescriptions and Result in Each Working Circle is furnished below.

11.3.1 Sal Conversion Working Circle : The total area of this working circle was 2640.2 Ha. Portion of Hatimunda, Sulia, Palva, Panchupandab and Maichheli–Sampada RF Blocks were allotted to this working circle. The main objective was to convert the present irregular and uneven aged crop to more or less regular even aged crop by adopting the **“Indian irregular shelter wood system”** and also maintain a normal forest as far as possible. There was prescription to retain all well formed, straight healthy and vigorously growing trees of Sal, Piasal, Sissoo and Gambhar below 90 Cm girth at breast height as advance growth. In addition some class II species of Kurum, Kasi, Asan, Bandhan, Dhaura, Mitikinia, Moi and Jamu were to be retained which would constitute about 15% in number of trees retained as advance growth of class I trees. There was further prescription to retain all well formed straight, sound growing trees of 30 cm diameter at breast height i.e. 90 cm girth at breast height and below of Sal, Piasal, Sissoo and Gambhar which occurs single or in groups to be retained as advance group. Further in addition to that the other miscellaneous species such as Kuruma, Kasi, Asan, Bandhan, Dhaura, Mitikinia, Moi and Jamu of 30 cm diameter at breast height were to be retained as advance growth along with regeneration of Sal. The fruit bearing species i.e. Mahula, Tamarind, Kendu, Oil Seeds bearing trees were to be retained as guest species till they became dry, dead or unproductive. It was also prescribed to retain healthy, straight species i.e. Sal, Piasal, Sisoo and Gambhar between 30 to 50 Cm diameter at breast height at least 25 to 30 trees per hector to act as shelter wood and seed disseminator. The above rules were applicable for P.B-I only. In P.B-II, it was prescribed to

mark and remove all dead, dry and hollow trees above 20 cm diameter at breast height. Dominant trees were to be selected for retention if the number was more the best among them were to be selected and retained. In P.B-III, it was prescribed to exploit the trees above 135 cm girth at breast height and also all the dry and diseased trees above 50 cm girth were to be removed. Keeping in view the number of trees retained, it was a gentle compromise between Uniform Working Circle and Selection Working Circle. The conversion period was fixed at 80 years and the rotation period was fixed at 20 years with 4 periodic blocks. The subsidiary silvicultural operation like cleaning, thinning, sowing and planting were prescribed. Along with other regulations like grazing, fire protection, rights and concessions were prescribed in this working circle.

Results – During the plan period, the condition of the forests under this working circle, deteriorated due to illicit felling and heavy biotic pressure. Due to imposition of moratorium on green felling most prescriptions could not be carried out. The areas of the working circle are geographically situated on both sides of the State Highway No. 1 near (now NH 224) Nayagarh town and it was more susceptible to illicit felling, and this became more vulnerable after imposition of moratorium on tree felling in 1992-93. The area is quite approachable to a number of small and large villages, which increased unregulated grazing and frequent forest ground fire. This hindered the establishment of regeneration. Due to paucity of funds the silvicultural operation prescribed was not carried out. So the main objective of conversion working circle could not be achieved.

The Selection Working Circle: The basic objects of management were to retain and improve the available growing stock, to conserve soil and water, to ensure ecological equilibrium, to bring favourable condition for natural regeneration of principal species, to derive maximum sustained yield of large timber. It included all the areas allotted to the selection working circle in the previous plan except Patharaganda , Barkhola and Ambalimba Blocks and compartment no. 16 and 17 of Gochha block, where the existing crop did not warrant selection system of management. In addition, the PB II and PB III areas of Guriabari felling series of Coppice Working Circle of the last plan had been added to this working circle.

Results – The density of tree growth in the forest blocks was reduced due to biotic interference and unscientific ways of removal of timber by the local people except some interior forest blocks i.e. Chadeyapalli, Central, Nasaghar, Ambalimba and some compartments of Pokharigochha, Ratadei and Palva. Forest fire occurred regularly during summer season which restricted the establishment of regeneration. Further the wide growth of weed of climbers like *Combretum decandrun* (Atundi) and siali (*Bauhinia Vahillii*)

has caused extensive damage to the principal species. Moratorium on green felling since 1990 restricted the implementation of the prescriptions of this working circle.

11.3.4 The Coppice Working Circle : This working circle comprised of RF blocks namely Similibanka and Pathara in full and portions of Hatimunda, Bahadajhola, Chhadesh, Balisinsa, Badhulipur and Sapua blocks. The forests allotted to this working circle comprised mainly had North Indian Peninsular and North Indian Moist Deciduous Forest. The special objects of management were to meet the small timber and firewood requirement of the people and to improve the quality and composition of the crop. These areas were in coppice working circle of the preceding plan, which still had some crop that could be worked under coppice system with reserves. The areas, which had degraded and completely deteriorated, had been excluded from this working circle. The rotation period was fixed at 40 years. The rules for marking in the plan were prescribed separately for reserves and other areas. In the reserve areas all the climbers were to be removed, all dead and uprooted trees were to be marked and all the other trees to be retained. In the method of execution of felling it was prescribed in the plan that after demarcation of Chhadesh felling series it will be open to tenants from December for extraction of forest produce on the strength of permit which was to be issued by the department and the forest produce removed from the forest under the direct supervision of the Foresters. Only the marked trees were to be allowed for removal. It was also mentioned in the method of execution of felling that if any marked trees were left in Chhadesh coupes after fulfillment of the requirement of the tenant it would be worked through OFDC Ltd. or department along with the other felling series. For bamboo it was prescribed in this working circle that if any coupe was not disposed off within 2 years of working, it need not be worked.

Results – Majority of the forest which was allotted to this working circle could not be worked out as adequate number of trees were not available for retention as per prescription in the plan and the forests were degraded due to heavy pressure by the people of the surrounding villages, ground forest fire and grazing restrict the regenerating crop to establish. These forests are now gradually rejuvenating due to protection by VSS.

11.3.5 The Teak Plantation Working Circle : All the existing teak plantation of the Division were included in this working circle. Besides, some plain areas and areas with gentle to moderate slopes containing miscellaneous crops with or without Daba bamboos had also been allotted to this working circle to replace the existing uneconomic stands with Teak plantation. The basic objects of management was to replace the existing crop of low economic value in plains and moderate slopes with teak, tending the existing teak

plantation under best possible condition of growth. Part of Bahadajhola, Balaram, Sulia, Charaibasa, Chhadesh, Gayalsingh, Khatia-Damasahi, Palva, Panchupandab Jamubani-Patrabani, Poibari, Patharaganda, Patharakata, Pokharigochha and Ragadimada were allotted for this purpose. As per record, 2766.5 ha were covered under Teak Plantation Working Circle,. The subsidiary tending operation like weeding, cleaning and thinning were also prescribed in this working circle.

Results – Except for a few patches in Nuagaon, Bahadajhola, Rukhi and Ratadei extending to an area of about 200 Ha all other teak plantations were removed illicitly and the present crop is of coppice growth of 1st to 2nd generation. Now these coppice shoots have been over topped by Sal, Asan, Dhaura, Chara, Mahula etc species. The areas allotted to this working circle have an appearance of miscellaneous forests with pole crops. Cleaning and thinning in existing teak plantation was neglected due to paucity of funds. The schedule of plantation was not followed due to non-availability of allotment. Hence the basic objective of the working circle could not be achieved.

11.3.6 The Rehabilitation Working Circle: This working circle covered 33 forest blocks in part or full, which had not been allotted to any other working circle due to its degraded condition. These blocks required special rehabilitation measures and included four types of areas as under: -

1. Completely barren, eroded and plain areas that could be planted with fast growing species.
2. Sal rooted wastes, which could not establish due to inhibiting factors like grazing, fire and repeated cutting.
3. Hill slopes devoid of forest growth requiring Soil Conservation and Afforestation measures.
4. Degraded areas containing miscellaneous and uneconomic species owing to previous coppice working.

The total area of this working circle was 13867.0 hectares. The main objective of management was to restock the depleted and degraded forests and to rehabilitate the existing forest crop through suitable silvicultural operations. The soil and moisture of the area is to be conserved by adopting suitable measures. To rehabilitate the area digging of trapezoidal cattle proof trenches mainly excavated on the boundary line to be dug out and the seeds of Bamboo, Gohira, Prosopis shall be shown on the excavated soil for its retention. Further it was also prescribed for the area where digging of trenches was not possible due to hard rocky or sandy soil, barbed wire fencing with the strand spaced at 15,

45,90 and 145 Cm from the ground level may be fixed to protect the biotic interference. Rehabilitation cycle was fixed to 20 years synchronizing with the period of the working plan. Cleaning, Thinning, Gully plugging and counter trenching are prescribed for the development of the area. Other regulation like grazing, fire protection and rights and concessions are prescribed in this working circle.

Result-The main objectives of this working circle could not be fulfilled due to irregular sequence of working and non-availability of funds. However in most of the areas, the crop condition of these forests has been developing gradually by sincere co-operation provided by the V.S.S. members. Silvicultural operations like cleaning, thinning, climber cutting, singling out of shoots and pruning has not been taken up in due time. The Social Forestry Division and Afforestation Division had taken up plantation in large scale in wasteland, Revenue land and also in R.Fs, P.R.Fs, and D.P.Fs. It was really helpful to the people to meet their local demand and also reduce the pressure on the forest.

11.3.7 The Bamboo (Overlapping) Working Circle: This working circle included the forest areas having bamboos and overlapped almost all the working circles. There were 28 forest blocks either in part or in full included in this working circle with 31 felling series. Ambalimba, Manibhadra, Gania, Mainsibindha, Barkhola and Sikharpur felling series of previous working plan which had no exploitable bamboo was also retained in this working circle where cultural operations were prescribed to rehabilitate these bamboo forests. All the areas that were included in the bamboo-working circle in the previous plan had been retained as such in this plan. The total area of this working circle was 95191.6 hect. After the merger of Baisipalli and Mahanadi blocks in Mahanadi Wildlife Division the area remaining in the circle was 70493.00 ha over 28 felling series. The prescriptions was implemented as per the guidelines approved by the Chief Conservator of Forests, Eastern Regional Office, Ministry of Environment and Forests, Government of India, Bhubaneswar Region vide his letter No. 13/FCWP/US-Gen dated 24.12.1990. The silvicultural prescription was “Culms” selection cum clump improvement. Tending and silvicultural operations have been prescribed for productive bamboo areas which were undertaken in different years since 1990.

Result – Out of the 31 annual coupes only 16 coupes were worked out at different years. Other coupes were economically not viable, unproductive and were avoided by Raw Material Procurers (RMPs) for working. Areas within the easy reach were worked while inaccessible areas remain almost untouched. Bamboo forest in Bankamunda, Manivadra, Mainsibindha, Barkhola, Sikharpur, Chhadesh, part of Hatimunda, part of Ragadimada,

Makarprasad, part of Sapua have been degraded due to biotic pressure. Cutting rules had not been followed properly. Adequate fire protection and grazing was not provided to these forests. During Plan period from 1983-84 to 1994-95, there was no silvicultural operation carried out but silvicultural operation started from 1995-96 on a regular basis up to 2000-01 in a few blocks. Due to paucity of funds very less areas were covered under simultaneous silvicultural operation.

11.3.8 Car Timber (Overlapping) Working Circle: Nayagarh Forest Division supplies timbers for construction of the holy chariots for the world famous car festival of Lord Jagannath, Puri every year. Conventionally the specific car timbers were supplied from current year annual coupes of Central South, Central North, Chadeyapally, and Pokharigochha etc felling series. After imposition of moratorium on tree felling in 1992-93, no coupe working was possible. Therefore, a Car Timber (Overlapping) Working Circle scheme was prepared for the period from 1999-2000 to 2002-2003, covering an area of 15064.30 ha. by Dr. R.V.Singh, IFS, Conservator of Forests, Working Plan Circle, Cuttack, which was sanctioned vide Government of India letter No. 13-FCWP/05 gent 544 to 551 dated 12.2.1999. After expiry of the above working scheme, another scheme for Car Timber (Overlapping) Working Circle was prepared by Sri D.B.Ray, IFS, Divisional Forest Officer, Nayagarh Division for a period from 2004-2005 to 2009-2010, which covers an area of 7380.6 ha. Sanction has been accorded by the Government of India for 2 years, i.e. 2004-2005 to 2005-2006 vide Letter No. F9-17/2002-ROHQ, G.O.I., Ministry of Environment and Forest-dated 22.3.2005 communicated vide Memo No. 7844 dt. 12.4.2005 of Principal Chief Conservator of Forests, Orissa, Bhubaneswar, and again sanction has been accorded by the Govt. of India. For another year i.e. 2006-07 vide their Letter No.9-17-2005-RO(SQ) dt. 19.9.2005, Ministry of Environment and Forests communicated to the Pr.Chief Conservator of Forests vide his Memo No.21416 dt. 27.9.2005 and communicated to Divisional Forest Officer, Nayagarh by the Conservator of Forests, Bhubaneswar Circle vide his Memo No.3150 (9) dt.4.10.2005.

Every year required number of timbers are supplied for construction of Holly Chariots for Lord Jagannath, Balabhadra and Devi Subhadra, Puri by DFO Nayagarh. The major part i.e. 790 Nos. Asan & Dhaura, 72 Nos. Phasi and 3 Nos. of Simul logs of different dimensions are supplied from Nayagarh Division as per Rath Code. Besides every year timbers are also supplied for 'Ashokastami' Car festival of Lord Lingaraj, Bhubaneswar. To carry out the annual Car Festival (Ratha Yatra), timbers essential for the construction of the three Cars (Ratha) i.e. Taladhwaja, Darpadalan and Nandighosa are to be supplied. This Division usually supplies. 862 nos. of logs (near about 400 cum.) Phasi, Asan, Dhaura, and Simul

from different Ranges every year for constructions of holy chariots. Phasi timbers are generally collected from tenants of Nayagarh Division. The details of annual requirement Car Timbers as per Ratha Yatra Code are furnished in **Table No.11.1.**

Table No 11.1 Annual requirement of Car Timber			
Species	Purpose	Dimension	Quantity (in No)
Phasi	Tumba	6 ft. x 9 ft.	22
Phasi	Pai	6 ft. x 12 ft.	50
Asan & Dhaura	Aramundi	3 ft. x 12 ft.	428
Dhaura	Danda & Akha	3 ft. x 40 ft.	50
Asan	Gayala	3 ft. x 40 ft.	312
Total: -			862

Result – Felling of required specified trees of Asan, Dhaura and Simili for the construction of the chariots of Lord Jagannath, Puri was irregularly collected from different selection coupes of Daspalla range as there was no specified coupes prescribed for car timber purpose earlier. As a result the lower hilly and plain forests of the above felling series are now devoid of suitable trees for car timber. However sufficient and established regeneration is available in Chadeyapalli, Central, and Nasaghar, Ambalimba etc. blocks from which the car timbers can be supplied regularly. To meet the future requirement Government has implemented a scheme named Jagannath Bana Prakalpa during 1999-2000 with a target of 400 hect. Plantations have also been completed during 2004-05.

11.3.9 Wild Life Management

To promote wildlife in this area the Mahanadi Wildlife Division, Phulbani was created vide Government Resolution No.13060/F&E dated 12.07.1999 of Government of Orissa, F&E Department, Bhubaneswar. The Baisipalli Wild Life Sanctuary area was handed over to Mahanadi Wild Life Division, Phulbani on 08.10.1999. Baisipalli and Mahanadi R.F. Blocks of this division were merged with the wildlife division where large varieties of wild animals were present. A separate management plan is being prepared for that division. But abundant wild life is found in the forests of Nayagarh division also. Spotted deer, Barking deer and Wild boars are seen in almost all the forests of this division except smaller forest patches located within habitations and agricultural fields. Sambhar, Elephants, Bisons dwell in Central, Chadiapalli, Pokharigochha blocks. Baisipalli and Mahanadi blocks were rich in wild animals from which bigger animals roamed to the adjacent forest blocks, which serve as elephant corridors. Gochha, Sapua, Hatimunda, Palva, and Sulia blocks also provided shelter to varieties of animals due to compactness of the forest.

The following prescriptions were outline to be followed during the plan period.

- a) Establishment of anti poaching gates
- b) Control over issue of gun licenses and to maintain the record at range level
- c) Restriction on felling of fruit bearing trees.
- d) Restriction on felling around water holes and cane brakes
- e) Regulation of grazing
- f) Introduction of succulent grasses.
- g) Creation of more salt licks.
- h) Creating water harvesting structures and deep game tanks inside forest having greater wildlife density.
- i) Restriction of blasting explosion, plying, of heavy vehicles in the forests.
- j) Control burning and fire protection measures.

Result – It was not possible to achieve most of the above prescriptions due to paucity of funds. Though it was not possible to improve the natural habitat of wildlife by introducing succulent grasses, planting fruit bearing trees, developing salt licks and construction of small water harvesting structures in the wildlife area the number of wildlife has not depleted due to better protection of forests both departmentally and by involvement of VSS members.

11.3.10 Minor Forest Produces (NFTP)

The MFP items play a vital role in forest management and add considerably to the State exchequer. Excepting timber and firewood all other forest produces are treated as minor forest produce (MFP) including bamboos. Most of the MFP items are available in Reserve forests as well in P.R.Fs and D.P.Fs. The important items are Kenduleaves, Sabaigrass, Cane, Genduligum, Sunaribark, Khaira, Broom grass, Nux vomica seed, Mahua flower and seed, Myrobalans, Siali leaves, Siali fiber, Mango fruit and Sal seed. The working of Bamboo is regulated as per the prescriptions of Bamboo (Overlapping) Working Circle. Kenduleaf has been nationalized since 1973 and a separate division has been functioning to deal with it. The important minor forest produces available in this division are furnished below.

11.3.11 Forest Development Agency: Forest Development Agency (FDA), Nayagarh was created consisting of 50 number of V.S.S. and also registered under Indian Society Act 1860 vide Regn. No.167/2313 of 2002. In 2nd Phase VSS created. In 3rd Phase VSS is created and in 4th Phase VSS created. The National Afforestation Programme (NAP) activities are carried out through the FDA. Most of the villages included in the FDA are adjacent to the forest. The poor Adibasi (Tribal), Scheduled Caste and General people whose livelihood

mainly depends on the forests have been included in FDA programme. At the Divisional level, a General Body of Forest Development Agency, Nayagarh was constituted with 140 members under the Chairmanship of Conservator of Forests, Berhampur Circle. After reorganization the Chairmanship is now transferred to the Conservator of Forests, Bhubaneswar Circle. The D.F.O. is the Member Secretary of the Agency. The Executive body of the F.D.A. was formed with 15 Nos. of Ex-officio members and 25 Nos. of V.S.S. representatives elected by the General Body.

11.3.12 Jagannath Bana Prakalpa:

The requirement of timber for Car Festival of Loed Jagannath has been elaborated under para 11.3.8 above. With the passage of time, difficulties were experienced in supplying timbers of the desired dimensions, quality and species due to continuous degradation of forest. In particular, suitable trees of Phasi, which occur in highly localized sites on the riverine zone, have got considerably reduced. Under these circumstances sustained supply of car timber of desired dimension, quality and species from these forests has become questionable without long term systematic efforts. To meet the future requirement, the Government has implemented a scheme named as “Jagannath Bana Prakalpa” and fixed a target of 2688 ha. of plantation in 6 Forest Divisions (Angul, Athagarh, Boudh, Dhenkanal, Nayagarh and Khurda) covering 7 districts for plantation of car timber species along with financial support from Panchayatiraj Department. The plantations were to be undertaken on Temple lands, Revenue lands and Reserved Forest free from any encroachment/ other encumbrances. The species to be raised were Asan, Dhaura, Phasi, Simul, Gambhar, Moi, Kadamba, Kansa, Paldhua, Asoka, Debadaru, Kalchua and Mahalimba which are the species specified in the Puri Car Festival Code, 1983. In addition to the above species Bandhana and Sal have already been tried as alternative species. Arjun is another species to be planted. The list of principal species may also include any other species, which may be preferred by the Temple Authorities. The major objectives of the scheme are as follows:

1. To raise, maintain and manage intensive plantations of desired species to meet the national need of Car timber on a sustained basis, and thus cater to the socio-cultural needs of the people of Orissa.
2. To reduce the burden on the natural forests of Nayagarh, Puri and other Forest Divisions.
3. To afforest the available bare lands, and thus to help improve local environment in these localities.

Accordingly, the plantation targets were fixed to carryout plantation in Nayagarh Forest Division over 400 Ha. on Forest and Revenue land. Since 1999-2000, the plantation works were carried out through D.R.D.A. funding. The target of 400 Ha. Plantation was achieved during 2004-05 and the maintenance of these plantations is going on. The plantation will be maintained for six years.

11.4 Past system of management in the last Plan of Sri Sudarsan Behera: (2007-08 to 2016-17)

The out going Plan was by Sri Sudarsan Behera, OFS-I (SB) and was for the period 2007-08 to 2016-17. The plan prescribed the following working circles for a better management.

1. The Sal Conversion Working Circle
2. The Selection Working Circle.
3. The Rehabilitation Working circle.
4. The Plantation (Overlapping) Working Circle.
5. The Forest protection (Overlapping) Working Circle.
6. The Bamboo (Overlapping) Working Circle.
7. The NTFP (Overlapping) Working Circle.
8. The Wild life (Overlapping) Working Circle.
9. The Joint Forest Management (Overlapping) Working Circle.
10. The Car Timber (Overlapping) Working Circle.

Out of ten Working Circles prescribed three Working Circle (Sl no 1,2 and 3) are independent Working Circle where as the rest are of Overlapping one.

The prescriptions, implementation and result of each Working Circle is described below. This will help in guiding the future prescriptions for the management.

11.4.1 The Sal Conversion Working Circle (1285.46 ha)

This working circle constitutes portions of Hatimunda, Palva, and Maichheli– Sampada RF Blocks. The total area now allotted to this working circle was 1285.46 Hectares. An area of 340.19 ha was been allotted to PB-I and the rest of the area was not been allotted to any PB and was kept in a floating Periodic Block to be re-allotted during the next revision after observation of change in crop condition and effect of working in coupes of Periodic Block – I. The area allotted to this Working Circle (PB-I) was divided into 20 coupes with an aim to convert the area to even aged crop within 20 years. Every year one coupe was worked out.

Result: The forest covered during plan period and beyond till revision of the plan is still in a irregular crop and regeneration of Sal and other species is not satisfactory. The opening of

crown did not encourage regeneration of light demanding species. The crop density is still below 40%.

11.4.2 The Selection Working Circle. (28837.08 ha)

This working circle has been formed with an objective to further improve the growing stock. The forest blocks have forests with good growth and mature trees available for harvest were allotted to this working Circle. Majority of the blocks included under this circle are in the Daspalla, Mahipur and Odagaon Ranges.

The Selection Working Circle as constituted in outgoing plan comprises of 12 RFs, 8 PRFs blocks and 1 DPF blocks. The total area allotted to this working circle is 28837.08 hectares, which is approximately 27 % of the total forest area covered in the plan.

The are so allotted was divided in to six felling series namely, **Ratadei, Central-1, Central-2, Chadiapalli-1, Chadiapalli- 2 and Nasaghar.**

The Selection system was adopted with emphasis on sustainable production and stability of the ecosystem. The crop and soil condition will be improved by selective opening up of the canopy. Conservative felling or no felling has been prescribed in eroded and steep hill slopes, blank areas and ten meters on both sides of Nallah banks.

The exploitable Girth was recommended as follows.

Table No 11.2 Exploitable Girth was Species		
Sl.No.	Species	Exploitable Girth At Breast Height
1	Katranga	75 cms
2	Piasal, Kurum, Mitikinia, Siris, Asan, Simili	150 cms
3	Sissoo, Gambhari,	120 cms.
4	Bandhan &Teak	105 cms.
5	Arjun, Phasi, Jamu	180 cms.
6	Sal and others	120 cms.

The number of trees that can be removed was calculated as per Smythies' Safeguarding Formula. The average number of trees recommended for removal **“for Sal 4 trees per 5 ha. and Non-Sal is 5 trees per 5 ha”**. From the available trees further 50% trees are to be retained as a safeguard measure against biotic pressure and for conservation purpose. After retaining 50% of the available trees above the exploitable diameter, the total number of trees actually to be removed felling series wise was indicated below.

Table No 11.3 Total number of trees actually to be removed felling series wise							
Name of Felling Series	Total Area assigned in Ha	No of Trees recommended for harvesting			No of Trees harvested		
		Sal	Non sal	Total	Sal	Non sal	Total
Central -1	5477.61	1699.86	2104.41	3804.27	996	748	1744
Central-2	5830.72	1358.64	2180.62	3539.26	1015	897	1912
Chadiapalli - 1	4803.21	1291.97	2024.36	3316.33	1018	1331	2349
Chadiapalli - 2	4530.36	1416.79	2048.16	3464.95	968	1390	2358
Ratadei	5529.58	769.89	1262.84	2032.73	227	641	868
Nasaghar	2665.60	801.07	913.56	1714.63	578	564	1142
Total	28837.08	7338.22	10533.95	17872.17	4802	5571	10373

On analysis it is observed that the marking has been further restricted than prescribed which was a very conservative. Against 17872 trees suggested only 10373 trees (58.04%) have been marked and harvested. As a result the number of trees now estimated above 120cm Girth Class is higher than trees in lower Girth Class (30cm- 60cm). Due to non opening of canopy the regeneration / establishment of crop has been hampered.

Subsidiary Silvicultural Operation taken up during the plan period is furnished below.

Table No 11.4 Subsidiary Silvicultural Operation taken up during the plan period										
Year	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
<i>Area covered under SSO – Timber (in Ha)</i>		2615.45	3498.11	2234	1818	821	3320	3620	2409	2408.90
<i>Coupe area</i>	3765.65	3759.97	3085.8	2261.66	2340.47	1882.12	3342.4	3635.92	2408.9	2267.67

The Coupe (timber) area covered under Subsidiary silvicultural Operation is about 79.10%.

11.4.3 The Rehabilitation working circle. (76194.11 ha)

This Working Circle includes mainly degraded Sal and Mixed Deciduous Forests having adequate rooted waste, which can be improved by cultural operations supplemented with artificial regeneration.

The total area under Rehabilitation Working Circle was increased many folds in comparison to the previous Working Plans. The Rehabilitation Working Circle as constituted in this plan comprises of 37 RFs, 19 PRFs Blocks, 23 DPFs and 63 Village forest blocks. The total area allotted to this working circle is 76194.11 ha, which is approximately 72% of the total forest area covered in the plan.

The total area was divided to 41 Treatment Series with total area of 76194.11 ha. Each Series was divided to 10 Treatment Coupes to be treated under various silvicultural practices. The area allotted and area treated under various schemes is furnished at Table No 11.5.

From analysis of Data it is observed that treatment of degraded forests assigned to RWC could not be taken up due to paucity of funds. Only 20.33% of allotted area have been treated. It has vitiated the objectives and the goal is not achieved.

The forest remains degraded and need treatment.

Table No 11.5 Area treated under Rehabilitation Working Circle											
Year	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Area proposed for treatment in Ha	8338.99	8223.85	7377.51	7541.29	7431.22	7372.45	7709.7	7146.83	7303.58	7748.75	76194.11
Area treated during Plan Period	1950	895	690	100	420	890	1130	1530	2535	5350	15490
Percentage	23.38	10.88	9.35	1.33	5.65	12.07	14.66	21.41	34.71	69.04	20.33

11.4.4 The Plantation (Overlapping) Working Circle.

In this working Circle old plantations of previous years were assigned for tending and thinning. Broadly two categories of existing plantations are included in this working circle. The first one is that of areas with old plantations of Teak and the second one are the plantations of other species including plantations taken up under Jagannath Bana Prakalpa and pure Phasi Plantation. These plantations need protection and tending/thinning operations. Both these categories of existing plantations overlap total area of **3416.60 ha** was assigned to this overlapping Working Circle. No fresh plantation was suggested.

The special objectives of the management of this Working Circle were

- To maintain and tend the existing Teak plantation under best possible condition of growth.
- To maintain and tend the existing Miscellaneous plantations including JBP under best possible condition of growth.

The area was divided in to Seven Tending Series and named after the Range.

Table No 11.6 Area divided in Trending series			
Sl No	Name of Tending Series	Area allotted in Ha	Area treated during Plan Period
1	Daspalla Plantation Tending Series	714.30	Treatment as prescribed in the plan has not been implemented
2	Gania Plantation Tending Series	677.00	
3	Khandapara Plantation Tend. Series	592.80	
4	Mahipur Plantation Tending Series	244.00	
5	Nayagarh Plantation Tending Series	405.00	
6	Odagaon Plantation Tending Series	584.00	
7	Panchirida Plantation Tending Series.	199.50	
Total	7 Series	3416.60	

The tending operation has been badly neglected and condition of plantations has not improved.

During Last Plan Period Block Plantations have been taken up for enrichment of forest crop. This has been intended for

- Introducing economic timber species to enrich forest,
- To Cover blank Space in forest and improve crop density,

The area covered under various plantation schemes during plan period is as follows.



Table No 11.7 Plantation Schemes (Plantation within the Forest Area) Area in Ha					
Year	Plantation Schemes (Plantation within the Forest Area) Area in Ha				Total
	Economic Pl	Fodder & Fuel Wood (Mixed)	NTFP	Others	
2007-08	30	0	0	50	80
2008-09		0	0		40
2009-10		0	0		0
2010-11		0	0		20
2011-12	100	0	0	40	185
2012-13	100	0	0	20	245
2013-14	100	0	0	150	280
2014-15	100	0	0		230
2015-16	100	0	0	74	234
2016-17	100	0	0	95	295
Total	630	0	0	429	1609

11.4.5 The Forest Protection (Overlapping) Working Circle.

The vulnerable forest covering 68718.25 Hect of forest area over 76 Forest Blocks were been taken into the fold of this overlapping working circle with an objectives enumerated below.

- To prevent further degradation of eco-fragile areas by maintaining adequate vegetative cover and ecologically stabilize the area.
- To enhance the natural regeneration adopting strong protection measures to minimize biotic interference and to arrest further degradation.
- To physically protect these forests from fire, grazing and also to provide strict vigil against illicit felling, encroachment and poaching.
- To protect the area from quarrying, removal of boulders, morums, rocks and soil.
- To free encroached forest area and restock encroachment areas by adequate silvicultural and administrative measures.
- To increase physical infrastructure in the remote areas to provide shelter to the forest protection staff.
- To prevent further encroachment of the Forest land by regularly maintaining the boundary line and boundary pillars
- To improve forest protection by developing road network, improving VHF coverage and constituting special protection units.



The total areas allotted were divided to Protection Units as detailed below.

Table No 11.8 Total area allotted devided to Protection Units					
Range	Protection Unit	R.F. Area in Ha.	PRF Area in Ha.	DPF Area in Ha.	Total area in Ha.
Daspalla	Daspalla - I	7037.44	1051.87	1531.11	9620.42
	Daspalla - II	8648.67	783.25	408.65	9840.57
	Range Total	15686.11	1835.12	1939.76	19460.99
Gania	Gania	3024.03	260.47	666.17	3950.67
Khandapada	Khandapada	8488.51			8488.51
Mahipur	Mahipur- I	5847.76			5847.76
	Mahipur - II	3819.09	136.77	62.08	4017.94
	Range Total	9666.85	136.77	62.08	9865.7
Nayagarh	Nayagarh	4495.20	583.13		5078.33
Odagaon	Odagaon	7207.32		1045.07	8252.39
Panchrida	Panchrida	7941.36	5580.29	100.01	13621.66
	Division Total	56509.38	8395.78	3813.09	68718.25

During the plan period no encroachment could be evicted but further encroachment has been checked. Fire incidence has been controlled but further strengthening of efforts is required. Infrastructures for staffs / mobile squad have been constructed and mentioned under Chapter –I (Forest Roads & Building). The efforts are appreciable and it has yielded required result.

11.4.6 The Bamboo (Overlapping) Working Circle:

This Working Circle was an overlapping working circle comprising of all the forest blocks have good concentration of bamboo crop. This circle overlaps the bamboo forest areas of the Selection Working Circle and the Rehabilitation working circle in the outgoing plan. 30 Nos. of Forest Blocks are included in this Working Circle covering a total area of **61151.15** ha. This area includes 22 Nos. of R.F. covering 56190.79 ha. 5 Nos. of PRF covering 1589.60 ha. and 3 DPFs covering 3370.75 ha.

The bamboo working coircles were managed with an objectives furnished below.

- To ensure regular silvicultural operations to prevent deterioration of the growing stock.



- To enforce scientific cutting rules to ensure maximum yield on sustainable basis so as not to effect the future yield
- To meet the bona fide requirements of bamboo artisans, local people and bamboo based industry.
- To rehabilitate the exhausted bamboo bearing areas through appropriate measures like tending, soil working, plantation etc.
- To generate employment for the local poor people.

For bamboo working the entire area was assigned to 17 Cutting series and yield was expected to a tune of 25560 SU

Table No 11.9 Bamboo Working area assigned to cutting series			
SI No	Felling Series	TOTAL	
		Area in Ha.	Yield in SU \$
1	Ambalimba (AL)	554.42	278
2	Poibadi (PO)	1619.84	195.68
3	Pokharigochha (Pg)	2591.05	678.28
4	Central (North) (CI)(N)	5564.2	5931.51
5	Central (South) (CI)(S)	4121.93	2625.66
6	Chadiapalli (CP)	6061.23	1879.63
7	Nasghar (Ns)	1857.38	1655.06
8	Nuagaon (Ng)	2785.34	1755.12
9	Kuradhinisha Ext(Kns)	2615.42	789.87
10	Ragadimada (Rm)	6305.79	1619.72
11	Ratadei (Rd)	2085.57	1684.56
12	Sulia (Sl)	7692.75	680.46
13	Sapua (Sp) (North)	3551.64	1116.83
14	Sapua (Sp) (South)	2456.74	581.4
15	Gochha (Gc)	4391.79	1636.39
16	Gayalsingh (Gs)	1399.59	607.37
17	Pathraganda (Pd)	5496.47	1844.99
	Total	61151.15	25560.53

The production has been estimated for one Cycle. During the plan period 2½ Cycles will be taken up. Hence the production during the Plan Period is $25560.53 \times 2.5 = 63901.325$ SU. Against this production estimation actual achievement during Plan Period is 12850 SU i.e. 20% only. This indicates a poor potential of Bamboo in the division.

**Simultaneous Silvicultural Operation of Bamboo:**

After bamboo coupe working, either simultaneous silvicultural Operation or in next year is usually taken up for improvement of Bamboo Clumps. The SSO taken up during last plan period is furnished below. Bamboo silvicultural Operation is only 32.18% only of the target.

Table No 11.10 Simultaneous Operation of Bamboo											
Cycle	1 st Cycle				2 nd Cycle				3 rd Cycle (P)		
Year	2007-8	2008-9	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Area covered under SSO (In ha)	-	3006.34	5525.5	3200	2400	4807	5500	6000	6000	12750.39	49189.23

11.4.7 The NTFP (Overlapping) Working Circle

The Non Timber Forest Produce (Overlapping) Working Circle was prescribed overlapping the entire Working Plan area of the Division. The objectives of this Working Circle are

- To regulate and optimize extraction and utilization of various NTFPs in conformity with Government policy with a view to promote sustainable management of forest.
- 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.
- To develop and extend skills to the local people including the tribals for sustainable collection, extraction and utilization of various NTFPs.
- To protect NTFP trees, promote their regeneration and develop productivity by taking suitable silvicultural measures.
- To create alternate employment/ income generation by developing village and cottage industries by using the locally available NTFP items as input / raw materials.

All the NTFP collection except Sal Leaf are being regulated by Panchyats as per Policy on procurement and trade of Non Timber Forest Produces during March 2000 and the Gram Panchayat (Minor Forest Produce) Rules'2002

The present condition of NTFP in the Division is not encouraging and in a path of degradation. It needs special efforts to improve the status of NTFP in the Division.



11.4.8 The Wild life (Overlapping) Working Circle:

Wild life (Overlapping) Working Circle was constituted which extends to almost the entire working plan area of the Division. The total operational area of this working circle (RFs, PRFs and DPFs) was 86586.54 ha.

The objectives of Management for this Working Circle were as furnished below.

- i. To conserve, protect and improve wild life habitat with special emphasis on the proposed Elephant Reserve/Corridor.
- ii. To promote wild life in general and endangered species of fauna in particular.
- iii. To create awareness among the local people 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 in the division
- vi. For prevention of wildlife related crimes.

During plan period constant efforts have been made to protect the wildlife habitat and improve the condition by making water body, plantations and enrichment of forests with fooder species.

Result:

The concentration of wild animals in the vicinity of Sanctuary has increased. In other parts, the animal concentration has improved. Combined efforts by Wildlife Division and territorial division is required for a sustained animal management.

11.4.9 The Joint Forest Management (Overlapping) Working Circle:

The JFM (Overlapping) Working Circle includes the Working Plan area already under the protection of the Vana Samrakshayna Samities (VSS) constituted as per the Joint Forest Management Resolution, 1993 of the State. All Village forests included in outgoing working plan are also placed in this Working Circle. The VFCs which were constituted to manage these forests as per Village Forest Rules, 1985 continued to manage and protect these forests. They will also implement the prescriptions of this working circle. The objectives of this working circle are as furnished below.

- i. To spread the message of JFM to every forest fringe village by mass awareness campaign
- ii. To involve communities in forest and natural resource management.



- iii. To make the people and Forest Department equal partners in management.
- iv. To restock the barren and blank areas through artificial regeneration.
- v. To increase the productivity of soil through suitable soil and moisture conservation activities.
- vi. To encourage people to rational utilization of their own community resources for the betterment of the community.
- vii. To involve people in NTFP collection and trade.
- viii. To create income generating activities in the villages & reduce dependence on Forest.
- ix. To study the scope of enhancing the network of VSS protection areas.

During the plan Period the number of VSS increased to 336 from 271 VSS at the beginning of the plan period. At the end of the plan period 34304.73 ha forest has been assigned against 27,487.70 ha at the beginning. Though No village forest has been harvested, the VSS were financially benefited from Timber Coupes / Bamboo Coupes. In financial term the VSS obtaining their share from Timber harvesting (Interim / Final) and Bamboo harvesting is as follows.

Table No 11.11 Timber Harvesting/ Bamboo Harvesting

Description (Benefits)	Year										Total
	2007- 8	2008- 9	2009- 10	2010- 11	2011- 12	2012- 13	2013- 14	2014-15	2015-16	2016-17	
From Timber Harvesting								62720.00	39795.00	25876.00	168391.00
From Bamboo Harvesting.								-	-	-	-
Total								62720.00	39795.00	65876.00	168391.00

11.4.10 The Car Timber (Overlapping) Working Circle.

Divisional Forest Officer, Nayagarh on the direction of the State Government supplies the annual requirement of timbers for the Car Festival at Puri, free of cost including delivery at Rathagada, Puri. Similarly for the Car Festival of Lord Lingaraj at Bhubaneswar, which is celebrated on the day of “Ashokastami” in the month of “Chaitra” on the day preceding “Rama Navami”, the Divisional Forest Officer Nayagarh also supplies timber for the Car Festival. This working circle was constituted with an special objectives as enumerated below.



- i.) To maintain and improve the available growing stock with a view to ensure sustained supply of timber for car festival annually.
- ii.) To induce conditions that would promote regeneration of principal species specially for Asan, Dhaura and Sal in these Forests.
- iii.) To ensure conditions that would encourage bio-diversity, soil and moisture conservation, with canopy closure.
- iv.) To restock barren areas through artificial regeneration with desirable indigenous species like Asan, Dhaura and Simili.
- v.) To increase heterogeneity in the forest crop by encouraging natural regeneration of principal species and to encourage ecological stability.

Table No 11.12 Timber Requirement for Ratha Yatra of Lord Jagannath, Puri

Species	Purpose	Dimension (Length x girth in feet)	Qty. In nos.
Phasi	Tumba	9 x 6	22 Nos.
Phasi	Pahi	12 x 6	50 Nos.
Dhaura	Danda and Akha	40 x 3	50 Nos.
Dhaura	Aramundi	12 x 3.17	428 Nos.
Asan	Gayala	40 x 3	312 Nos.
		TOTAL	862 Nos.

Table No 11.13 Timber requirement for Rukuna Ratha of Lord Lingaraj, Bhubaneswar

Species	Dimensions (ft.)	Quantity (Nos.)	Remarks
Mai	15 x 5	5	The quantity and sizes of required timbers have been differs from year to year.
Semul	15 x 5	5	
Sal (Poles)	18 x 2.5	3	
Sal	15 x 14	2	
Sal	10 x 5	8	
Kumbhi	15x5	5	
	TOTAL	28 Nos.	

Against the above requirement, timber supplied for both the Purpose is furnished below.



Table No 11.14 Timber Supplied for Puri/Bhubaneswar Ratha Yatra											
Description (Timber supplied)	Year (in no of Pieces)										Total
	2007-8	2008-9	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	
For Puri Ratha Yatra	661	744	774	719	728	633	677	691	870	754	7251
Percentage of Requirement	76.68	86.31	89.79	83.41	84.45	73.43	78.54	80.16	100.93	87.47	84.12

From the above data it is observed that supply of specific timber is gradually reducing due to non availability of such timber in the division. The management practices needs to be revamped to grow such timber for sustaining the supply chain of Ratha Katha to Puri and Bhubaneswar.

The steps taken to meet the car timber requirement seem to be inadequate. A dedicated and devotional approach is required to be taken to meet the challenge in future.

11.4.11 Management under Annual working Schemes:

The out going Working Plan was valid for the period 2007-08 to 2016-17. After expire of the Plan, the forests were managed under Annual Schemes 2017-18, 2018-19, 2019-20 and 2020-21duly approved by the MoEF&CC, Integrated Regional Office, Bhubaneswar.

The targets / achievements pertaining to each year / working circle wise is furnished below.

Table No 11.15 Implementation of Work under Annual Working Schem. (Area in Ha)								
Working Circle	Year 2017-18		Year 2018-19		Year 2019-20		Year 2020-21	
	Target	Achievement	Target	Achievement	Target	Achievement	Target	Achievement
Selection WC	2240.01	0	6241.60	4014.40	3227.22	3072.18	2306.80	2306.80
RWC	8298.99	400	8223.85	4761	7357.44	560.0	7536.29	2293.014
PI WC	335.00	35.0	0	50.0	0	15.0		27.42
Bamboo (OL) WC	13537.04	2623.41	15998.25	1192.05	17210.06	478.07	14378.83	3462.96

On analysis it is observed that there is a gap between target and achievement in case of all working circles especially Rehabilitation Working Circle, Bamboo (O) WC. This gap is arising



due to faucity of funds. It is required to resource mobilization for improvement of Degraded Forests.

11.5 Special works of improvement undertaken.

During Plan period special works has been taken up to improve

- a- Infrastructures like buildings as provided under Para 1.1.4.
- b- Improvement of Central Nursery at Mahipur.
- c- Improvement of communication net work.
- d- Involvement of People through FDA.

11.6 Past Yield, Revenue and Expenditure:

The yield from Forest Resources is from Timber, Fire wood, Bamboo and Sal Leaf. Yield from other NTFP are not recorded and documented. The yield from these count are as furnished below (table No 11.16) .

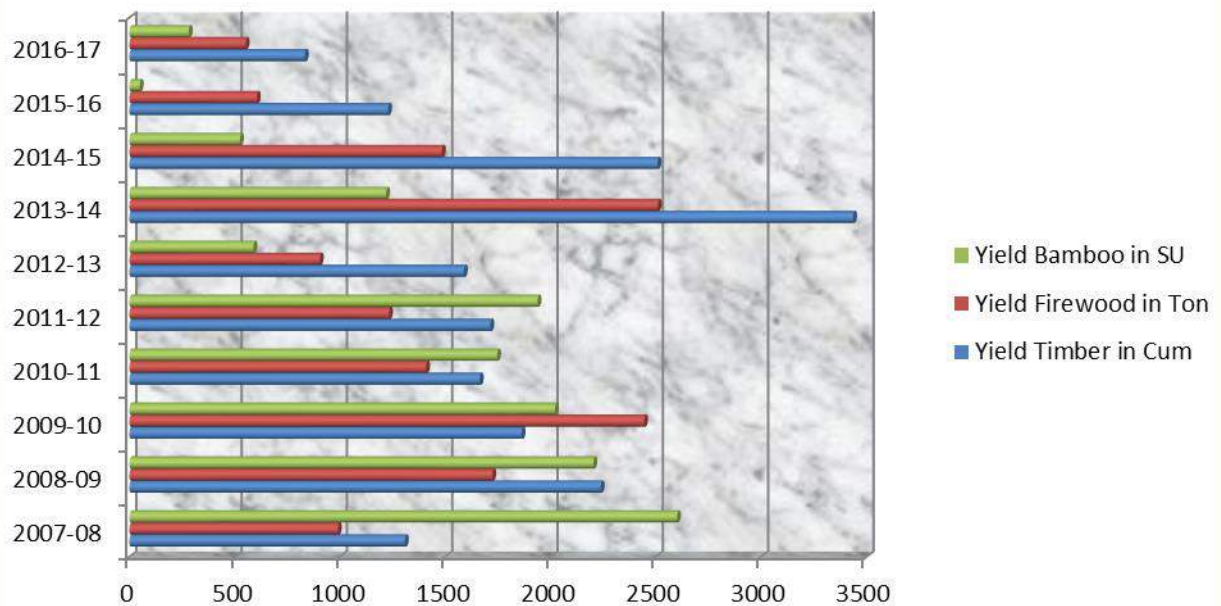
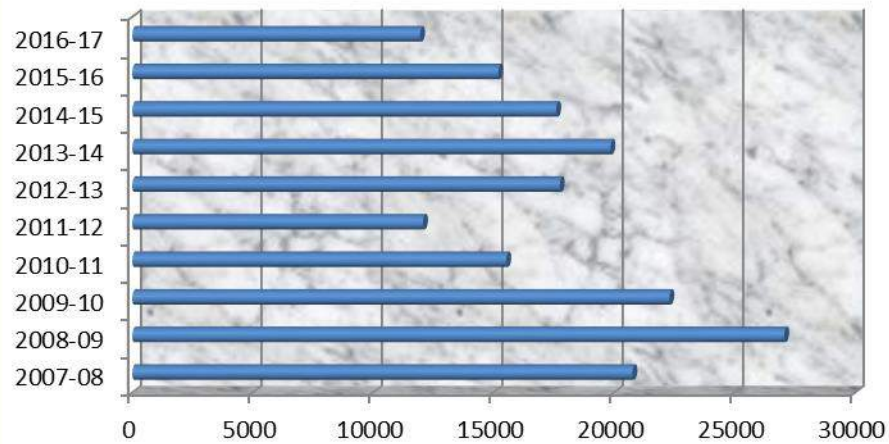
11.6.1 Past Yield:

Past yield on Timber, Bamboo, Firewood have been dicussed in respectyive chapters / para. However it is reproduced below at table No 11.17

Table No: 11.17 Past Yield				
Year	Yield			Sal Leaf
	Timber in Cum	Firewood in Ton	Bamboo in SU	
2007-08	1307.621	990	2600	20765.8
2008-09	2237.841	1723	2203	27068
2009-10	1862.445	2444	2021	22300
2010-11	1663.56	1409	1746	15527
2011-12	1713.483	1233	1938	12070
2012-13	1587.89	904	589	17750
2013-14	3435.926	2509	1219	19851
2014-15	2507.586	1484	525	17600
2015-16	1227.758	605	49	15200
2016-17	832.967	552	282	11950



Production - Sal Leaf in Qt





11.6.2 Revenue & Expenditure.

The revenue received & expenditure incurred during plan period in this division is as given at Table No 11.18

Table 11.18 Revenue & Expenditure			
Year	Revenue in Lakh Rs	Expenditure in Lakh Rs	Ratio Rev: Exp
2007-08	29.84274	232.80580	1:7.8
2008-09	73.26342	185.59150	1:2.5
2009-10	55.47407	205.75790	1:3.7
2010-11	125.38831	201.26000	1:1.6
2011-12	117.76778	225.46789	1:1.9
2012-13	142.92653	317.85079	1:2.2
2013-14	136.79255	553.08118	1:4
2014-15	154.23280	471.94266	1:3
2015-16	241.80075	643.91848	1:2.6
2016-17	61.94770	458.66011	1:7.4
2017-18	33.34651	221.94106	1:6.65
Total	1172.78316	3718.27737	01:03.2

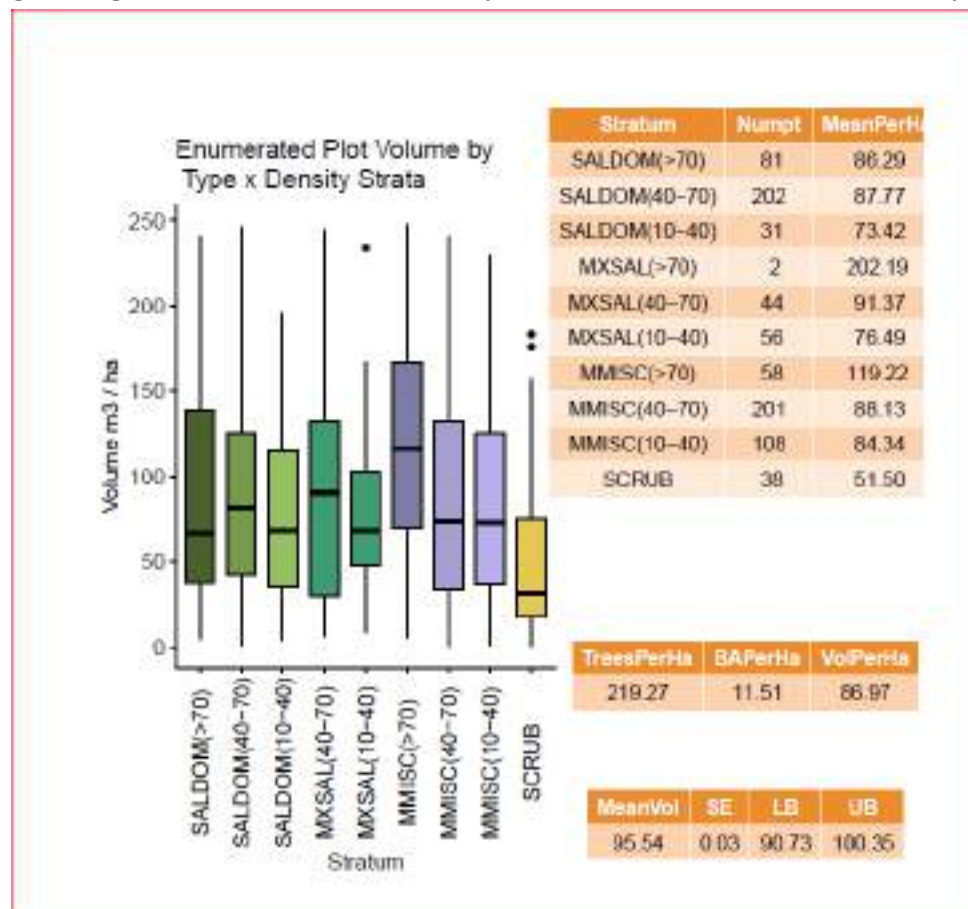


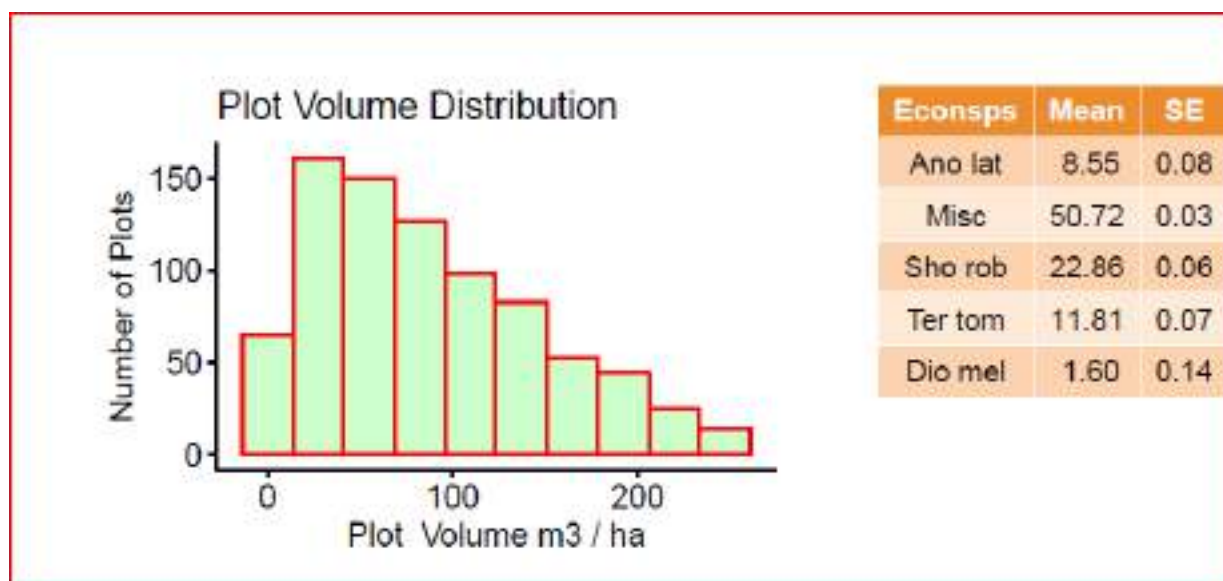
CHAPTER-12

STATISTICS OF GROWTH AND YIELD

12.1 Statistics of Growth and yield:

Nayagarh Forest Division is one of the good moist forests of the State. It is a combination of Plane Forests, Hill Forests, Valley Forests and Riparian Forests. To assess the Growing stock Sample enumeration has been taken up over 917 points. Analysis by NRSC has been carried out over 821 Sample points through various modeling by NRSC, Hyderabad. The growing stock has been assessed. The relevant portion is furnished below to indicate the growing stock position in Nayagarh Division.



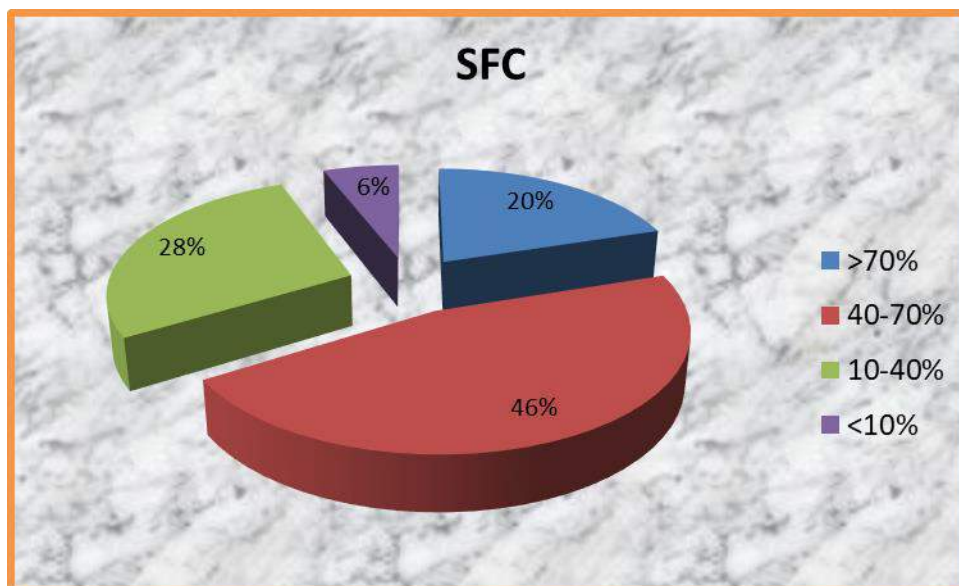
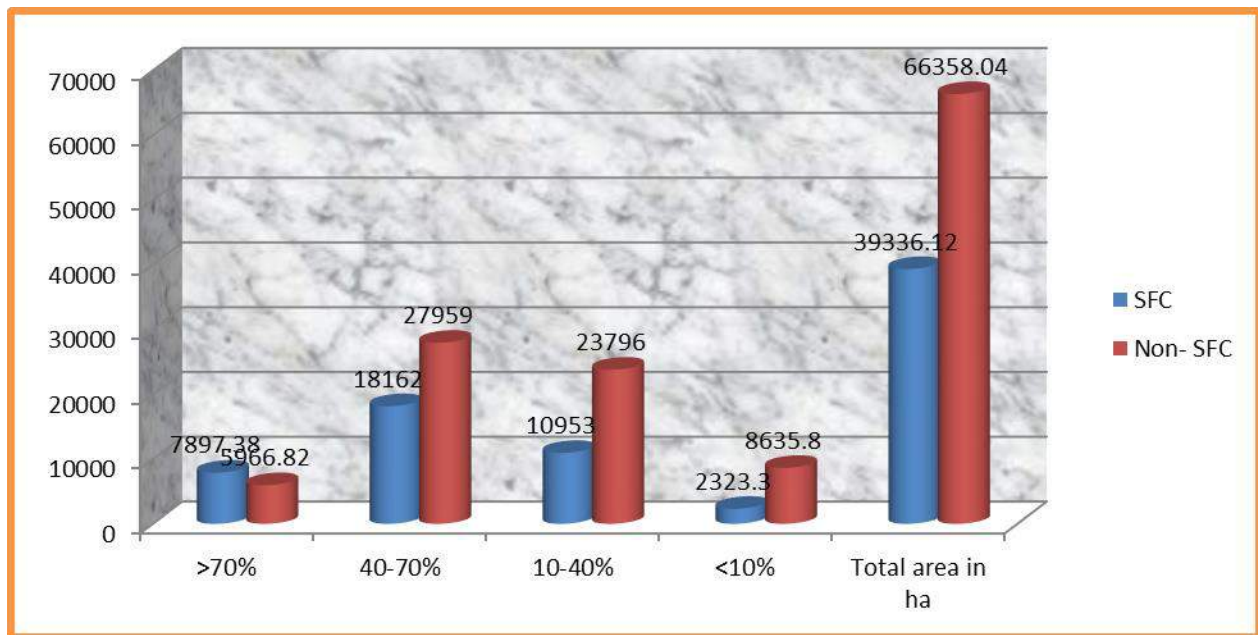


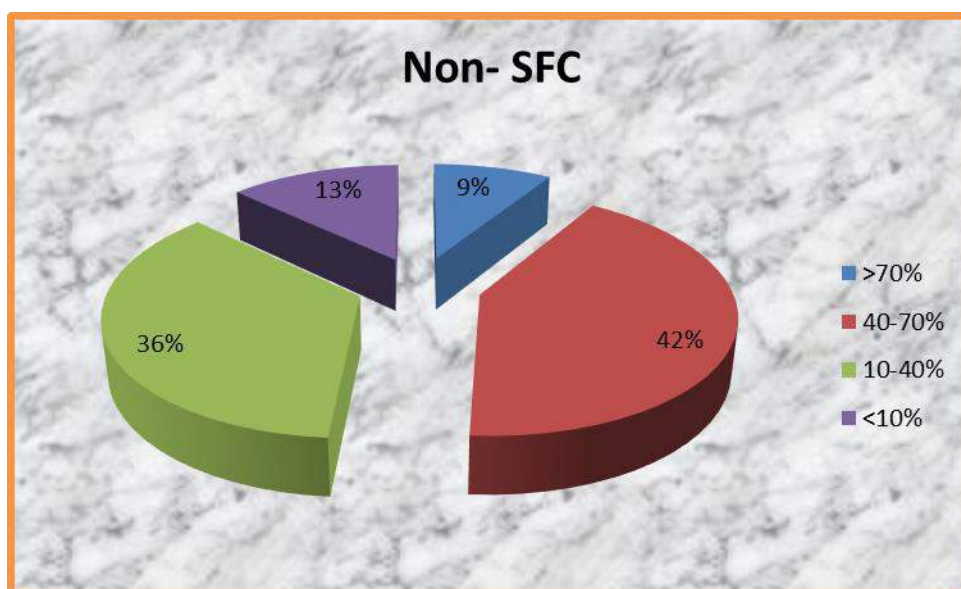
The overall crop density and other parameters have been assessed and furnished at Table No 12.1

Table No 12.1 Stand volume parameters – Nayagarh Division.						
Criteria						
No of trees / ha	Basal Area per ha (M ³)	Volume per Ha (in M ³)	Mean Volume (in M ³)	Standard Error	LB (in M ³)	UB (in M ³)
219.27	11.51	86.97	95.54	0.03	90.73	100.35

The Overall crop density and area under each density class has been furnished by ORSAC. The details are as given below (Table No 12.2).

Table No 12.2 Forest Area under Different density Class (Sal & Non sal)					
Category	Area under different Density class (in Ha)				Total
	>70%	40-70%	10-40%	<10%	
Sal Forest (SFC)	7897.38	18162	10953	2323.3	39336.12
No of Plots in SFC	93	229	115	10	447
Density Class %	20.08	46.17	27.85	5.91	100
Non Sal Forest (Non-SFC)	5966.82	27959	23796	8635.8	66358.04
No of Plots in Non SFC	48	218	80	28	374
Density %	8.99	42.13	35.86	13.01	100
Div. Total					
Area (All)	13864.2	46121.17	34749.69	10959.1	105694.2
Sample plots	141	447	195	38	821
%	13.12	43.64	32.88	10.37	100.00





It is observed that Non Sal Forest area (62.8%) is more than the Sal Forest (37.2%). The species composition in Non sal Forest is more of Dryer Tract. It seems that more and dryer plant community is invading towards Moist Sal Forests of the Division.

12.2 Annual Increment:

From various growth data volume equation for some important species has been derived, this is quite close to ground reality. The increment varies in different age classes. The higher increment is recorded in two phases of the trees. One during young phase i.e. within 20 years and then 40- 50 years when it responded to thinning process and put diameter growth. The increment assessed for various species is as given at **Table No 12.3**

Table No 12.3 Growth Pattern & Increment assessed.						
Name of Species	Growth in in cum					Annual increment predicted in Cum
	10-20 Yr	20-30 Yr	30-40Yr	40-50 Yr	50-60Yr	
Sal	0.02655	0.346908	0.28793	0.618398	0.995039	0.045497
Bija	0.068848	0.12334	0.27832	0.396387	0.648105	0.0303
Asan	0.15082	0.367031	0.577969	0.69	1.0425	0.056566
Arjun	0.145079	0.446425	0.712149	0.657187	1.058907	0.060395
Dhaura	0.158614	0.483691	0.614414	0.295781	0.457969	0.040209
Teak	0.066225	0.184287	0.665738	1.06395	1.296007	0.065524



The Forest is the greatest Carbon sink. It is associated with bio mass production and retention over a long period. No systematic carbon sequestration has been assessed; an attempt has been made to predict the carbon stock of Nayagarh Division.

The available Biomass over one hectare of Forest is projected at 95.54cum (Leaves / braches etc not included)

The forest area (RF/ DFP/ PRF / PF) of the Division is 112500.07 ha. The total Growing Stock of the division is projected at 10748257 cum or say 107.48 lakh Cum. Taking average wood density at 0.7 T/ cum and 30 ton of Bio Mass contains 11.7 T carbon, the forest of Nayagarh may contain 29.128 lakh Tons of carbon. All steps will be initiated to induce growth through silvicultural operation to enhance the carbon sink to grow 3-4% every year.

12.2.1 Forest Block Wise Carbon Stock:

There are Reserved Forests, DPF, PRF and PF in the division. The total area under natural forest is 112500.07 ha. The carbon Stock of each Forest block is furnished below.

Table 12.4(a) (RF) Carbon stock of each Forest Block							
Sl No	Name of RF	Area in Ha.(Notified)	Growing Stoch Cum/ ha	Density T/ Cum	Total G. Stock in 10 ³ Tons	Carbon Equivalent in 10 ³ T	CO2 equivalent 10 ³ T
1	Pokharigochha	5154.89	95.54	0.7	344.749	131.005	480.350
2	Central	10586.6	95.54	0.7	708.011	269.044	986.495
3	Chadiapalli	5466.09	95.54	0.7	365.561	138.913	509.349
4	Nuagaon	1165.5	95.54	0.7	77.946	29.620	108.605
5	Nasghar	1683.49	95.54	0.7	112.588	42.784	156.873
6	Poibadi	777	95.54	0.7	51.964	19.746	72.403
7	Chhadesh	2169.12	95.54	0.7	145.066	55.125	202.126
8	Ambalimba	579.51	95.54	0.7	38.756	14.727	54.001
9	Hatimunda	8094.53	95.54	0.7	541.346	205.711	754.275
10	Ratadei	2848.99	95.54	0.7	190.535	72.403	265.478
11	Palva	3795.55	95.54	0.7	253.839	96.459	353.682
12	Maichheli Sampada	309.99	95.54	0.7	20.732	7.878	28.886
13	Ragadimada	5196.17	95.54	0.7	347.509	132.054	484.197
14	Panchupandav	832.03	95.54	0.7	55.645	21.145	77.531
15	Gochha	12213.4	95.54	0.7	816.808	310.387	1138.085
16	Patharaganda	1214.06	95.54	0.7	81.194	30.854	113.130
17	Khatia- Damasahi (5 Patch)	267.9	95.54	0.7	17.917	6.808	24.964



18	Gayalsingh	1353.27	95.54	0.7	90.504	34.392	126.102
19	Bahadajhola	465.39	95.54	0.7	31.124	11.827	43.367
20	Balisinsa – Badhulipur (2 Patch)	366.24	95.54	0.7	24.493	9.307	34.127
21	Sulia	6531.23	95.54	0.7	436.796	165.982	608.602
22	Balaram	364.62	95.54	0.7	24.385	9.266	33.977
23	Rukhi	259.81	95.54	0.7	17.376	6.603	24.210
24	Patharakata	128.85	95.54	0.7	8.617	3.275	12.007
25	Matia (2 Patch)	1359.74	95.54	0.7	90.937	34.556	126.705
26	Makarprasad	1003.62	95.54	0.7	67.120	25.506	93.521
27	Bankamunda	1810.97	95.54	0.7	121.114	46.023	168.752
28	Manibhadra (2 Patch)	518	95.54	0.7	34.643	13.164	48.269
29	Gania	453.25	95.54	0.7	30.312	11.519	42.235
30	Similibanka	186.96	95.54	0.7	12.504	4.751	17.422
31	Pathara	49.78	95.54	0.7	3.329	1.265	4.639
32	Barakhola	753.53	95.54	0.7	50.395	19.150	70.216
33	Pithakhai	331.84	95.54	0.7	22.193	8.433	30.922
34	Bandra	222.58	95.54	0.7	14.886	5.657	20.741
35	Chadeibasa	97.12	95.54	0.7	6.495	2.468	9.050
36	Sapua	8073.49	95.54	0.7	539.939	205.177	752.315
37	Sikharpur	1138.01	95.54	0.7	85.145	32.355	118.635
38	Guriabari (2 Patch)	576.27	95.54	0.7	38.540	14.645	53.699
39	Mainisibindha	603.79	95.54	0.7	40.380	15.345	56.263
40	Hanumantia	740.58	95.54	0.7	49.529	18.821	69.010
41	Patrabani-Jamubani	225.41	95.54	0.7	15.075	5.728	21.004
42	Dengabahada	736.53	95.54	0.7	49.258	18.718	68.632
	Div. Total	90705.713	95.54	0.7	6075.251	2308.595	8464.850



Table No 12.(b) (PRF) Carbon Stock – Nayagarh Division

Sl No	Name of PRF	Area in Ha. (Notified)	Growing Stock Cum/ ha	Density T/ Cum	Total G. Stock in 10 ³ Tons	Carbon Equivalent in 10 ³ T	CO2 equivalent 10 ³ T
1	Pankalasahi	66.85	95.54	0.7	4.471	1.699	6.229
2	Khaman	71.62	95.54	0.7	4.790	1.820	6.674
3	Baisipalli Ext-1	80.93	95.54	0.7	5.412	2.057	7.541
4	Nephari	67.66	95.54	0.7	4.525	1.719	6.305
5	Gochhabari	521.23	95.54	0.7	34.859	13.246	48.570
6	Gambhariganda	322.33	95.54	0.7	21.557	8.192	30.036
7	Boni	106.83	95.54	0.7	7.145	2.715	9.955
8	Baliberena	22.98	95.54	0.7	1.537	0.584	2.141
9	Dhundugadia	566.56	95.54	0.7	37.890	14.398	52.794
10	Chadeypalli Ext	403.87	95.54	0.7	27.010	10.264	37.634
11	Baisipalli Ext-II	129.49	95.54	0.7	8.660	3.291	12.066
12	Baisipalli Ext- III	150.94	95.54	0.7	10.095	3.836	14.065
13	Araniganda	26.91	95.54	0.7	1.800	0.684	2.508
14	Gumurakhola	258.99	95.54	0.7	17.321	6.582	24.134
15	Phasi Ext.-I	30.35	95.54	0.7	2.030	0.771	2.828
16	Matia	27.84	95.54	0.7	1.862	0.708	2.594
17	Bankamunda Ext-I	191.01	95.54	0.7	12.774	4.854	17.799
18	Phasi Ext.- II	114.12	95.54	0.7	7.632	2.900	10.634
19	Phasi Ext.- III	56.65	95.54	0.7	3.789	1.440	5.279
20	Baisipalli Extn – IV	544.7	95.54	0.7	36.428	13.843	50.757
21	Makarapalli	1359.74	95.54	0.7	90.937	34.556	126.705
22	Banijhari	2810.17	95.54	0.7	187.939	71.417	261.861
23	Sukaramala	2533.33	95.54	0.7	169.424	64.381	236.064
24	Ambamundia	323.74	95.54	0.7	21.651	8.227	30.167
25	Palva	76.48	95.54	0.7	5.115	1.944	7.127
26	Ragadimada	77.69	95.54	0.7	5.196	1.974	7.239
27	Barabanka	424.92	95.54	0.7	28.418	10.799	39.595
	Total PRF	11367.93	95.54	0.7	760.264	288.900	1059.302



Table No 12.4(c) (DPF) Carbon Stock – Nayagarh Division.

Sl No	Forest Block (DPF)	Area in Ha	Growing Stock Cum/ ha	Density T/ Cum	Total G. Stock in 10 ³ Tons	Carbon Equivalent in 10 ³ T	CO ₂ equivalent in 10 ³ T
1	Ranga	278.6	95.54	0.7	18.63	7.27	26.64
2	Baijhari	73.6	95.54	0.7	4.92	1.92	7.04
3	Sirisabadi	968.2	95.54	0.7	64.75	25.25	92.59
4	Kerabari	37.8	95.54	0.7	2.53	0.99	3.62
5	Nandagadu	35	95.54	0.7	2.34	0.91	3.35
6	Sikharpanga	61.5	95.54	0.7	4.11	1.60	5.88
7	Kuradhinisa	587.5	95.54	0.7	39.29	15.32	56.19
8	Kuradhinisa Ext.	2436.29	95.54	0.7	162.93	63.54	233.00
9	Nuagaon	48.05	95.54	0.7	3.21	1.25	4.60
10	Bankamunda Ext-II	524.48	95.54	0.7	35.08	13.68	50.16
11	Matia Ext .	601.83	95.54	0.7	40.25	15.70	57.56
12	Ambaghati	81.48	95.54	0.7	5.45	2.13	7.79
13	Arakhataila	247	95.54	0.7	16.52	6.44	23.62
14	Makarprasad	66	95.54	0.7	4.41	1.72	6.31
15	Kurala	630.11	95.54	0.7	42.14	16.43	60.26
16	Dhadi	235.53	95.54	0.7	15.75	6.14	22.53
17	Takarakhai	72.84	95.54	0.7	4.87	1.90	6.97
18	Nariamba	699.31	95.54	0.7	46.77	18.24	66.88
19	Netabandha	101.33	95.54	0.7	6.78	2.64	9.69
20	Binjhagiri	257.14	95.54	0.7	17.20	6.71	24.59
21	Bhagabati	133.02	95.54	0.7	8.90	3.47	12.72
Division Total		8176.61	95.54	0.7	546.84	213.27	781.97



Table No 12.4(d) (PF) Carbon Stock – Nayagarh Dicision.								
Sl No	Name of PF	Mouza	In Ha	Growing Stock Cum/ ha	Density T/ Cum	Total G. Stock in 10 ³ Tons	Carbon Equivalen t in 10 ³ T	CO2 equivalen t 10 ³ T
1	Arakhataila	Arakhataila	95.75	45	0.7	3.02	1.18	4.31
2	Bindhyagiri	Bindhyagiri	347.87	45	0.7	10.96	4.27	15.67
3	Kasia	Khandpada	321.98	45	0.7	10.14	3.96	14.50
4	Badadurupa	Badadurupa	64.58	45	0.7	2.03	0.79	2.91
5	Banuasahi	BanuaSahi	40.21	45	0.7	1.27	0.49	1.81
6	Bamuri	Bamuri	57.48	45	0.7	1.81	0.71	2.59
7	Turuturi	Turuturi	116.58	45	0.7	3.67	1.43	5.25
8	KumbhiaPalli	KumbhiaPalli	62.24	45	0.7	1.96	0.76	2.80
9	Bhandar	Bhandar	125.04	45	0.7	3.94	1.54	5.63
10	Chhanchunia	Chhanchunia	303.51	45	0.7	9.56	3.73	13.67
Division Total- 10 block			1535.2	45	0.7	48.36	18.86	69.15
11	All VF (63 Site)		579.45	45	0.7	18.25	7.12	26.10
G. Total			2114.69	45	0.7	66.61	25.98	95.26
Total (RF+PRF+DPF+PF+VF)						7449.014	2897.45	10624.13

12.2.2 Carbon Stock (For TOF Plantations):

Plantations have been raised outside the Forest area. The plantations are in good growing condition. It is also contributing to Sequestration of carbon and act as carbon sink.

It is felt necessary to calculate the carbon stock in TOF created / maintained by the department. It is furnished below in Table No 12.5



Table No 12.5 Carbon stock in TOF created/maintained by the Department

Sl No.	Planting Site	Area in Ha	Growing Stock Cum/ ha	Density T/ Cum	Total G. Stock in 10 ³ Tons	Carbon Equivalent in 10 ³ T	CO ₂ equivalent in 10 ³ T
1	Ranipada Water shed	20	30	0.6	0.36	0.14	0.51
2	Patharkata Water shed	20	30	0.6	0.36	0.14	0.51
3	Khuntubandha Water shed	25	30	0.6	0.45	0.18	0.64
4	Bhatasahi Watershed	10	30	0.6	0.18	0.07	0.26
5	Analapata Watershed	13.5	30	0.6	0.243	0.09	0.35
6	Golapokhari Watershed	5	30	0.6	0.09	0.04	0.13
7	Mituani Watershed	40	30	0.6	0.72	0.28	1.03
8	Kanasingh Watershed	19.5	30	0.6	0.351	0.14	0.50
9	Kumbharapada Watershed	17	30	0.6	0.306	0.12	0.44
10	Baraput Watershed	15	30	0.6	0.27	0.11	0.39
11	Dimiripadar Watershed	20	30	0.6	0.36	0.14	0.51
12	Naitaila Watershed	20	30	0.6	0.36	0.14	0.51
13	Kosalanga Watershed	50	30	0.6	0.9	0.35	1.29
14	Maniakot Watershed	20	30	0.6	0.36	0.14	0.51
15	Achupada Watershed	30	30	0.6	0.54	0.21	0.77
16	Sikhargochha Watershed	60	30	0.6	1.08	0.42	1.54
17	Subarnapur Watershed	65	30	0.6	1.17	0.46	1.67
18	Suankhala Watershed	75	30	0.6	1.35	0.53	1.93
19	Mahulia Watershed	40	30	0.6	0.72	0.28	1.03



20	Karadamada Watershed	50	30	0.6	0.9	0.35	1.29
21	Bulunda Watershed	30	30	0.6	0.54	0.21	0.77
22	Khajuribania Watershed	20	30	0.6	0.36	0.14	0.51
23	Nariamba Watershed	90	30	0.6	1.62	0.63	2.32
24	Balisinsa Watershed	25	30	0.6	0.45	0.18	0.64
25	Ambapada Watershed	40	30	0.6	0.72	0.28	1.03
26	Tulubi Watershed	25	30	0.6	0.45	0.18	0.64
27	Karsing Watershed	30	30	0.6	0.54	0.21	0.77
28	Punipada Watershed	35	30	0.6	0.63	0.25	0.90
29	Kurumuduli Watershed	40	30	0.6	0.72	0.28	1.03
30	Jamusahi Watershed	115	30	0.6	2.07	0.81	2.96
31	Nachipur Watershed	145	30	0.6	2.61	1.02	3.73
32	Dengajgari Watershed	30	30	0.6	0.54	0.21	0.77
33	Jakeda Watershed	30	30	0.6	0.54	0.21	0.77
34	Tulubi Watershed	25	30	0.6	0.45	0.18	0.64
35	Kakalama Watershed	20	30	0.6	0.36	0.14	0.51
36	Jaada RL	20	30	0.6	0.36	0.14	0.51
37	Chandijhari RL	20	30	0.6	0.36	0.14	0.51
38	Brundabanapur RL	20	30	0.6	0.36	0.14	0.51
39	Beladwara RL	20	30	0.6	0.36	0.14	0.51
40	Lembugochha RL	10	30	0.6	0.18	0.07	0.26
41	Alapanga RL	10	30	0.6	0.18	0.07	0.26
42	Lunisahi RL	20	30	0.6	0.36	0.14	0.51
43	Sikharapur RL & Barapalli RL	10	30	0.6	0.18	0.07	0.26
44	Jaharkot & Kismat Kendupalli RL	10	30	0.6	0.18	0.07	0.26



45	Arasahi RL	20	30	0.6	0.36	0.14	0.51
46	Jaada R.L	10	30	0.6	0.18	0.07	0.26
47	Mainsibindha R.L	10	30	0.6	0.18	0.07	0.26
48	Kandhamirigi R.L	10	30	0.6	0.18	0.07	0.26
49	Jatiapally R.L	10	30	0.6	0.18	0.07	0.26
50	Gopiballavpur R.L	17	30	0.6	0.306	0.12	0.44
51	Gholahandi R.L	23	30	0.6	0.414	0.16	0.59
52	Sundhijhola R.L	20	30	0.6	0.36	0.14	0.51
53	Laxmiprasad R.L	11	30	0.6	0.198	0.08	0.28
54	Solapata R.L	15	30	0.6	0.27	0.11	0.39
55	Kespania R.L	10	30	0.6	0.18	0.07	0.26
56	Patharachakada RL	10	30	0.6	0.18	0.07	0.26
57	Sudungi RL	20	30	0.6	0.36	0.14	0.51
58	Nidhikiari RL	25	30	0.6	0.45	0.18	0.64
59	Jatiapalli RL	25	30	0.6	0.45	0.18	0.64
60	Nuapada RL	40	30	0.6	0.72	0.28	1.03
61	Jhuntamara RL	20	30	0.6	0.36	0.14	0.51
62	Chemedi RL	40	30	0.6	0.72	0.28	1.03
63	Kaliamba RL	15	30	0.6	0.27	0.11	0.39
64	Beladwara RL	15	30	0.6	0.27	0.11	0.39
65	Kendubida RL	10	30	0.6	0.18	0.07	0.26
66	Gochha RL	10	30	0.6	0.18	0.07	0.26
67	Chadakamara RL	13	30	0.6	0.234	0.09	0.33
68	Khairapankalasahi RL	12	30	0.6	0.216	0.08	0.31
69	Gohirimada RL	25	30	0.6	0.45	0.18	0.64
70	Kakudikhola RL	25	30	0.6	0.45	0.18	0.64
71	Gochha RL	25	30	0.6	0.45	0.18	0.64
72	Sorada RL	20	30	0.6	0.36	0.14	0.51
73	Talamarada RL near Hanumantia RF	44	30	0.6	0.792	0.31	1.13
74	Madhupur RL	10	30	0.6	0.18	0.07	0.26
A	Total	2015	30	0.6	36.27	14.2	51.79
B	All Avenue Plantation =1042.90 RKM = 163.95 ha	163.95	30	0.6	2.9511	1.15	4.22



A+B	Carbon in TOF	2272.95			39.2211	15.35	56.01
C	Carbon stock in RF/PRF/DPF/PF/ VF				7449.014	2897.45	10624.13
A+B+C	Division Total				7488.235	2912.8	10680.14

The carbon Stock of the Division has been estimated to be **2912.8 x10³ Ton of Carbon** which is equivalent to **10680.14 x10³ Tons of Carbon Dioxide**.

12.3 Deviation in working circle wise actual area worked with reason:
Deviation Statement of Different Working Circle wise in Actual Area of Previous Working Plan with reason

A. Plantation Overlapping Working Circle

Sl No	Year	Physical Target (in Ha.)	Physical Achievement (in Ha.)	Plantation Type	Reasons of deviation
1	2007-08	335.00	Nil	Tending Series	Physical & Financial Target not received from PCCF &HoFF, Odisha. Hence target not achieved.
2	2008-09	372.70	Nil	Tending Series	Physical & Financial Target not received from PCCF &HoFF, Odisha. Hence target not achieved.
3	2009-10	373.10	Nil	Tending Series	Physical & Financial Target not received from PCCF &HoFF, Odisha. Hence target not achieved.
4	2010-11	369.00	Nil	Tending Series	Physical & Financial Target not received from PCCF &HoFF, Odisha. Hence target not achieved.



5	2011-12	390.00	Nil	Tending Series	Physical & Financial Target not received from PCCF &HoFF, Odisha. Hence target not achieved.
6	2012-13	365.00	Nil	Tending Series	Physical & Financial Target not received from PCCF &HoFF, Odisha. Hence target not achieved.
7	2013-14	321.00	Nil	Tending Series	Physical & Financial Target not received from PCCF &HoFF, Odisha. Hence target not achieved.
8	2014-15	311.80	Nil	Tending Series	Physical & Financial Target not received from PCCF &HoFF, Odisha. Hence target not achieved.
9	2015-16	271.00	Nil	Tending Series	Physical & Financial Target not received from PCCF &HoFF, Odisha. Hence target not achieved.
10	2016-17	308.00	Nil	Tending Series	Physical & Financial Target not received from PCCF &HoFF, Odisha. Hence target not achieved.

B. Rehabilitation Working Circle :

Sl No	Year	Physical Target (in Ha.)	Physical Achievement (in Ha.)	Plantation Type	Reasons of deviation
1	2007-08	8338.99	690		Target achieved as per Physical & Financial target received from the PCCF &HoFF, Odisha



2	2008-09	8223.85	20		Target achieved as per Physical & Financial target received from the PCCF &HoFF, Odisha
3	2009-10	7377.51	370		Target achieved as per Physical & Financial target received from the PCCF &HoFF, Odisha
4	2010-11	7541.29	350		Target achieved as per Physical & Financial target received from the PCCF &HoFF, Odisha
5	2011-12	7431.22	390		Target achieved as per Physical & Financial target received from the PCCF &HoFF, Odisha
6	2012-13	372.45	300		Target achieved as per Physical & Financial target received from the PCCF &HoFF, Odisha
7	2013-14	7709.7	1280		Target achieved as per Physical & Financial target received from the PCCF &HoFF, Odisha
8	2014-15	7146.8	435		Target achieved as per Physical & Financial target received from the PCCF &HoFF, Odisha
9	2015-16	7303.58	165		Target achieved as per Physical & Financial target received from the PCCF &HoFF, Odisha
10	2016-17	7748.75	100		Target achieved as per Physical & Financial target received from the PCCF &HoFF, Odisha



11	2017-18	76194.11	110		Target achieved as per Physical & Financial target received from the PCCF &HoFF, Odisha

C. Bamboo Overlapping Working Circle :

Sl No	Year	Physical Target (in Ha.)	Physical Achievement (in Ha.)	Plantation Type	Reasons of deviation
1	2008-09	14402.53	8268.10		Working in all coupes could not be done by RMP due to un-economical
2	2009-10	13537.07	8775.82		Working in all coupes could not be done by RMP due to un-economical
3	2010-11	15998.25	8121.88		Working in all coupes could not be done by RMP due to un-economical
4	2011-12	17213.30	9925.40		Working in all coupes could not be done by RMP due to un-economical
5	2012-13	14402.53	4163.50		The OFDC could not work in all coupes with stating that these coupes are not commercially viable.
6	2013-14	13537.07	4211.46		The OFDC could not work in all coupes with stating that these coupes are not commercially



					viable.
7	2014-15	15998.25	2257.63		The OFDC could not work in all coupes with stating that these coupes are not commercially viable.
8	2015-16	17213.30	2119.27		The OFDC could not work in all coupes with stating that these coupes are not commercially viable.
9	2016-17	14402.53	3573.27		The OFDC could not work in all coupes with stating that these coupes are not commercially viable.
10	2017-18	13537.07	2623.41		The OFDC could not work in all coupes with stating that these coupes are not commercially viable.
11	2018-19	15998.25	1192.05		The OFDC could not work in all coupes with stating that these coupes are not commercially viable.
12	2019-20	17213.30	478.07		The OFDC could not work in all coupes with stating that these coupes are not commercially viable.

D. Selection Working Circle :

Sl No	Year	Physical Target (in Ha.)	Physical Achievement (in Ha.)	Plantation Type	Reasons of deviation
1	2007-08	3973.4	Nil		6 Nos. of coupe not worked due to late delivery of coupes during 2007-08. But these coupes worked in 2009-10.



Revised Working Plan for the period 2021-2031 Nayagarh Division

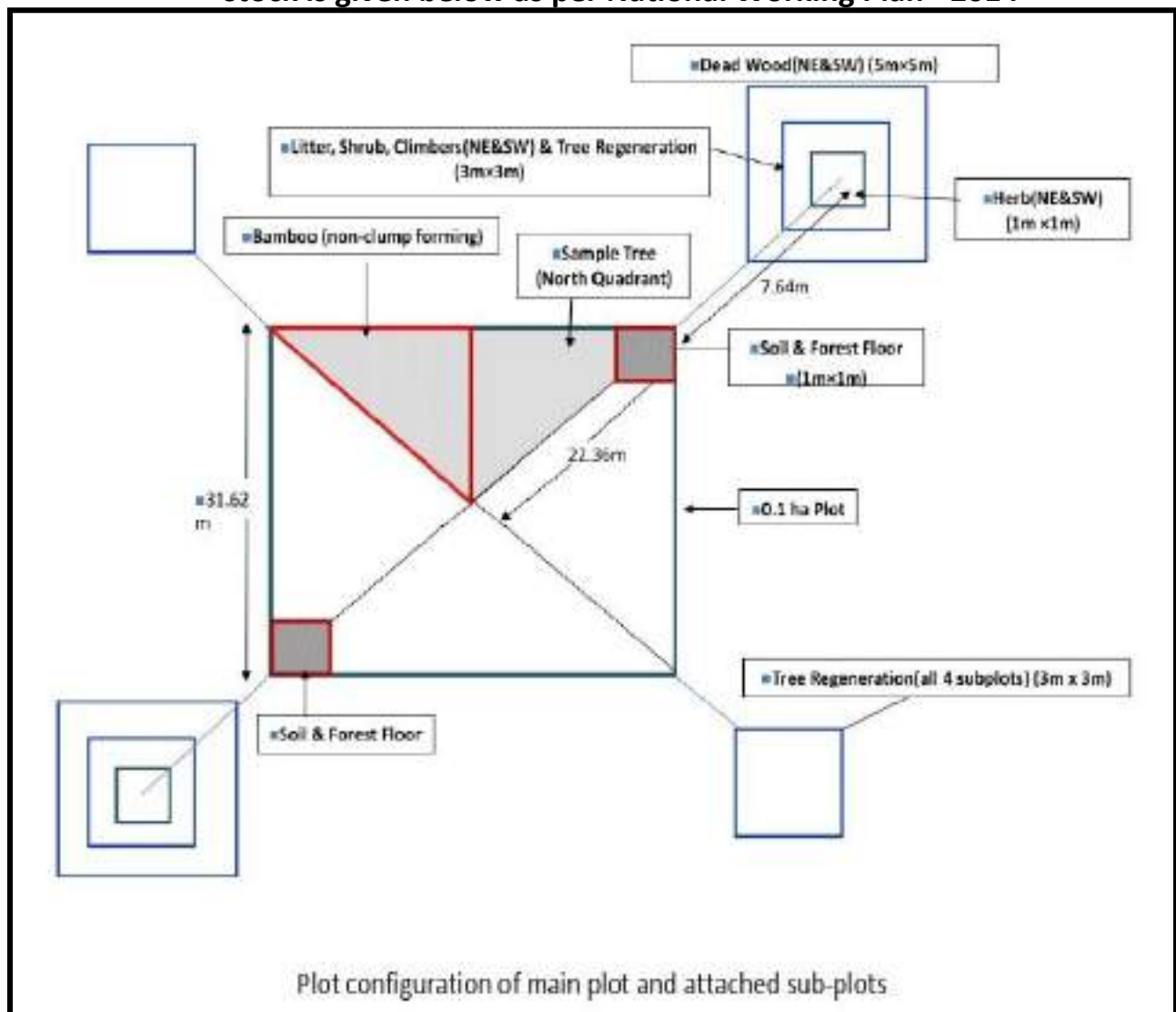
2	2008-09	3746.36	3746.36		Worked
3	2009-10	7045.58	7045.58		The OFDC has worked the Timber Coupe of 2007-08 during year 2009-10
4	2010-11	2243.77	2243.77		Worked
5	2011-12	2327.39	2327.39		Worked
6	2012-13	1871.66	1871.66		Worked
7	2013-14	3328.5	3328.50		Worked
8	2014-15	3625.25	3625.25		One Timber Coupe could not be worked due to obstruction of adjacent villagers.
9	2015-16	2397.43	2397.43		Worked
10	2016-17	2251.14	2251.14		One Coupe could not be worked due to non-availability of tree & one coupe due to obstruction.
11	2017-18	Timber Coupe Not Worked			Non approval of Working Plan / Scheme
12	2018-19	4020.47	4020.47		Worked
13	2019-20	3072.18	2818.38		One Coupe could not be worked due to non-availability of tree & one coupe due to obstruction of adjacent villagers.



Permanent Sample Plots in Nayagarh Forest Division :

Sl No.	Name of the Range	Number of Permanent Sample Plot
1 -	Daspalla	37
2 -	Gania	6
3 -	Khandapada	9
4 -	Mahipur	15
5 -	Nayagarh	4
6 -	Odagaon	10
7 -	Panchirida	11
	Grand Total	92

The diagram of laying of Sample Plot for inventory of forest resource and carbon stock is given below as per National Working Plan - 2014





REVISED WORKING PLAN OF NAYAGARH FOREST DIVISION PART-II



FOR THE PERIOD 2021- 2031

BY

SMT KSHAMA SARANGI, OFS – I (SAG)

DIVISIONAL FOREST OFFICER, NAYAGARH DIVISION.



CHAPTER- 13

FUTURE MANAGEMENT

13. BASIS OF PROPOSALS :

In recent years there has been paradigm shift in the National Forest Policy and approach to the forest sector both nationally and internationally. The focus is shifted from timber / NTFP harvesting to environmental stability, biodiversity conservation, restoration of ecological balance of the disturbed areas, protection of forest management to cater the need of the present generation keeping the need of future generation and other socio-economic benefits based on non-wood forest products (NWFP). In the present scenario climate change has greater impact on forest ecosystem. The actual state of forest largely depends on process & practices of the past. Impact on climate change in forest ecosystem are getting manifested as species range shifts, changing biodiversity, physiological changes in plant life cycle, forest growth pattern of the species. United Nations Framework Convention on Climate Change (UNFCCC) has adopted forest conservation, sustainable management of forest and enhancement of carbon stocks to reduce the emission from deforestation and forest degradation, REDD+. Implementation of REDD+ requires efforts to measure forest carbon, and alternative activities such as efficient cooking energy devices etc.

Therefore, provision has been made to integrate the aspects of forest management which are considered important for assessing the sustainability, accompanied by a set of related quantitative, qualitative, and descriptive attributes which when measured or assessed periodically indicate the direction of change for each aspect of sustainable management of forests.

13.1: Objectives of Management.

Nayagarh Forest Division has a vast treasure of Peninsular Moist Sal Forest. Its growing stock matches with the ideal crop distribution both in number of trees in different girth class as well as Biomass distribution slightly tilted towards more matured crops (Girth Class 120 cm – 150 cm) and above. Most of the Forests are Reserved Forests and PRF. It is one of the best Elephants landscape. A part of the forest comes within Eco Sensitive Zone of



Baisipali Sanctuary and Mahanadi Gorge Sanctuary (on default). Buguda- Central RF Elephant Corridor is within this division. Due to National Highway -57 joining Khurdha – Bolangir and proposed New Broad Gauge Rail line connecting Khurdha - Bolangir intersecting the Buguda- Central RF Elephant Corridor, the elephant's movement as well as living in this tract to be considered during management of forests. Though Baisipali Sanctuary which is part of Satkosia Tiger Reserves is under the management of Mahanadi Wildlife Division, the Eco Sensitive Zone falls within the jurisdiction of this division.

Mahanadi after Satkosia Gorge forms the North – Eastern Boundary. Protecting the River banks through Suitable forest management requires attention.

Nayagarh Division is providing Car Timber to Puri Temple administration for construction of three Chariots for *LORD BALABHADRA (TALADHWAJA)*, *DEVI SUBHADRA (DEBADALANA)* AND *LORD JAGANNATH (NANDIGHOSA)*. Every year some specific timbers are required to be supplied in a time bound manner. This is a statutory obligation. This aspect is also to be taken in to consideration while formulating the management Plan.

The Forests of Nayagarhis being managed under “Sustainable Management Practices” and contributes to harvest of Timber to a major extent in the state. It fulfills demand of timber not only of the division but also of the state and outside. Keeping these vital factors in mind the management practices are to be designed with a long term vision. The objectives of this working plan is to provide a basic approach for sustainable management of forests and preserve its biodiversity in light of the National Forest Policy, encompassing the ecological (environmental), economic (production) and social (including cultural) dimensions. The objectives for attaining this goal include conservation of forests and reducing forest degradation, maintenance and enhancement of ecosystem services, enhancement of forest productivity together with establishment of regeneration to improve forest health and vitality as per ecological and silvicultural requirements of the species, progressively increasing the growing stock and carbon sequestration potential, maintenance of biological diversity, sustainable yield of forest produce, prevention of soil erosion and stabilization of the terrain; improvement and regulation of hydrological regime; people's involvement in planning and management of forests fulfilling socio-economic and livelihood needs of the people.

The orders of Hon'ble Supreme Court of India in the matter of W.P. No 202/95 GodavermanTherumulkpad Vs Union of India and related Interlocutory applications shall be



strictly complied with. Any prescription or operation in variance with the orders of Hon'ble Apex Court shall be kept in abeyance till such order is in force or otherwise not modified.

The sector wise objectives are precisely enumerated in following paragraphs.

13.1(I): Dynamics of Forests and Stands.

Forest is a living dynamic entity and changes its species composition, growth pattern, bio diversity in passage of time. This plan aims at

- To enhance species composition towards a climatic climax species of more important and of valuable species.
- To ensure Annual Biomass Production is sustainable throughout the plan period so as to ensure a specific quantum of carbon sequestration.
- To enhance Bio Diversity of a Forest through various management practices & proper documentation.
- To ensure sustainable & dependable production of timber / fuel wood and other available forest produce.
- To enhance availability of NTFP species by conservation, natural regeneration and follow a systematic sustainable harvesting practices.
- To create forests near to habitations / industrial houses to control effect of GHG (Green House Gases)
- *The Working Plan prescriptions shall be implemented in co-existence of development with nature adhering to the provisions of different Acts and Rules including Odisha Forest Act, 1972, Wild Life (Protection) Act, 1972, Forest (Conservation) Act, 1980, Panchayats (Extension to the Scheduled Areas) Act, 1996 (PESA), Biological Diversity Act, 2002 and Forest Rights Act, 2006.*

13.1(II): Forests and Soil:

The Forests and soil condition and its fertility are like two sides of a coin. Forest enriches the soil organic content and as the soil marched forward, the forest luxuriance also marched forward. When the soil is degraded for many reasons, gradually the forest condition & vegetation degraded. The soil condition & forest covers moves hand in hand. In order to keep the soil health high this plan sets the following objectives to be achieved.

- To follow appropriate management practices to protect the soil against erosion.



- To protect the hill slopes and Forest floor against erosion and restore the humus in forest floor.
- To cover abandoned Shifting Cultivation area with woody vegetation and bring it to Productive Level
- To Protect River banks against erosion and save riparian forests.
- To protect forests against drivers of forest degradation with special importance to Soil conservation.
- To check soil erosion in forest floor – sheet erosion, Rill erosion, Splash erosion, Gully and ravine formation.
- To maintain Soil cover of any form – mostly of woody vegetative / grass cover in forests i.e. enriched undergrowth.
- To maintain adequate humus layer on forest floor.
- To reduce the grazing pressure on forest.

13.1(III): Forests and Water.

The forests are the store house of water. All the rivulets / springs are originating from forests. The flow of water in springs and rivulets depends upon water holding capacity of Forest floor. Recharge of ground water table mostly depends upon runoff time, conditions for percolation of surface water. Reduced time of collection of runoff water enhances the flood menace in rivers. Availability of surface water also decides the carrying capacity of wildlife of any forest. The composition of forests mostly depends on water regime of forest floor. The objectives set out for this plan are

- To protect and maintain thick vegetation at the origin of rivers, springs and rivulets.
- To treat the catchment area of water body within the forest block or outside to enhance water holding capacity and enhance flow of water in Rivers, Springs and Rivulets.
- To create new water body within the forest blocks and preserves the existing wet land inside the forests and outside.
- To ensure flow of water in springs – especially those are in the catchment area of River Mahanadi.
- To create water body to impound the running waters & enhance utilization of water to a greater extent.



13.1(IV): Forest Biodiversity.

The natural forests of importance rich in Bio- Diversity are confined to moist forests of the division mostly in Daspalla and Mahipur Range. Some of the RET (Rear Endangered and threatened) of the state are available in this division. *Cycas nayagarhensis* is a species found only in Nayagarh district of Odisha in India. The species was recently discovered by Indian scientists. Natural cane is available in this forests. The vegetation is of moist Sal forest with riparian vegetation along the river banks. The rich floral diversity requires protection and enrichment. This plan aims

- To preserve bio diversity of natural forests,
- To take appropriate steps to prepare Bio- Diversity Register of the locality.
- To prevent mono culture practices in plantations only on economic consideration.
- To encourage natural regeneration in forest blocks.
- To have Concept of Bio- Diversity park grow among the staffs / villagers.

13.1(V): Climate and Forests:

The relation between climate and forests is complementary to each other. The climate influences the forest composition and forest ameliorates the climate of an area in a larger context. During recent past, loss of forests has its effect on climate and a change in climatic behavior is being experienced. Extreme climatic conditions like high rainfall, low rainfall, Cyclonic storm, merging of seasons to summer and rain only are frequently experienced. Duration of other seasons likes autumn, Dew, winter and spring has been marginalized and sometimes not felt. In order to combat climate change the following objectives has been outlined for this plan. These are

- To improve the crop density of forest vegetations.
- To increase tree cover outside the conventional forest land i.e. TOF.
- To reduce emission of Green House Gases at source through public cooperation and create new carbon sink through Farm Forestry / Urban Plantation.
- To bring Village Woodlots of erstwhile **Social Forestry Project** to the management fold and **enhance forest cover & carbon sequestration.**
- To reduce fuel wood dependency by introducing alternate /





renewable source of energy through VSS / EDC constituted under JFM Resolution.

- To enhance Solar Energy generation & utilization than conventional energy i.e. fossil fuels, Petroleum etc.

13.1(VI): Socioeconomic Considerations and generation of forest based employment opportunities and livelihood options:

Forest Management is not confined to departmental personals only. It has encompassed community participatory management practices since 1985 and more effectively thereafter. JFM resolution - 1993 has brought revolutionary changes in participatory Forest Management which has been further fortified in JFM Resolution 2011. This resolution (2011) provided a wider scope for participatory forest management, encompassing the Revenue Forests for joint management with villagers. The Committee is designated as **Vana Surakshya Samiti (VSS)** for forests and **Eco- Development Committee (EDC)** for Sanctuary, National Park and other Protected Areas. EDC are actively involved in management of Eco-Tourism, Nature Camps and Tourist Resorts/ barracks/ Complexes. The Panchyat Raj Institutions (PRI) is also involved in the process of Joint Forest Management in accordance with the JFM Resolution 2011. The objectives intended to be fulfilled / achieved in this plan are as follows.

- To involve VSS in forest management for assigned Forest Fringe areas.
- To enhance / support various forests based livelihood and employment opportunity.
- To strengthen usufruct share ring mechanism for interim / final harvested forest produce from the assigned area.
- To arrange Skill development training camps for VSS on Value addition to NTFP and other Forest Produce.
- To support the VSS to change from traditional fuel wood use to renewable energy resources.
- To protect traditional knowledge / cultural practices and help in documentation of traditional knowledge related to Forest, NTFP and Forest based medicinal practices.
- Strengthening of Village Forest Management through VFC (Village Forest Committee) constituted during erstwhile Social Forestry Project (1985-2003)
- To Involve VSS in Preparing “Peoples Biodiversity Register” and preserve and enhance biodiversity of the area.



13.1(VII): Tools for integrated development:

For overall development of Forest resources / TOF in the division dovetailing of various developmental schemes, make use of modern technology in forest management, Nursery raising, tissue culture etc are required to be implemented / use by Forest personnel. The department is to work hand in hand with the District Administration. Development in Veterinary & Animal Husbandry Sector, Soil Conservation and Water Resource Department are to be integrated with forest activities to make it more scientific, effective and more acceptable for the developing situation. This plan aims

- To develop Forest resources through various Schemes like MANREGA, DPAP, NAP, DMF etc.
- To improve Planting stock through Tissue Culture, other Vegetative Propagation and root trainer nursery.
- To identify and protect plus trees and create improved genetic pool,
- To identify important Seed stand for different important species and improve genetic value & quality of species available in the division.
- To imbibe knowledge on first growing technology in Agriculture / soil conservation to improve forest growing stock.
- To use Satellite related output for forest management with the help of ORSAC, National Institutes of Remote Sensing & Space Application / Forest Research Institute etc.
- Digitization of all forest blocks under administrative control of Forest department and Revenue department.
- To introduce management practices in all revenue forest areas through working schemes.

13.1(VIII): Performance Indicators for different objectives of management. (PI)

In order to assess the performance on above outlined broad objectives, a set of performance indicators (PI) has been indicated below. It is required to evaluate / assess the performance in a periodical basis. First year of the Plan (2021-22) may be taken as base value and subsequent results may be compared to evaluate the achievements. The measurable / assessable parameters / attributes are furnished in **Table No 13.1** below.



Table No 13.1: Performance Indicators for different objectives of management.

Sl No	Objectives	Parameters to be assessed.	Frequency	Remark
1	Dynamics of Forests and Stands.	Species Composition	1 st Yr, 6 th Yr & 10 Yr	Sample Survey Method.
		Annual Biomass Production		Basal area Method. (M ² / Ha)
		Bio Diversity of a Forest		Bio Diversity Index – Sample Survey
		Sustainable & dependable production of timber / fuel wood		Annual Production Cum Per annum / MT PA
		Area under Man made Forest / Plantation.		Interpretation of Satellite Imagery.
2	Forests and Soil:	Soil Erosion	1 st Yr, 6 th Yr & 10 Yr	Interpretation of Satellite Imagery / Local Observation / measurement of silt in water body.
		Create & maintained Wind Break		Analysis of Runoff Water & Local observation.
		Gully and ravine formation / Silt in Run Off		Study of Soil Profile
		Humus layer on forest floor		Random assessment in a particular Forest Block in Nov- Dec.
		Grazing pressure on forest		
3	Forests and Water.	Thick vegetation at the origin of rivers, springs and rivulets	1 st Yr, 6 th Yr & 10 Yr	Interpretation of Satellite Imagery / Local Observation
		Flow of water in Rivers, springs and rivulets.		Observation – Recording the quantum of flow of water and Period of Flow.
		Utilization of rain water flowing out of forests		Local observation.
4	Forest	Bio- Diversity Register	1 st Yr, 6 th	At least one Bio- Diversity



	Biodiversity		Yr & 10 Yr	Register to be prepared in each range & compare
		Natural regeneration in forest blocks.		Regeneration Survey
5	Climate and Forests	Crop density of forest vegetations.	1 st Yr, 6 th Yr & 10 Yr	FSI Report on Forest cover
		Tree Outside the Forest.		
		Fuel wood dependency and changing over to alternate / renewable source of energy.		Participatory Rural Appraisal. Economic survey Report
6	Socioeconomic Considerations and generation of forest based employment opportunities and livelihood options	Forests based livelihood and employment opportunity.	1 st Yr, 6 th Yr & 10 Yr	Survey on Self employment on Forest Produce/ Value addition.
		Usufruct sharing mechanism for interim / final harvested forest produce	Annual	Records of Forest produce harvest in JFM area & distribution- Manner / Conflict if any.
		Skill development training camps for VSS on Value addition to NTFP	Annual	Survey on Self employment on Forest Produce/ Value addition.
		Documentation of traditional knowledge related to Forest	1 st Yr, 6 th Yr & 10 Yr	Documentation and analysis.
7	Tool for integrated development:	To develop Forest resources through various Schemes like MANREGA	Annual	Funds flow from other agencies.
		To improve Planting stock through Tissue Culture, other vegetative propagation		Plantation / Nursery through modern techniques.
		Identify and protect plus trees and create improve genetic pool.		Creation of Genetic Pool



		First growing technology in Agriculture / soil conservation to improve forest growing stock.	Annual	Application of Modern technology & Result evaluation.
		Use Satellite related output for forest management		Self assessment.
		Forest Certification on Sustainable forest Utilization	Plan period	Progress in Product Certification
8	Soil Health & Organic Fertilizer.	Use of Chemical Fertilizer vrs Organic Fertilizer.	Annual	Comparison of use of Chemical Fertilizer and Organic Fertilizer like FYM, Urban Compost, Vermi Compost etc.

13.2: Method of treatment to be adopted:

The forests of Nayagarh Division are broadly categorized in to six categories i.e.

- Moist Peninsular Sal Forest having site quality (II/III) in most blocks.
- Dry Deciduous mixed forests with biotic interference.
- Dry Bamboo forests with good to moderate juvenility.
- Forests assigned to VSS for Protection, Enrichment & Management.
- Village Forests of erstwhile Social Forestry Project.
- Economic Plantations (Mostly Teak) in various forest blocks.

13.2.1 Natural vegetations having Crop Density > 40%

Forest Blocks having good Sal and Miscellaneous crop previously managed under Selection system and Conversion system and the Crop Density is above 40%. The crop consists of all age classes and having good regeneration. All such blocks constitutes around 26.51% of the Forest under management and proposed to be managed under **Selection Working Circle**.

13.2.2 Natural vegetations having Crop Density <40%.

The Forest Blocks having natural vegetation and crop density less than 40% is proposed to be treated for Rehabilitation of Degraded Forests with the help of VSS. The treatment for these forest blocks to enhance the regeneration of natural species in normal silvicultural



practices i.e. High Forest System mixed with Aided Natural Regeneration, Soil & Moisture Conservation, and Strict protection against fire and closed to grazing. These Forests will be managed under **Rehabilitation Working Circle**.

13.2.3 Plantations Raised within Forest Blocks.

Under various plantation schemes, plantations have been raised in forest blocks in a large scale. Previously there was Teak Plantation Working Circle under which teak plantations have been raised. Mixed plantations in small patches has merged with natural vegetation and enriched the crop. Plantations under Jagannath Van Prakalpa (JVP) with special objectives to provide Car Timber for construction of Chariots were raised. These plantations are to be managed with special objectives. For mixed plantations raised within natural forests **“as enrichment Plantations”** in forests will not specially managed rather will be treated at par with natural vegetation.

The plantations raised under Social Forestry Project during 1985-2003 will also be brought to management fold. The system to be adopted for SFP plantations is clear felling with standard. Similarly Plantations raised under Compensatory Afforestation and declared as Protected Forest will also be managed at par with SFP Plantation. All these forests will be managed under **“Plantation Working Circle”**

13.2.4: Management of Fragile & Sensitive Areas:

There are forest blocks coming within Buguda- Central RF Elephant Corridor which is very sensitive area. There are also forests from which perennial streams have originated and have Eco- Tourism importance & value. These Forest blocks are to be maintained as “No Disturbance Zone” and will be managed under **“Protection Working Circle”**

13.2.5 Management of Bamboo Forests:

Bamboo Forests of Daspalla ex state (now in Daspalla and Mahipur Range) are excellent and well known for the juvenility and good stock. Dry deciduous Sal forests / mixed forests are having good bamboo concentration in past and managed under **Bamboo (Overlapping) Working Circle**. During last plan period no bamboo coupe were worked out partly due to degraded nature and partly due to other consideration alike poor demand on Bamboo, Bamboo working seems to be not Cost effective. All bamboo forests with viable commercial potential will be managed under **Bamboo (Overlapping) Circle** with a 4 years cutting cycle. During plan period two & half cycles will be completed.



13.2.6 Management of Non Timber Forest Produce:

Forests of Nayagarh division are having Siali leaf, Sal Leaf, Sal seeds, Siali fiber, Myrobolan, Cane, Mango, Kendu, Char, Mahula and important MAP (Medicinal & Aromatic Plants). The forest blocks with rich Bio Diversity harbor NTFP species of local importance. The Tribal's knowledge in traditional treatment depends upon herbs / shrubs found in forests. It will be managed under **"NTFP (Overlapping) Working Circle"**.

13.2.7 Management of Wildlife:

There is no wildlife sanctuary in Nayagarh Division. A part of Daspalla Forest Range comes under Eco sensitive Zone of Baisipali Sanctuary and Mahanadi Gorge Sanctuary (Combinedly under Satkosia Tiger Reserve). Some Forest Blocks are coming within Mahanadi Elephant Reserve. Nayagarh Division has a whole, considered to be a good habitat for elephant due its dense forest, availability of food and water. For management of Wildlife an **Overlapping Working Circle** will be constituted and the problems related to wildlife management will be addressed suitably.

13.2.8 Miscellaneous uses:

Some Forest Blocks / areas are being managed for Eco- Tourism Purpose and Central Nursery. These areas will be managed under **"Miscellaneous Working Circle"**.

13.2.9: Providing Car Timber to Puri Temple Administration:

For construction of Chariots for **LORD JAGANNATH, BALADHADRA AND DEVI SUBHADRA**, specific timbers of specific size are required to be supplied every year without any deviation. These species have been over exploited. The forests are to be managed to sustain the pressure and supply in a sustainable manner. These aspects are to be embodied in management practices to achieve the goal. A **"Car Timber Overlapping Working Circle"** is constituted to achieve the objectives.

13.2.10: Participatory Forest Management:

Forest fringe villages have been assigned with responsibility of Protection & Management of Forests and Wildlife under provisions of Joint Forest Management Resolution -2011 and subsequent amendment -2015 and 2019. **"Aama Jungal Yojana"** is also being implemented is being managed by Village Forest Committee constituted under provisions of Village Forest Rule-1985. These forests will be managed under Participatory Forest Management in JFM Mode. These forests except those of SIDA Assisted Social forestry plantations will be considered & managed under **JFM (Overlapping) working Circle. SIDA Assisted Social**



Forestry Plantations will be managed under provisions of Village Forest Rule 1985 in JFM Mode also.

13.2.11: Management of Forest Resource outside the Forest area:

Tree Outside the forest (TOF) has been enriched through various plantation programs under different schemes (State plan, Central Plan, Special Schemes). Road side Plantations / Avenue Plantation has been created for aesthetic value. There is a high level meeting / discussion to constitute a Working Circle namely “Development Working Circle” on 13.02.2019. After discussion / deliberations, it is decided to constitute a working Circle to manage Forest Resource outside the Forest area vide letter no 3628/ 11F (SFM)-15 / 2018 dated 26.02.2019. **(Annexure-XIV)**. This working circle will comprise the forests created outside the forest area including Avenue Plantations, other plantations of first growing species, other need based plantations like Fuel wood and Fodder Plantations, National Afforestation Program i.e. Plantations taken up under FDA Program. Regulating guidelines for TOF management will be embodied in the “**TOF Working Circle**”.

13.3: Constitution of Working Circles

13.3.1 Comparison of area proposed for Management vis- a- vis outgoing Plan:

Table No 13.2 Comparison of Area under management in Outgoing plan vrs current Plan					
Category of Forests	Area under Out Going Plan	Total area in Ha	Area under this Plan	Total area in ha	Remark
Reserved forest	85535.54	106316.65	83645.5358	105881.2005	In case of RF GIS Computed area has been considered. PF area has been added up for management
Proposed Reserved forest	11755.89		11675.207		
Demarcated Protected Forest	8445.77		8445.7677		
Protected Forest	0		1535.24		
Village Forest	579.45		579.45		



13.3.2 Constitution of Working Circles & Area allotted to Various Working Circle:

Considering the aspects discussed above, the following Circles are prescribed & constituted accordingly.

- i. Selection Working Circle (28557.8841 ha)
- ii. Rehabilitation Working Circle (70241.8414ha)
- iii. Plantation Working Circle (3683.4750 ha)
- iv. Protection Working Circle (3278.00Ha)
- v. Miscellaneous Working circle (120.00 Ha)
- vi. Bamboo (Overlapping) Working Circle (57071.9406ha).
- vii. Non Timber Forest Produce (Overlapping) Working Circle (103766.5105 Ha).
- viii. Wildlife (Overlapping) Working Circle (103766.5105 Ha)
- ix. Joint Forest Management (Overlapping) Working Circle (33786.6140 Ha)
- x. Car Timber (Overlapping) Working circle (100368.5105 ha)
- xi. TOF Working Circle (2015 Ha + 1042.90RKM avenue Plantation)

All total it is proposed to have Ten Working Circle. Out of these working circles, Five Working Circle will have independent area where as other Five Working Circle will have overlapping jurisdiction. The TOF (Tree outside the Forest Area) Working Circle does not cover any RF/ PRF or VF.

The area allotted to different Working circle is furnished below and at **Annexure -XV**.



In strict compliance with Hon'ble Supreme Court's order dated. 22.09.2020, it will be ensured that regeneration of forest is commensurate with felling to be carried out under the present working plan.

No felling shall be carried out without making allocation of requisite funds for undertaking regeneration operation in order to ensure regeneration to be commensurate with felling. 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, MoEF& CC, Bhubaneswar is obtained. No felling shall be carried without an approved Annual Timber Operation by the competent authority.

Standing snags / dead or dying trees shall not be removed and shall be preserved for wildlife habitat / shelter. In site specific coupes / sections having unduly large number of such trees needing removal, special permission shall be taken from Integrated Regional Office, MOEF & CC, Bhubaneswar.

Under no circumstance, clear felling of naturally grown forest area shall be done.

**Table No 13.3 A Forest Blocks and area assigned to Various Working Circle – Nayagarh Division.
(Area in ha)**

SL.No	Name of forest block	Comp. No	Area in Ha GIS Computed)	Area Diverted		Area Available for Management.
				FRA	FC Act	
	Reserved Forest					
	Daspalla Range					
1	Ambalimba	AI 1	554.4190	0	0	554.4190
2	Central R.F	CI 1	999.5352	0	0	999.5352
3	Central R.F	CI 2	586.8663	0	0	586.8663
4	Central R.F	CI 3	483.0487	0	0	483.0487
5	Central R.F	CI 4	1090.6640	0	200	890.6640
6	Central R.F	CI 5	551.6211	0	0	551.6211
7	Central R.F	CI 6	644.4631	0	0	644.4631
8	Central R.F	CI 7	448.8703	0	50.2	398.6703
9	Central R.F	CI 8	553.2473	0	10	543.2473



10	Central R.F	Cl 9	759.1270	0	10	749.1270
11	Central R.F	Cl 10	925.3559	0	0	925.3559
12	Central R.F	Cl 11	1034.2480	0	69.8	964.4480
13	Central R.F	Cl 12	651.5344	0	0	651.5344
14	Central R.F	Cl 13	957.5446	0	0	957.5446
15	Chadiapalli R.F	Cp 1	419.5593	0	0	419.5593
16	Chadiapalli R.F	Cp 2	686.0548	0	0	686.0548
17	Chadiapalli R.F	Cp 3	927.0187	0	0	927.0187
18	Chadiapalli R.F	Cp 4	510.5561	0	0	510.5561
19	Chadiapalli R.F	Cp 5	483.0798	0	0	483.0798
20	Chadiapalli R.F	Cp 6	930.7682	0	0	930.7682
21	Chadiapalli R.F	Cp 7	947.8103	0	0	947.8103
22	Chadiapalli R.F	Cp 8	416.7687	0	0	416.7687
23	Chadiapalli R.F	Cp 9	316.8639	0	0	316.8639
24	Chadiapalli R.F	Cp 10	422.7530	0	0	422.753
25	Chhades RF	Cd 1	1781.4790	0	105.032	1676.4470
26	Nuagaon R.F	Ng-1	615.6390	0	0	615.6390
	Nuagaon R.F	Ng-2	580.1000			580.1000
27	Nasaghar R.F	Ns.1	602.8431	0	50	552.8431
28	Nasaghar R.F	Ns.2	331.2504	0	120	211.2504
29	Nasaghar R.F	Ns 3	445.2220	0	60.25	384.9720
30	Nasaghar R.F	Ns 4	478.0713	0	0	478.0713
31	Poibari R.F	Pb 1	1619.8440	0	0	1619.8440
32	Pokharigochha R.F	Pg 1	732.1588	0		732.1588
33	Pokharigochha R.F	Pg 2	624.0144	0	30.25	593.7644
34	Pokharigochha R.F	Pg 3	606.9499	0	85	521.9499
35	Pokharigochha R.F	Pg 4	746.8277	0	18	728.8277
36	Pokharigochha R.F	Pg 5	533.7106	0	20.00	513.7106
37	Pokharigochha R.F	Pg 6	252.9628	0	71.8	181.2128
38	Pokharigochha R.F	Pg 7	460.0544	0	65.23	394.8244
39	Pokharigochha R.F	Pg 8	336.0810	0	153.25	182.8310
	Daspalla Range Total		27048.9861	0.0000	1118.7620	25930.2241
	Gania range					
40	Bankamunda R.F	Bm 1	602.6840	0	0	602.6840
41	Bankamunda R.F	Bm-2	370.8514	0	0	370.8514
42	Bankamunda R.F	Bm-3	288.7945	0	0	288.7945
43	Bankamunda R.F	Bm-4	597.4703	0	0	597.4703
44	Gania R.F	Gn 1	342.8016	0	0	342.8016



45	Matia R.F	Mt 1	643.6100	0	0	643.6100
46	Makarprasad R.F	Mp 1	1157.6710	0	0	1157.6710
47	Manibhadra R.F	Mv 1	527.9488	0	0	527.9488
	Gania Range Total		4531.8316	0.0000	0.0000	4531.8316
	Khandapara Range					
48	Bandara R.F		216.6869	0	0	216.6869
49	Barakhola R.F	Bk 1	787.6532	0	0	787.6532
50	Chadeibasa R.F	Cb 1	92.1845	0	0	92.1845
51	Dengabahada R.F	Db 1	451.8845	0	0	451.8845
52	Dengabahada R.F	Db 2	320.3681	0	0	320.3681
53	Guriabari R.F	Gb P-1	353.8513	0.4	0.3	353.1513
54	Guriabari R.F	Gb P-2	254.5676	0	72.08	182.4876
55	Hanumantia R.F	Hm 1	329.6100	0	0	329.61
56	Mainsibindha R.F	Mb 1	637.3768	0	0	637.3768
57	Similibanka R.F	Sb 1	216.9048	0	0	216.9048
58	Pathara R.F	Pt 1	49.0167	0	0	49.01665
59	Pithakhai R.F	Pk 1	365.6600	0	2.5	363.1600
60	Sapua R.F	Sp 3	702.0006	0.3	0	701.7006
61	Sapua R.F	Sp 4	556.3740	0	0.4	555.9740
62	Sapua R.F	Sp 5	805.3868	0	0	805.3868
63	Sapua R.F	Sp 6	725.3056	0	0	725.3056
64	Sapua R.F	Sp 7	883.4660	0	0	883.4660
65	Sapua R.F	Sp 8	386.2498	0	0	386.2498
66	Sapua R.F	Sp 9	650.3146	0	0	650.3146
67	Sapua R.F	Sp 10	481.2428	0	0	481.2428
68	Sapua R.F	Sp 11	521.5492	0	0	521.5492
69	Sapua R.F	Sp 12	721.5915	0	0	721.5915
70	Sapua R.F	Sp 13	711.9831	0	0	711.9831
71	Sikharpur R.F	Sr 1	1398.4830	0	24.37	1374.1130
72	Patrabani Jamubani R.F	Pj 1	212.3944	0	2.05	210.3444
	Khandapara Range (Total)		12832.1058	0.7000	101.7000	12729.7058
	Mahipur Range					
73	Hatimunda R.F (Mahipur)	Hm 1	603.6784	0.51	0	603.1684
74	Hatimunda R.F (Mahipur)	Hm 2	599.5121	0	124.5	475.0121
75	Hatimunda R.F (Mahipur)	Hm 3	393.4262	0	120	273.4262
76	Hatimunda R.F (Nayagarh)	Hm 4	295.0725	0	77	218.0725
77	Hatimunda R.F (Nayagarh)	Hm 5	386.9039	0	0	386.9039
78	Hatimunda R.F (Nayagarh)	Hm 6	320.7396	0	0.854	319.8856



79	Hatimunda R.F (Nayagarh)	Hm 7	489.3869	0	10.961	478.4259
80	Hatimunda R.F (Nayagarh)	Hm 8	589.0450	0	0	589.045
81	Hatimunda R.F (Nayagarh)	Hm 9	707.7462	0	0	707.7462
82	Hatimunda R.F (Nayagarh)	Hm 10	222.6502	0	0	222.6502
83	Hatimunda R.F (Nayagarh)	Hm 11	461.1620	0	0	461.162
84	Hatimunda R.F (Mahipur)	Hm 12	498.5381	0	0	498.5381
85	Maichheli Sampada R.F	Ms 1	328.9887	0	44.696	284.2927
86	Ratadei R.F	Rd 1	315.4693	0	0.595	314.8743
87	Ratadei R.F	Rd 2	656.1344	0.378	0	655.7564
88	Ratadei R.F	Rd 3	350.2195	0.595	0	349.6245
89	Ratadei R.F	Rd 4	763.7505	0	0	763.7505
90	Palva R.F	Pb 1	461.6117	0	0	461.6117
91	Palva R.F	Pb 2	337.6271	0	0	337.6271
92	Palva R.F	Pb 3	293.4185	0	0	293.4185
93	Palva R.F	Pb 4	429.9870	0	0	429.9870
94	Palva R.F	Pb 5	440.3508	0	0	440.3508
95	Palva R.F	Pb 6	402.2832	0	0	402.2832
96	Palva R.F	Pb 7	394.3466	0	0	394.3466
97	Palva R.F	Pb 8	355.1275	0	0	355.1275
98	Sulia R.F	Sl 1	647.5751	0	0	647.5751
99	Sulia R.F	Sl 2	502.3064	0	0	502.3064
100	Ragadimada R.F	Rm 1	403.9182	0	0	403.9182
101	Ragadimada R.F	Rm 2	661.2036	0	0	661.2036
102	Ragadimada R.F	Rm 3	405.1577	0	0	405.1577
103	Ragadimada R.F	Rm 4	427.5547	0	0	427.5547
104	Ragadimada R.F	Rm 5	727.8733	0	0	727.8733
105	Ragadimada R.F	Rm 6	481.1499	0	0	481.1499
106	Ragadimada R.F	Rm 7	544.5512	0	0	544.5512
107	Ragadimada R.F	Rm 8	267.8752	0	0	267.8752
108	Ragadimada R.F	Rm 9	530.9555	0	0	530.9555
109	Panchupandav R.F	Pp 1	409.7043	0	85	324.7043
110	Panchupandav R.F	Pp 2	454.1617	0	37.08	417.0817
	Mahipur Range (Total)		17561.1627	1.4830	500.6860	17058.9937
	Nayagarh Range					
111	Balaram RF	Br 1	341.1061	0	1.578	339.5281
112	Hatimunda R.F (Mahipur)	Hm 13	312.9783	0	0	312.9783
113	Hatimunda R.F (Mahipur)	Hm 14	338.5783	0	0	338.5783
114	Hatimunda R.F (Mahipur)	Hm 15	360.3932	0	0	360.3932



115	Hatimunda R.F (Mahipur)	Hm 16	201.0997	0.854	0	200.2457
116	Hatimunda R.F (Mahipur)	Hm 17	255.3059	0	0	255.3059
117	Hatimunda R.F (Mahipur)	Hm 18	155.5424	0	0	155.5424
118	Hatimunda R.F (Mahipur)	Hm 19	546.4431	0	0	546.4431
119	Hatimunda R.F (Mahipur)	Hm 20	367.5184	0	0	367.5184
120	Rukhi R.F	Rk 1	220.8998	0	0	220.8998
121	Sulia R.F	Sl 3	828.5552	0	90.21	738.3452
122	Sapua R.F (Khandapada)	Sp 1	369.6665	0	32.25	337.4165
123	Sapua R.F (Khandapada)	Sp 2	585.9866	0	30	555.9866
124	Patharakata R.F (Nayagarh)	Pk 1	135.0238	0		135.0238
	Nayagarh Range(Total)		5019.0973	0.8540	154.0380	4864.2053
	Odogaon Range					
125	Bahadajhola R.F	Bj 1	404.5449	0	0	404.5449
126	Balisinsa Badhulipur R.F	Bb Patch 1	92.2116	0	0	92.2116
127	Balisinsa Badhulipur R.F	Bb Patch 2	318.0178	0	4.15	313.8678
128	Gayalsingh R.F	Gs 1	324.3672	0	0	324.3672
129	Gayalsingh R.F	Gs 2	393.3122	0	0	393.3122
130	Gayalsingh R.F	Gs 3	361.3458	0	0	361.3458
131	Gayalsingh R.F	Gs 4	320.5606	0	0	320.5606
132	Gochha R.F	Gc 1	452.5743	0	0	452.5743
133	Gochha R.F	Gc 2	413.7592	0.85	0	412.9092
134	Gochha R.F	Gc 3	218.7219	0	0	218.7219
135	Gochha R.F	Gc 4	464.9396	0.72	4.44	459.7796
136	Gochha R.F	Gc 5	311.7409	0	0	311.7409
137	Gochha R.F	Gc 6	433.0097	0.78	0	432.2297
138	Gochha R.F	Gc 7	877.2780	0	0	877.278
139	Gochha R.F	Gc 8 Part (a)	823.0117	0	0	823.0117
140	Gochha R.F	Gc 18	396.7640	0	0	396.764
142	Sulia R.F (Nayagarh Range)	Sl 4	915.8674	0	0	915.8674
143	Sulia R.F (Odagaon Range)	Sl 8	477.5446	0	0	477.5446
144	Sulia R.F (Odagaon Range)	Sl 9	668.6969	0	0	668.6969
	Odogaon Range (Total)		8668.2683	2.3500	8.5900	8657.3283
	Panchirida Range					
145	Gochha R.F	Gc 9	956.5656	0	0	956.5656
146	Gochha R.F	Gc 10	842.4302	0	0	842.4302
147	Gochha R.F	Gc 11	740.4688	0	0	740.4688



148	Gochha R.F	Gc 12	774.6294	0	0	774.6294
149	Gochha R.F	Gc 13	448.5630	0	0.85	447.713
150	Gochha R.F	Gc 14	779.5681	0	0	779.5681
151	Gochha R.F	Gc 15	654.5882	0	0	654.5882
152	Gochha R.F	Gc 16	465.5781	0	0	465.5781
153	Gochha R.F	Gc 17	446.5627	0	0	446.5627
154	Khatia Damasahi R.F (4 Patches)	Kd 1	268.2350	0	0	268.2350
155	Patharaganda R.F	Pd 1	316.8457	0	0	316.8457
156	Patharaganda R.F	Pd 2	273.4276	0	0	273.4276
157	Patharaganda R.F	Pd 3	298.5558	0	0	298.5558
158	Patharaganda R.F	Pd 4	394.0514	0	0	394.0514
159	Sulia R.F (Odagaon & Panchirida Range)	Sl 6 & 5	1328.8260	0	0	1328.8260
160	Sulia R.F (Mahipur Range)	Sl 7	885.2014	0	0	885.2014
	Panchirida Range (Total)		9874.0970	0.0000	0.8500	9873.2470
	Division Total		85535.5488	5.3870	1884.6260	83645.5358
	PRF					
	Daspalla Range					
1	Khamana (PRF)		116.8569	0	0	116.8569
2	Boni (PRF)		79.3134	0	0	79.3134
3	Gumurukhola (PRF)		270.9614	0	0	270.9614
4	Pankalasahi (PRF)		68.1276	0	0	68.1276
5	Baisipalli Extn-I (PRF)		73.2720	0	0	73.2720
6	Baisipalli Extn-II (PRF)		110.4664	0	38.5	71.9664
7	Baisipalli Ext-III (PRF)		163.6354	0	0	163.6354
8	Dhundugadia PRF		756.7991	0	0	756.7991
9	Nephari (PRF)		253.7985	0	0	253.7985
10	Gochhabari		522.0140	0	0	522.0140
11	Gambhariganda (PRF)		325.2898	0	37.04	288.2498
12	Baliberena (PRF)		44.5776	0	0	44.5776
13	Chadiapalli Extn (PRF)		378.0971	0	0	378.0971
14	Aranignda (PRF)		102.1612	0	0	102.1612
	Daspalla Range total		3265.3704	0	75.54	3189.8304
	Gania Range					
15	Phasi Extn-I (PRF)		23.4961	0	0	23.4961
16	Phasi Extn-II (PRF)		112.0323	0	0	112.0323
17	Phasi Extn-III (PRF)		58.8719	0	0	58.8719
18	Matia (PRF)		54.8403	0	0	54.8403



19	Bankamunda Extn-I (PRF)		205.6272	0	0	205.6272
20	Baisipalli Ext-IV		609.1446	0		609.1446
21	Palava (PRF) (Mahipur Range)		59.8702	0	0	59.8702
22	Ragadimada (PRF) (Mahipur Range)		76.8970	0	0	76.8970
	Gania Range Total		1200.7796	0	0	1200.7796
	Odogaon Range					
23	Makarapalli (PRF)		1126.2980	0.51	1.398	1124.390
	Odogaon Range total		1126.2980	0.510	1.398	1124.390
	Panchirida Range					
24	Banijhari (PRF)		2756.6170	0	0	2756.617
25	Sukarmala (PRF)		2525.8950	0	0	2525.895
26	Ambamundia (PRF)		297.7761	0	0	297.776
	Panchirida Range Total		5580.2881	0.000	0.000	5580.288
	Nayagarh Range					
27	Barabanka (PRF)		583.1289	0	3.21	579.9189
	Nayagarh Range Total		583.1289	0	3.21	579.91890
	Div. Total		11755.8650	0.510	80.148	11675.20700
	DPF					
	Daspalla Range					
1	Kuradhinisa Ext		2615.4160	0	0	2615.416
2	Kuradhinisha (DPF)		505.1108	0	0	505.1108
3	Kerabari (DPF)		39.6854	0	0	39.6854
4	Nandagadu (DPF)		54.4770	0	0	54.477
5	Nuagaon (DPF)		49.4514	0	0	49.451
6	Sirisabadi (DPF)		934.9828	0	0	934.983
7	Sikharpanga (DPF)		87.6165	0	0	87.617
8	Ranga (DPF)		305.9649	0	0	305.965
9	Baijhari (DPF)		89.4322	0	0	89.4322
	Daspalla Range Total		4682.1370	0.000	0.000	4682.137
	Gania Range					
10	Matia Extn (DPF)		546.1503	0	0	546.150
11	Bankamunda Extn-II (DPF)		546.6233	0	0	546.623
12	Arakhataila		253.3231	0	0	253.323
13	Ambaghati-I		1.1650	0	0	1.1650
14	Ambaghati-II		11.8504	0	0	11.8504
15	Ambaghati-III		1.9600	0	0	1.960
16	Ambaghati-IV		60.3667	0	0	60.3667



17	Makarprasad		125.2948	0	0	125.295
	Gania Range Total		1546.7336	0.000	0.000	1546.734
	Odogaon Range					
18	Dhadi (DPF) (Panchirida)		232.8733	0	0	232.873
19	Takarakhai (DPF) (Panchirida)		78.8052	0	0	78.8052
20	Kurala (DPF)		677.3515	0	0	677.352
21	Nariamba		774.0594	0	0	774.059
	Odogaon Range (Total)		1763.0894	0.000	0.000	1763.089
	Mahipur Range					
22	Bhagabati (DPF)		62.0763	0	0	62.0763
	Mahipur Range (Total)		62.0763	0.000	0.000	62.0763
	Panchirida Range					
23	Binjhagiri (DPF)		250.2270	0	0	250.227
24	Netabandha (DPF)		141.5044	0	0	141.504
	Panchirida Range (Total)		391.7314	0.000	0.000	391.731
	Division Total		8445.7677	0.000	0.000	8445.7677
	PF					
	Gania Range					
1	Arakhataila PF		95.7500	0	0	95.75
2	Bindhyagiri PF		347.8700	0	0	347.87
	Gania Range (Total)		443.6200	0	0	443.62
	Khandapada Range					
3	Kasia		321.9800			321.98
	Khandapara Range (Total)		321.9800	0	0	321.98
	Mahipur Range					
4	Badadurupa		64.5800			64.58
5	Banuasahi		40.2100			40.21
6	Bamuri		57.4800			57.48
7	Turuturi		116.5800			116.58
	Mahipur Range (Total)		278.8500	0	0	278.85
	Odagaon Range					
8	KumbhiaPalli		62.2400			62.24
	Odagaon Range (Total)		62.2400	0	0	62.24
	Panchirida Range					
9	Bhandar		125.0400			125.04
10	Chhanchunia		303.5100			303.51
	Panchirida Range (Total)		428.5500	0	0	428.55
	Div Total		1535.2400	0	0	1535.24



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	RF, PRF, DPF ,PF		107272.4215	5.8970	1964.7740	105301.7505
	All VF (63 Block)		579.4500			579.45
	Div. G. Total		107851.8715	5.8970	1964.7740	105881.2005



Table No 13.3B Forest Blocks and area assigned to Various Working Circle – Nayagarh Division. (Area in ha)

SL no	Name of forest block	Comp. No	Area Available for Management.	Allotted to WC (in Ha)									
				SWC	RWC	PIWC	Protection	Misc WC	Bamboo(O) WC	NTFP (O) WC	WL(O) WC	JFM(O) WC	Car Timber (O) WC
	Reserved Forest												
	Daspalla Range												
1	Ambalimba	AI 1	554.4190	554.4190	0.0000				554.419	554.4190	554.4190	100.0	554.4190
2	Central R.F	CI 1	999.5352	999.5352	0.0000				999.5352	999.5352	999.5352	1020	999.5352
3	Central R.F	CI 2	586.8663	576.8663	0.0000	10.0			586.8663	586.8663	586.8663	200	586.8663
4	Central R.F	CI 3	483.0487	463.0487	0.0000	20.0			483.0487	483.0487	483.0487		483.0487
5	Central R.F	CI 4	890.6640	814.6640	0.0000		76.0		890.6640	890.6640	890.6640		814.6640
6	Central R.F	CI 5	551.6211	503.6211	0.0000		48.0		551.6211	551.6211	551.6211		503.6211
7	Central R.F	CI 6	644.4631	644.4631	0.0000				644.4631	644.4631	644.4631		644.4631
8	Central R.F	CI 7	398.6703	366.6703	0.0000		32.0		398.6703	398.6703	398.6703	250	366.6703
9	Central R.F	CI 8	543.2473	471.2473	0.0000		72.0		543.2473	543.2473	543.2473		471.2473
10	Central R.F	CI 9	749.1270	749.1270	0.0000				749.1270	749.1270	749.1270		749.1270
11	Central R.F	CI 10	925.3559	839.3559	0.0000		86.0		925.3559	925.3559	925.3559		839.3559
12	Central R.F	CI 11	964.4480	898.4480	0.0000		66.0		964.4480	964.4480	964.4480		898.4480
13	Central R.F	CI 12	651.5344	587.5344	0.0000		64.0		651.5344	651.5344	651.5344		587.5344
14	Central R.F	CI 13	957.5446	847.5446	0.0000		110.0		957.5446	957.5446	957.5446		847.5446
15	Chadiapalli R.F	Cp 1	419.5593	419.5593	0.0000				419.5593	419.5593	419.5593	350	419.5593
16	Chadiapalli R.F	Cp 2	686.0548	686.0548	0.0000				686.0548	686.0548	686.0548	400	686.0548
17	Chadiapalli R.F	Cp 3	927.0187	927.0187	0.0000				927.0187	927.0187	927.0187		927.0187
18	Chadiapalli R.F	Cp 4	510.5561	408.5561	0.0000		102.0		510.5561	510.5561	510.5561		408.5561
19	Chadiapalli R.F	Cp 5	483.0798	483.0798	0.0000				483.0798	483.0798	483.0798	200	483.0798



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20	Chadiapalli R.F	Cp 6	930.7682	930.7682	0.0000				930.7682	930.7682	930.7682		930.7682
21	Chadiapalli R.F	Cp 7	947.8103	947.8103	0.0000				947.8103	947.8103	947.8103		947.8103
22	Chadiapalli R.F	Cp 8	416.7687	416.7687	0.0000				416.7687	416.7687	416.7687		416.7687
23	Chadiapalli R.F	Cp 9	316.8639	316.8639	0.0000				316.8639	316.8639	316.8639		316.8639
24	Chadiapalli R.F	Cp 10	422.753	422.7530	0.0000				422.7530	422.7530	422.7530		422.7530
25	Chhades RF	Cd 1	1676.4470		1676.4470					1676.4470	1676.4470	460	1676.4470
26	Nuagaon R.F	NG-1	615.6390	615.6390	0.0000				615.6390	615.639	615.639	300	615.6390
	Nuagaon R.F	NG-2	580.1000	580.1000					580.1000	580.1	580.1	200	580.1000
27	Nasaghar R.F	Ns.1	552.8431	552.8431	0.0000				552.8431	552.8431	552.8431	0	552.8431
28	Nasaghar R.F	Ns.2	211.2504	211.2504	0.0000				211.2504	211.2504	211.2504	0	211.2504
29	Nasaghar R.F	Ns 3	384.9720	384.9720	0.0000				384.9720	384.972	384.972	0	384.9720
30	Nasaghar R.F	Ns 4	478.0713	478.0713	0.0000				478.0713	478.0713	478.0713	0	478.0713
31	Poibari R.F	Pb 1	1619.8440		1459.8440		160.0		1619.8440	1619.844	1619.844		1459.8440
32	Pokharigochha R.F	Pg 1	732.1588	678.1588			54.0		732.1588	732.1588	732.1588		678.1588
33	Pokharigochha R.F	Pg 2	593.7644	457.7644		12.0	124.0			593.7644	593.7644		469.7644
34	Pokharigochha R.F	Pg 3	521.9499	521.9499					521.9499	521.9499	521.9499	450	521.9499
35	Pokharigochha R.F	Pg 4	728.8277	578.8277			150.0		728.8277	728.8277	728.8277	219.4	578.8277
36	Pokharigochha R.F	Pg 5	513.7106		491.7106		22.0			513.7106	513.7106		491.7106
37	Pokharigochha R.F	Pg 6	181.2128		131.2128		50.0			181.2128	181.2128	100	131.2128
38	Pokharigochha R.F	Pg 7	394.8244		356.8244		38.0			394.8244	394.8244	20.6	356.8244
39	Pokharigochha R.F	Pg 8	182.8310	182.8310						182.831	182.831		182.8310
Daspalla Range Total			25930.2241	20518.1853	4116.0388	42.0000	1254.0000	0.0000	22387.4339	25930.2241	25930.2241	4270.0000	24634.2241
	Gania range												0.0000
40	Bankamunda R.F	Bm 1	602.6840		442.6840	160.0			602.6840	602.6840	602.6840	515	602.6840
41	Bankamunda R.F	Bm-2	370.8514		370.8514				370.8514	370.8514	370.8514	300	370.8514
42	Bankamunda R.F	Bm-3	288.7945		288.7945					288.7945	288.7945	200	288.7945
43	Bankamunda R.F	Bm-4	597.4703		597.4703					597.4703	597.4703	221	597.4703



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44	Gania R.F	Gn 1	342.8016		162.8016	180.0				342.8016	342.8016	308.5	342.8016
45	Matia R.F	Mt 1	643.6100		633.6100	10.0				643.6100	643.6100		643.6100
46	Makarprasad R.F	Mp 1	1157.6710		1157.6710					1157.671	1157.671		1157.6710
47	Manibhadra R.F	Mv 1	527.9488		517.9488	10.0				527.9488	527.9488		527.9488
Gania Range Total			4531.8316	0.0000	4171.8316	360.0000	0.0000	0.0000	973.5354	4531.8316	4531.8316	1544.5000	4171.8316
	Khandapara Range												0.0000
48	Bandara R.F	Bn 1	216.6869		166.6869	50.000				216.6869	216.6869	87.8	216.6869
49	Barakhola R.F	Bk 1	787.6532		787.6532				787.6532	787.6532	787.6532	162.7	787.6532
50	Chadeibasa R.F	Cb 1	92.1845		72.1845	20.000				92.1845	92.1845	80	92.1845
51	Dengabahada R.F	Db 1	451.8845		436.8845	15.000				451.8845	451.8845	409.4	451.8845
52	Dengabahada R.F	Db 2	320.3681		310.3681	10.000				320.3681	320.3681	220	320.3681
53	Guriabari R.F	Gb 1 (Patch)	353.1513		308.5313	44.620				353.1513	353.1513	250	353.1513
54	Guriabari R.F	Gb 2 (Patch)	182.4876		182.4876					182.4876	182.4876	180	182.4876
55	Hanumantia R.F	Hm 1	329.61	329.6100						329.6100	329.6100	300	329.6100
56	Mainsibindha R.F	Mb 1	637.3768		637.3768				637.3768	637.3768	637.3768	400	637.3768
57	Similibanka R.F	Sb 1	216.9048		216.9048					216.9048	216.9048	200	216.9048
58	Pathara R.F	Pt 1	49.01665		49.01665					49.01665	49.01665	30	49.0167
59	Pithakhai R.F	Pk 1	363.1600		353.1600			10.0		363.16	363.16	300	353.1600
60	Sapua R.F	Sp 3	701.7006		701.7006					701.7006	701.7006	600	701.7006
61	Sapua R.F	Sp 4	555.9740		555.9740				555.9740	555.974	555.974	450	555.9740
62	Sapua R.F	Sp 5	805.3868		805.3868				805.3868	805.3868	805.3868	700	805.3868
63	Sapua R.F	Sp 6	725.3056		725.3056				725.3056	725.3056	725.3056		725.3056
64	Sapua R.F	Sp 7	883.4660		883.4660				883.4660	883.466	883.466		883.4660
65	Sapua R.F	Sp 8	386.2498		386.2498					386.2498	386.2498	300	386.2498
66	Sapua R.F	Sp 9	650.3146		650.3146					650.3146	650.3146		650.3146
67	Sapua R.F	Sp 10	481.2428		481.2428					481.2428	481.2428	225.614	481.2428



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68	Sapua R.F	Sp 11	521.5492		511.5492	10.000			521.5492	521.5492	521.5492		521.5492
69	Sapua R.F	Sp 12	721.5915		721.5915				721.5915	721.5915	721.5915	24	721.5915
70	Sapua R.F	Sp 13	711.9831		711.9831					711.9831	711.9831		711.9831
71	Sikharpur R.F (P)	Sr 1	1374.1130		1349.1130	25.000				1374.1130	1374.1130		1374.1130
72	Patrabani Jamubani R.F	Pj 1	210.3444		209.6394	0.705				210.3444	210.3444		210.3444
Khandapara Range (Total)			12729.7058	329.6100	12214.7708	175.3250	0.0000	10.0000	5638.3031	12729.7058	12729.7058	4919.5140	12544.3808
	Mahipur Range												0.0000
73	Hatimunda R.F	Hm 1	603.1684		603.1684				603.1684	603.1684	603.1684	300	603.1684
74	Hatimunda R.F	Hm 2	475.0121		475.0121					475.0121	475.0121	250	475.0121
75	Hatimunda R.F	Hm 3	273.4262		273.4262					273.4262	273.4262		273.4262
76	Hatimunda R.F (Nayagarh Range)	Hm 4	218.0725		218.0725					218.0725	218.0725	200	218.0725
77	Hatimunda R.F (Nayagarh Range)	Hm 5	386.9039		386.9039					386.9039	386.9039	300	386.9039
78	Hatimunda R.F (Nayagarh Range)	Hm 6	319.8856		319.8856				319.8856	319.8856	319.8856		319.8856
79	Hatimunda R.F (Nayagarh Range)	Hm 7	478.4259		443.4259	35.0				478.4259	478.4259	200	478.4259
80	Hatimunda R.F (Nayagarh Range)	Hm 8	589.045		589.0450				589.0450	589.0450	589.0450	400	589.0450
81	Hatimunda R.F (Nayagarh Range)	Hm 9	707.7462		692.7462			15.0	707.7462	707.7462	707.7462	550	692.7462
82	Hatimunda R.F (Nayagarh Range)	Hm 10	222.6502		222.6502				222.6502	222.6502	222.6502	200	222.6502
83	Hatimunda R.F (Nayagarh Range)	Hm 11	461.162		451.1620	10.0				461.1620	461.1620	360	461.1620
84	Hatimunda R.F	Hm 12	498.5381		498.5381				498.5381	498.5381	498.5381	400	498.5381
85	Maicheli Sampada R.F	Ms 1	284.2927	284.2927						284.2927	284.2927	300	284.2927
86	Ratadei R.F	Rd 1	314.8743		284.6043	30.27			314.8743	314.8743	314.8743	215	314.8743
87	Ratadei R.F	Rd 2	655.7564	655.7564					655.7564	655.7564	655.7564	456	655.7564
88	Ratadei R.F	Rd 3	349.6245		349.6245				349.6245	349.6245	349.6245	300	349.6245
89	Ratadei R.F	Rd 4	763.7505	763.7505					763.7505	763.7505	763.7505	368	763.7505



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90	Palva R.F	Pb 1	461.6117	425.6117			36.0		461.6117	461.6117	461.6117		425.6117
91	Palva R.F	Pb 2	337.6271		313.6271		24.0		337.6271	337.6271	337.6271		313.6271
92	Palva R.F	Pb 3	293.4185		267.4185		26.0		293.4185	293.4185	293.4185		267.4185
93	Palva R.F	Pb 4	429.9870		403.9870		26.0		429.9870	429.9870	429.9870		403.9870
94	Palva R.F	Pb 5	440.3508	394.3508			46.0			440.3508	440.3508		394.3508
95	Palva R.F	Pb 6	402.2832	402.2832						402.2832	402.2832		402.2832
96	Palva R.F	Pb 7	394.3466		294.3466		100.0			394.3466	394.3466		294.3466
97	Palva R.F	Pb 8	355.1275	355.1275						355.1275	355.1275		355.1275
98	Sulia R.F	Sl 1	647.5751		647.5751				647.5751	647.5751	647.5751		647.5751
99	Sulia R.F	Sl 2	502.3064		402.3064		100		502.3064	502.3064	502.3064		402.3064
100	Ragadimada R.F	Rm 1	403.9182		403.9182				403.9182	403.9182	403.9182		403.9182
101	Ragadimada R.F	Rm 2	661.2036		661.2036				661.2036	661.2036	661.2036	360	661.2036
102	Ragadimada R.F	Rm 3	405.1577		405.1577				405.1577	405.1577	405.1577		405.1577
103	Ragadimada R.F	Rm 4	427.5547		321.5547	20	86.0		427.5547	427.5547	427.5547		341.5547
104	Ragadimada R.F	Rm 5	727.8733	665.8733		20.0	42.0		727.8733	727.8733	727.8733		685.8733
105	Ragadimada R.F	Rm 6	481.1499		481.1499				481.1499	481.1499	481.1499		481.1499
106	Ragadimada R.F	Rm 7	544.5512		544.5512				544.5512	544.5512	544.5512	430.25	544.5512
107	Ragadimada R.F	Rm 8	267.8752		201.8752		66.0		267.8752	267.8752	267.8752		201.8752
108	Ragadimada R.F	Rm 9	530.9555		530.9555					530.9555	530.9555	145	530.9555
109	Panchupandav R.F	Pp 1	324.7043		324.7043				324.7043	324.7043	324.7043		324.7043
110	Panchupandav R.F	Pp 2	417.0817		417.0817				417.0817	417.0817	417.0817		417.0817
Mahipur Range (Total)			17058.9937	3947.0461	12429.6776	115.2700	552.0000	15.0000	12358.6348	17058.9937	17058.9937	5734.2500	16376.7237
	Nayagarh Range												0.0000
111	Balaram RF	Br 1	339.5281	0.0000	289.5281			50.0		339.5281	339.5281	320.95	289.5281
112	Hatimunda R.F (Mahipur Range)	Hm 13	312.9783		312.9783					312.9783	312.9783	306	312.9783
113	Hatimunda R.F (Mahipur Range)	Hm 14	338.5783		338.5783					338.5783	338.5783	330	338.5783
114	Hatimunda R.F	Hm 15	360.3932		360.3932					360.3932	360.3932	300	360.3932



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	(Mahipur Range)												
115	Hatimunda R.F (Mahipur Range)	Hm 16	200.2457		200.2457					200.2457	200.2457	130	200.2457
116	Hatimunda R.F (Mahipur Range)	Hm 17	255.3059		255.3059					255.3059	255.3059	250	255.3059
117	Hatimunda R.F (Mahipur Range)	Hm 18	155.5424		75.5424	80.0				155.5424	155.5424	150	155.5424
118	Hatimunda R.F (Mahipur Range)	Hm 19	546.4431		546.4431					546.4431	546.4431	532.1	546.4431
119	Hatimunda R.F (Mahipur Range)	Hm 20	367.5184	352.5184				15.0		367.5184	367.5184	360	352.5184
120	Rukhi R.F	Rk 1	220.8998		220.8998					220.8998	220.8998	200	220.8998
121	Sulia R.F	Sl 3	738.3452		648.3452	90.0			738.3452	738.3452	738.3452	720	738.3452
122	Sapua R.F (Khandapada)	Sp 1	337.4165		337.4165				337.4165	337.4165	337.4165	269	337.4165
123	Sapua R.F (Khandqapada)	Sp 2	555.9866		555.9866					555.9866	555.9866	580	555.9866
124	Patharakata R.F	Pk 1	135.0238		120.0238	15.0				135.0238	135.0238	135	135.0238
Nayagarh Range(Total)			4864.2053	352.5184	4261.6869	185.0000	0.0000	65.0000	1075.7617	4864.2053	4864.2053	4583.0500	4614.2053
	Odogaon Range												0.0000
125	Bahadajhola R.F		404.5449	204.1200	190.4249	10				404.5449	404.5449	234.5	404.5449
126	Balisinsa Badhulipur R.F	Bb 1	92.2116		92.2116					92.21163	92.21163	92	92.2116
127	Balisinsa Badhulipur R.F	Bb 2	313.8678		313.8678					313.8678	313.8678	300	313.8678
128	Gayalsingh R.F	Gs 1	324.3672		324.3672				324.3672	324.3672	324.3672	300	324.3672
129	Gayalsingh R.F	Gs 2	393.3122		363.3122	30			393.3122	393.3122	393.3122	350	393.3122
130	Gayalsingh R.F	Gs 3	361.3458		356.3458			5.0	361.3458	361.3458	361.3458	361	356.3458
131	Gayalsingh R.F	Gs 4	320.5606		300.5606	20			320.5606	320.5606	320.5606		320.5606
132	Gochha R.F	Gc 1	452.5743		362.5743		90.00		452.5743	452.5743	452.5743	400	362.5743
133	Gochha R.F	Gc 2	412.9092		330.9092		82.00		412.9092	412.9092	412.9092		330.9092
134	Gochha R.F	Gc 3	218.7219	174.7219			44.00		218.7219	218.7219	218.7219	200	174.7219
135	Gochha R.F	Gc 4	459.7796	459.7796					459.7796	459.7796	459.7796	460	459.7796
136	Gochha R.F	Gc 5	311.7409	311.7409					311.7409	311.7409	311.7409	300	311.7409



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137	Gochha R.F	Gc 6	432.2297	346.2297			86.00		432.2297	432.2297	432.2297		346.2297
138	Gochha R.F	Gc 7	877.278		723.2780		154.00		877.2780	877.278	877.278	450	723.2780
139	Gochha R.F	Gc 8 (a)	823.0117		671.8217	1.19	150.00		823.0117	823.0117	823.0117		673.0117
140	Gochha R.F	Gc 18	396.764		296.7640	20	80.00		396.7640	396.764	396.764	157	316.7640
142	Sulia R.F	Sl 4	915.8674		905.8674	10.0			915.8674	915.8674	915.8674		915.8674
143	Sulia R.F	Sl 8	477.5446		372.5446	100.0		5.0	477.5446	477.5446	477.5446		472.5446
144	Sulia R.F	Sl 9	668.6969		648.6969	20.0				668.6969	668.6969		668.6969
Odogaon Range (Total)			8657.3283	1496.5921	6253.5462	211.1900	686.0000	10.0000	7178.0071	8657.3283	8657.3283	3604.5000	7750.1383
	Panchirida Range												0.0000
145	Gochha R.F	Gc 9	956.5656		856.5656		100.0			956.5656	956.5656	856	0.0000
146	Gochha R.F	Gc 10	842.4302		754.4302		88.0		842.4302	842.4302	842.4302		856.5656
147	Gochha R.F	Gc 11	740.4688		660.4688		80.0			740.4688	740.4688		754.4302
148	Gochha R.F	Gc 12	774.6294		724.6294	50.0			774.6294	774.6294	774.6294	454	660.4688
149	Gochha R.F	Gc 13	447.713		447.7130					447.713	447.713		774.6294
150	Gochha R.F	Gc 14	779.5681		625.5681	70.0	74.0	10.0	779.5681	779.5681	779.5681	564	447.7130
151	Gochha R.F	Gc 15	654.5882		524.5882		130.0		654.5882	654.5882	654.5882	600	695.5681
152	Gochha R.F	Gc 16	465.5781		465.5781				465.5781	465.5781	465.5781	430	524.5882
153	Gochha R.F	Gc 17	446.5627		446.5627				446.5627	446.5627	446.5627		465.5781
154	Khatia Damasahi R.F		268.2350		223.2350	45				268.235	268.235	208	446.5627
155	Patharaganda R.F	Pd 1	316.8457		316.8457				316.8457	316.8457	316.8457	303	268.2350
156	Patharaganda R.F	Pd 2	273.4276		219.4276		54.00		273.4276	273.4276	273.4276		316.8457
157	Patharaganda R.F	Pd 3	298.5558		298.5558				298.5558	298.5558	298.5558	246	219.4276
158	Patharaganda R.F	Pd 4	394.0514		384.0514	10			394.0514	394.0514	394.0514	375	298.5558
159	Sulia R.F	Sl 6	1328.8260		1328.8260				1328.8260	1328.8260	1328.8260	909	394.0514
160	Sulia R.F	Sl 7	885.2014		735.2014		140.0	10.0	885.2014	885.2014	885.2014		1328.8260
Panchirida Range Total			9873.2470	0.0000	9012.2470	175.0000	666.0000	20.0000	7460.2646	9873.2470	9873.2470	4945.0000	9012.2470
Division Total			83645.5358	26643.9519	52459.7989	1263.7850	3158.0000	120.0000	57071.9406	83645.5358	83645.5358	29600.8140	79103.7508



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	of PRF											80367.5358
	Daspalla Range											0.0000
1	Khamana (PRF)		116.8569		116.8569				116.8569	116.8569	50	0.0000
2	Boni (PRF)		79.3134		79.3134				79.3134	79.3134		116.8569
3	Gumurukhola (PRF)		270.9614		270.9614				270.9614	270.9614		79.3134
4	Pankalasahi (PRF)		68.1276		68.1276				68.1276	68.1276		270.9614
5	Baisipalli Extn-I (PRF)		73.2720		73.2720				73.272	73.272		68.1276
6	Baisipalli Extn-II (PRF)		71.9664	71.966					71.9664	71.9664		73.2720
7	Baisipalli Ext-III (PRF)		163.6354	163.635					163.6354	163.6354		71.9664
8	Dhundugadia PRF		756.7991		756.7991				756.7991	756.7991		163.6354
9	Nephari (PRF)		253.7985	253.799					253.7985	253.7985		756.7991
10	Gochhabari		522.0140	522.014					522.014	522.014		253.7985
11	Gambhariganda (PRF)		288.2498	288.250					288.2498	288.2498		522.0140
12	Baliberena (PRF)		44.5776	44.578					44.5776	44.5776		288.2498
13	Chadiapalli Extn (PRF)		378.0971	378.097					378.0971	378.0971		44.5776
14	Aranignda (PRF)		102.1612	102.161					102.1612	102.1612		378.0971
Daspalla Range total			3189.8304	1824.5000	1365.3304	0.0000	0	0.000	3189.8304	3189.8304	50	3189.8304
	Gania Range											3189.8304
15	Phasi Extn-I (PRF)		23.4961		23.4961				23.4961	23.4961	20	0.0000
16	Phasi Extn-II (PRF)		112.0323		112.0323				112.0323	112.0323		23.4961
17	Phasi Extn-III (PRF)		58.8719		58.8719				58.8719	58.8719	40	112.0323
18	Matia (PRF)		54.8403		34.8403	20.000			54.8403	54.8403	26	58.8719
19	Bankamunda Extn-I (PRF)		205.6272		205.6272				205.6272	205.6272		54.8403
20	Baisipalli Ext-IV		609.1446		489.1446		120.000		609.1446	609.1446		205.6272
21	Palava (PRF)		59.8702		59.8702				59.8702	59.8702		489.1446
22	Ragadimada (PRF)		76.8970		76.8970				76.897	76.897		59.8702



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Gania Range Total			1200.7796		1060.7796	20.00	120.000	0.000		1200.7796	1200.7796	86	1060.7796
	Odogaon Range												1080.7796
23	Makarapalli (PRF)		1124.390		1104.3900	20	0.000	0		1124.39	1124.39	200	0.0000
Odogaon Range total			1124.390	0.000	1104.3900	20.000	0.000	0.000		1124.39	1124.39	200	1104.3900
Panchirida Range													0.0000
24	Banijhari (PRF)		2756.617		2756.6170					2756.617	2756.617	756	0.0000
25	Sukarmala (PRF)		2525.895		2495.8950	30.0				2525.895	2525.895	719	2756.6170
26	Ambamundia (PRF)		297.776		297.7761					297.7761	297.7761		2525.8950
	Panchirida Range Total		5580.288	0.000	5550.2881	30.000	0.000	0.000		5580.2881	5580.2881	1475	297.7761
	Nayagarh Range												5580.2881
27	Barabanka (PRF)		579.9189		549.9189	30.0				579.9189	579.9189	200	0.0000
Nayagarh Range Total			579.91890		549.9189	30.0				579.9189	579.9189	200	549.9189
	Div. Total		11675.2070	1824.500	9630.7070	100.000	120.000	0.000	0.000	11675.207	11675.207	2011.000	579.9189
	of DPF												11555.2070
	Daspalla Range												0.0000
1	Kuradhinisa Ext		2615.416		2615.4160					2615.416	2615.416		0.0000
2	Kuradhinisha (DPF)		505.1108		505.1108					505.1108	505.1108		2615.4160
3	Kerabari (DPF)		39.6854		39.6854					39.6854	39.6854		505.1108
4	Nandagadu (DPF)		54.477		54.4770					54.477	54.477		39.6854
5	Nuagaon (DPF)		49.451		49.4514					49.45136	49.45136		54.4770
6	Sirisabadi (DPF)		934.983		934.9828					934.9828	934.9828		49.4514
7	Sikharpanga (DPF)		87.617		87.6165					87.61654	87.61654		934.9828
8	Ranga (DPF)		305.965		305.9649					305.9649	305.9649		87.6165
9	Baijhari (DPF)		89.4322	89.4322						89.4322	89.4322		305.9649
Daspalla Range Total			4682.137	89.432	4592.7048	0.000	0.000	0.000	0.000	4682.137	4682.137	0.000	4682.1370
	Gania Range												4682.1370
10	Matia Extn (DPF)		546.15030		546.1503					546.1503	546.1503	17.5	0.0000



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11	Bankamunda Extn-II (DPF)	546.62330		546.6233					546.6233	546.6233	95	546.1503
12	Arakhataila	253.32310		218.3231	35				253.3231	253.3231		546.6233
13	Ambaghathi-I	1.16500		1.1650					1.165	1.165		253.3231
14	Ambaghathi-II	11.85040		11.8504					11.8504	11.8504		1.1650
15	Ambaghathi-III	1.96000		1.9600					1.96	1.96		11.8504
16	Ambaghathi-IV	60.36670		60.3667					60.3667	60.3667		1.9600
17	Makarprasad	125.29480		125.2948					125.2948	125.2948		60.3667
	Gania Range Total	1546.7336	0.0000	1511.7336	35.0000	0.0000	0.0000	0.0000	1546.7336	1546.7336	112.500	125.2948
	Odogaoon Range											1546.7336
18	Dhadi (DPF)	232.8733		232.8733					232.8733	232.8733	132	0.0000
19	Takarakhai (DPF)	78.8052		78.8052					78.8052	78.8052	56.06	232.8733
20	Kurala (DPF)	677.3515		637.3515	40				677.3515	677.3515	152	78.8052
21	Nariamba	774.0594		744.0594	30				774.0594	774.0594	112	677.3515
	Odogaoon Range (Total)	1763.0894	0.000	1693.0894	70.000	0.000	0.000	0.000	1763.089	1763.089	452.060	1693.0894
	Mahipur Range											1763.0894
22	Bhagabati (DPF)	62.0763		62.0763		0			62.0763	62.0763		0.0000
	Mahipur Range (Total)	62.0763	0.000	62.0763		0.000	0.000	0.000	62.076	62.076	0.000	62.0763
	Panchirida Range											62.0763
23	Binjhagiri (DPF)	250.2270		150.2270	100.0				250.227	250.227	50	0.0000
24	Netabandha (DPF)	141.5044		141.5044					141.5044	141.5044	25	250.2270
	Panchirida Range (Total)	391.7314	0.000	291.7314	100.000	0.000	0.000	0.000	391.731	391.731	75.000	291.7314
	Division Total	8445.7677	89.4322	8151.3355	205.000	0.000	0.000	0.000	8445.7677	8445.7677	639.560	391.7314
	Of PF											8445.7677
	Gania Range											0.0000
1	Arakhataila PF	95.75			95.75						95.75	0.0000
2	Bindhyagiri PF	347.87			347.87						347.87	0.0000
	Gania Range (Total)	443.62	0	0.0000	443.62	0	0	0			443.62	0.0000



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	Khandapada Range												0.0000
3	Kasia		321.98			321.98						321.98	0.0000
Khandapara Range (Total)			321.98	0	0.0000	321.98	0	0				321.98	0.0000
	Mahipur Range												0.0000
4	Badadurupa		64.58			64.58						64.58	0.0000
5	Banuasahi		40.21			40.21						40.21	0.0000
6	Bamuri		57.48			57.48						57.48	0.0000
7	Turuturi		116.58			116.58						116.58	0.0000
Mahipur Range (Total)			278.85	0	0.0000	278.85	0	0	0			278.85	0.0000
	Odagaon Range												0.0000
8	KumbhiaPalli		62.24			62.24						62.24	0.0000
Odagaon Range (Total)			62.24	0	0.0000	62.24	0	0	0			62.24	0.0000
	Panchririda Range												0.0000
9	Bhandar		125.04			125.04						125.04	0.0000
10	Chhanchunia		303.51			303.51						303.51	0.0000
Panchrida Range (Total)			428.55	0	0	428.55	0	0	0	0	0	428.55	0.0000
	Div Total		1535.24	0	0.0000	1535.24	0	0	0			1535.24	0.0000
	RF, PRF, DPF ,PF		105301.7505	28557.8841	70241.8414	3104.0250	3278.0000	120.0000	57071.9406	103766.5105	103766.5105	33786.6140	0.0000
	All VF (63 Block)		579.45			579.45							100368.5105
	Div. G. Total		105881.2005	28557.8841	70241.8414	3683.4750	3278.0000	120.0000	57071.9406	103766.5105	103766.5105	33786.6140	0.0000

The Divisional Area Statement is at Annexure-XVI.

RCCF (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.



13.4: Period of Working Plan and necessity for intermediate revision.

The period of this working Plan is **from 1st April'2021 to 31st March 2031**. The implementation and probable impact of various prescriptions may be reviewed after five years of working, if it is so required.

Deviation statement along with the prescribed documents shall be reported and get 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.



CHAPTER 14

SELECTION WORKING CIRCLE (S.W.C)

14.1 Name of working circle:

The Forest blocks having good crop with crop density above 40% and trees above harvestable diameter / Girth at Breast Height and in approach class are available, it is proposed to harvest silviculturally available trees. Previously these blocks were also managed under Selection Working Circle, Sal Conversion Working circle and at present are in a good health. There are also areas / patches in the some compartment where congested pole crops are available and diameter growth is hampered due to non availability of adequate space to grow. These pockets coming in the same compartment needs to be thinned to put diameter growth. Other silvicultural operations are also required to retain or improve the stand through silvicultural operations. Hence “**Selection Working Circle**” is constituted for better management. The total Area assigned to this Working Circle is **28557.8841 ha.**

14.2 General constitution of working circle:

The forest blocks included in this working circle consists of Moist Sal Forests. Sal is up to 40% and above of the stand. The area assigned to this Working Circle is at **Table No 14.1 below.**

Table No 14.1 List of Blocks allotted to Selection Working Circle- Nayagarh Division					
Sl No	Block	Compt.	Area for management	SWC	JFM
	RF				
	Daspalla Range				
1	Ambalimba		554.4190	554.4190	100.00
2	Central R.F	CI 1	999.5352	999.5352	1020.00
3	Central R.F	CI 2	586.8663	576.8663	200.00
4	Central R.F	CI 3	483.0487	463.0487	
5	Central R.F	CI 4	890.664	814.664	
6	Central R.F	CI 5	551.6211	503.6211	
7	Central R.F	CI 6	644.4631	644.4631	
8	Central R.F	CI 7	398.6703	366.6703	250.00



9	Central R.F	Cl 8	543.2473	471.2473	
10	Central R.F	Cl 9	749.1270	749.1270	
11	Central R.F	Cl 10	925.3559	839.3559	
12	Central R.F	Cl 11	964.448	898.448	
13	Central R.F	Cl 12	651.5344	587.5344	
14	Central R.F	Cl 13	957.5446	847.5446	
15	Chadiapalli R.F	Cp 1	419.5593	419.5593	350.00
16	Chadiapalli R.F	Cp 2	686.0548	686.0548	400.00
17	Chadiapalli R.F	Cp 3	927.0187	927.0187	
18	Chadiapalli R.F	Cp 4	510.5561	408.5561	
19	Chadiapalli R.F	Cp 5	483.0798	483.0798	200.00
20	Chadiapalli R.F	Cp 6	930.7682	930.7682	
21	Chadiapalli R.F	Cp 7	947.8103	947.8103	
22	Chadiapalli R.F	Cp 8	416.7687	416.7687	
23	Chadiapalli R.F	Cp 9	316.8639	316.8639	
24	Chadiapalli R.F	Cp 10	422.7530	422.7530	
25	Nuagaon R.F	NG 1	615.639	615.639	300.00
26	Nuagaon R.F	NG2	580.10	580.10	200.0
27	Nasaghar R.F	Ns.1	552.8431	552.8431	0.00
28	Nasaghar R.F	Ns.2	211.2504	211.2504	0.00
29	Nasaghar R.F	Ns 3	384.972	384.972	0.00
30	Nasaghar R.F	Ns 4	478.0713	478.0713	0.00
31	Pokharigochha R.F	Pg 1	732.1588	678.1588	
32	Pokharigochha R.F	Pg 2	593.7644	457.7644	
33	Pokharigochha R.F	Pg 3	521.9499	521.9499	450.00
34	Pokharigochha R.F	Pg 4	728.8277	578.8277	219.40
35	Pokharigochha R.F	Pg 8	182.8310	182.8310	
	Daspalla Range Total		21544.1853	20518.1853	3689.40
	Khandapara Range				
36	Hanumantia R.F		329.6100	329.6100	300.00
	Khandapara Range (Total)		329.6100	329.6100	300.00
	Mahipur Range				
37	Maicheli Sampada R.F		284.2927	284.2927	300.00
38	Ratadei R.F	Rd 2	655.7564	655.7564	456.00
39	Ratadei R.F	Rd 4	763.7505	763.7505	368.00
40	Palva R.F	Pb 1	461.6117	425.6117	
41	Palva R.F	Pb 5	440.3508	394.3508	
42	Palva R.F	Pb 6	402.2832	402.2832	



43	Palva R.F	Pb 8	355.1275	355.1275	
44	Ragadimada R.F	Rm 5	727.8733	665.8733	
	Mahipur Range (Total)		4091.0461	3947.0461	1124.0
	Nayagarh Range				
45	Hatimunda R.F	Hm 20	367.5184	352.5184	352.00
	Nayagarh Range(Total)		367.5184	352.5184	352.00
	Odogaon Range				
46	Bahadajhola R.F		404.5449	204.1200	200.00
47	Gochha R.F	Gc 3	218.7219	174.7219	170.0
48	Gochha R.F	Gc 4	459.7796	459.7796	459.00
49	Gochha R.F	Gc 5	311.7409	311.7409	300.00
50	Gochha R.F	Gc 6	432.2297	346.2297	
	Odogaon Range (Total)		1827.0170	1496.5921	1194.50
	Division Total		28159.3768	26643.9519	6659.90
	of PRF				
	Daspalla Range				
1	Baisipalli Extn-II (PRF)		71.9664	71.9664	70.00
2	Baisipalli Ext-III (PRF)		163.6354	163.6354	160.0
3	Nephari (PRF)		253.7985	253.7985	250.0
4	Gochhabari		522.0140	522.0140	522.0
5	Gambhariganda (PRF)		288.2498	288.2498	280.0
6	Baliberena (PRF)		44.5776	44.5776	40.00
7	Chadiapalli Extn (PRF)		378.0971	378.0971	378.0
8	Aranignda (PRF)		102.1612	102.1612	102.0
	Daspalla Range total		1824.500	1824.500	1802.000
	Div. Total				
	of DPF				
	Daspalla Range				
1	Baijhari (DPF)		89.4322	89.4322	0
	Daspalla Range Total		89.4322	89.4322	0
	Div. Total		89.4322	89.4322	0
	Total		30073.3090	28557.8841	8461.900

14.3 General characteristics of vegetation:

The forest included in this working circle bears a good Sal forests and having trees in different Girth Classes well distributed as detailed in the following Table no 14.2

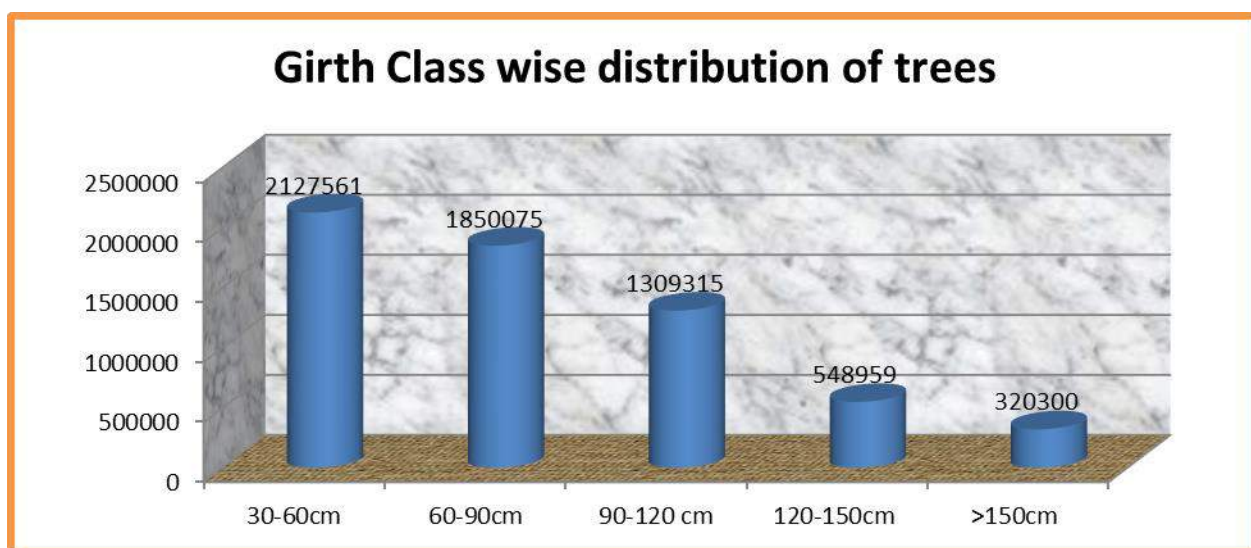


Table No 14.2 Girth Class wise distribution of trees in assigned blocks- Nayagarh Division

Sl No	Forest Block	Comp. No	No of Trees in different Girth Class					Total
			30-60cm	60-90cm	90-120 cm	120-150cm	>150cm	
1	Ambalimba		28130	33654	25741	12503	7234	107262
2	Central R.F	Cl 1 to 13	534869	597696	428818	186760	111524	1859667
3	Chadiapalli R.F	Cp 1 to 10	347502	378361	287674	125182	73986	1212705
4	Nuagaon R.F	1 & 2	77266	66623	38816	20397	16358	219460
5	Nasaghar R.F	Ns.1 to 4	108995	110760	77525	36251	21123	354654
6	Pokharigochha R.F	Pg 1 to 4 & 8	173529	157027	110204	53352	26744	520856
	Khandapara Range							
7	Hanumantia R.F		28362	8146	5086	1913	1285	44792
	Mahipur Range							
8	Maicheli Sampada R.F		36498	20540	12497	3649	2142	75326
9	Ratadei R.F	Rd 2 & 4	131085	75117	56353	15398	9217	287170
10	Palva R.F	Pb 1 & 8	75840	43943	28226	8552	4460	161021
	Palva R.F	Pb 5	52341	28637	17610	5084	2750	106422
	Palva R.F	Pb 6	36492	20231	12517	3586	1938	74764
11	Ragadimada R.F	Rm 5	126530	54442	35015	11157	6900	234044
	Nayagarh Range							
12	Hatimunda R.F	Hm 20	36521	18550	11891	4062	2596	73620
	Odogaon Range							
13	Bahadajhola R.F		44992	26671	16641	4465	2090	94859
14	Gochha R.F	Gc 3 to 6	171152	91322	63638	18629	7357	352098
15	Baisipalli Extn-II (PRF)		6991	7235	4882	2297	1367	22772
16	Baisipalli Ext-III (PRF)		10594	9643	6621	2992	1993	31843
17	Nephari (PRF)		15350	15068	10407	4854	2906	48585
18	Gochhabari		31847	31437	21466	9980	6053	100783
19	Gambhariganda (PRF)		17797	18395	12511	5940	3457	58100
20	Baliberena (PRF)		2451	2568	1750	825	484	8078
21	Chadiapalli Extn		22299	23266	16076	7642	4348	73631



	(PRF)							
22	Aranignda (PRF)		5043	5273	3653	1739	950	16658
23	Baijhari (DPF)		5085	5470	3697	1750	1038	17039
	Division Total		2127561	1850075	1309315	548959	320300	6156210



The Stock maps of the representative Blocks assigned to SWC are furnished at Annexure-XVII.

14.4 Felling series, cutting sections and JFM areas:

14.4.1 Area allotted to Different Felling Series:

For convenience of working and distributed working all over the division, the assigned area is allotted to various felling series and further sub divided to Sections (namely Annual Coupes). The Felling Series Constituted is as follows.



Table No 14.3 Constitution of Felling Series- Nayagarh Division

Name of Felling Series	Range	Forest Block	Comp. No	Area in ha	Total
Ratadei FS	Mahipur	Ratadei RF	2	655.7564	5159.3455
		Ratadei RF	4	763.7505	
		Palva RF	1	425.6117	
		Palva RF	5	394.3508	
		Palva RF	6	402.2832	
		Palva RF	8	355.1275	
		Ragadimada RF	5	665.8733	
	Odogaon	Gocha RF	3	174.7219	
		Gocha RF	4	459.7796	
		Gocha RF	5	311.7409	
		Gocha RF	6	346.2297	
		Bahadajhola	(part)	204.1200	
Nasagarh FS	Daspalla	Ambalimba		554.4190	3401.7754
		Nasagarh RF	1	552.8431	
		Nasagarh RF	2	211.2504	
		Nasagarh RF	3	384.9720	
		Nasagarh RF	4	478.0713	
		Nephari (PRF)		253.7985	
	Khandapada	Hanumantia R.F		329.6100	
	Mahipur	Maicheli Sampada R.F		284.2927	
	Nayagarh	Hatimunda R.F		352.5184	
Central-I FS	Daspalla	Central RF	1	999.5352	5048.0640
		Central RF	2	576.8663	
		Central RF	3	463.0487	
		Central RF	4	814.6640	
		Central RF	5	503.6211	
		Central RF	6	644.4631	
		Gochhabari PRF		522.0140	
		Gambhariganda (PRF)		288.2498	
		Baisipalli Extn-II (PRF)		71.9664	
		Baisipalli Ext-III (PRF)		163.6354	



Central-II FS	Daspalla	Central RF	7	366.6703	5891.1191
		Central RF	8	471.2473	
		Central RF	9	749.1270	
		Central RF	10	839.3559	
		Central RF	11	898.4480	
		Pokharigochha RF	1	678.1588	
		Pokharigochha RF	2	457.7644	
		Pokharigochha RF	3	521.9499	
		Pokharigochha RF	4	578.8277	
		Pokharigochha RF	8	182.8310	
		Aranignda (PRF)		102.1612	
		Baliberena (PRF)		44.5776	
Chadiapali-I FS	Daspalla	Chadiapali RF	5	483.0798	4803.2151
		Chadiapali RF	6	930.7682	
		Chadiapali RF	7	947.8103	
		Chadiapali RF	8	416.7687	
		Chadiapali RF	9	316.8639	
		Chadiapali RF	10	422.7530	
		Nuagaon RF	1	615.639	
		Nuagaon RF	2	580.10	
		Baijhari (DPF)		89.4322	
Chadiapali-II FS	Daspalla	Chadiapali RF	1	419.5593	4254.3650
		Chadiapali RF	2	686.0548	
		Chadiapali RF	3	927.0187	
		Chadiapali RF	4	408.5561	
		Central RF	12	587.5344	
		Central RF	13	847.5446	
		Chadiapalli Extn (PRF)		378.0971	
6 FS		Total		28557.8841	28557.8841



Abstract of Felling Series Constituted

Table No 14.4 Abstract of Felling Series Constituted		
Sl No	Name of Felling Series	Area in Ha
1	Ratadei FS (RFS)	5159.3455
2	Nasagarh FS (NFS)	3401.7754
3	Central-I FS (CFS-I)	5048.0640
4	Central-II FS (CFS-II)	5891.1191
5	Chadiapali-I FS (CPFS-I)	4803.2151
6	Chadiapali-II FS (CPFS-II)	4254.3650
	Total	28557.8841

14.4.2 Cutting Series (Annual Coupe area)

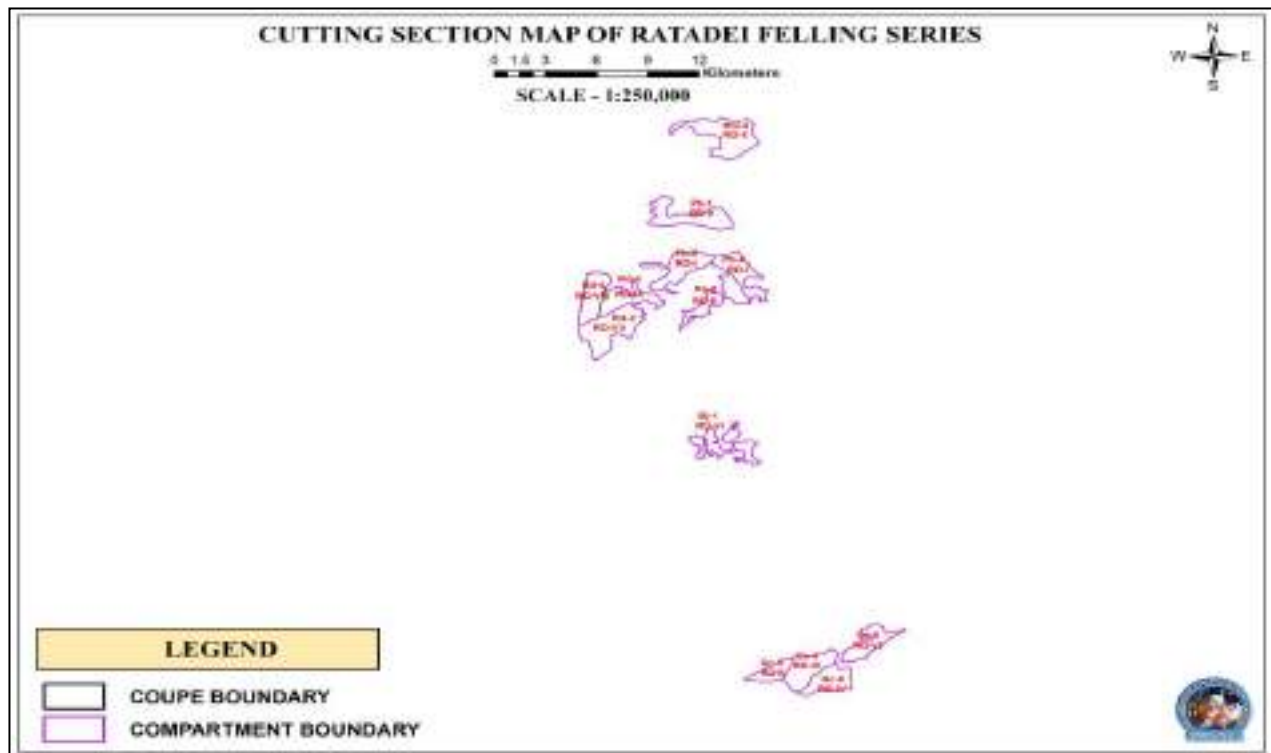
For scientific management of forests and work distribution, each felling series is divided in to 10 sections (Annual Coupe). The sections are furnished below.



14.4.2 (i) Cutting Sections of Ratadei Felling Series

Table No 14.5 Cutting Sections of Ratadei FS

Table No 14.5 Cutting Sections of Ratadei FS							
Name of FS	Range	Year of Working	Section	Forest Block	Comp. no	Area in ha	Coupe Area in Ha
Ratadei FS (RFS)	Mahipur	2021-22	RD-I	Palva RF	5	394.3508	796.634
				Palva RF	6	402.2832	
	Odogaon	2022-23	RD-II	Palva RF	8	355.1275	529.8494
				Gocha RF	3	174.7219	
	Odogaon	2023-24	RD-III	Gocha RF	4	459.7796	459.7796
		2024-25	RD-IV	Gocha RF	6	346.2297	346.2297
		2025-26	RD-V	Palva RF	1	425.6117	425.6117
		2026-27	RD-VI	Bahadajhola	(part)	204.1200	515.8609
				Gocha RF	5	311.7409	
		Mahipur	2027-28	RD-VII	Ratadei RF	2	655.7564
	2028-29		RD-VIII	Ratadei RF	4 (P)	380.00	380.00
	2029-30		RD-IX	Ratadei RF	4 (B)	383.7505	383.7505
	2030-31		RD-X	Ragadimada RF	5	665.8733	665.8733
		Total				5159.3455	5159.3455

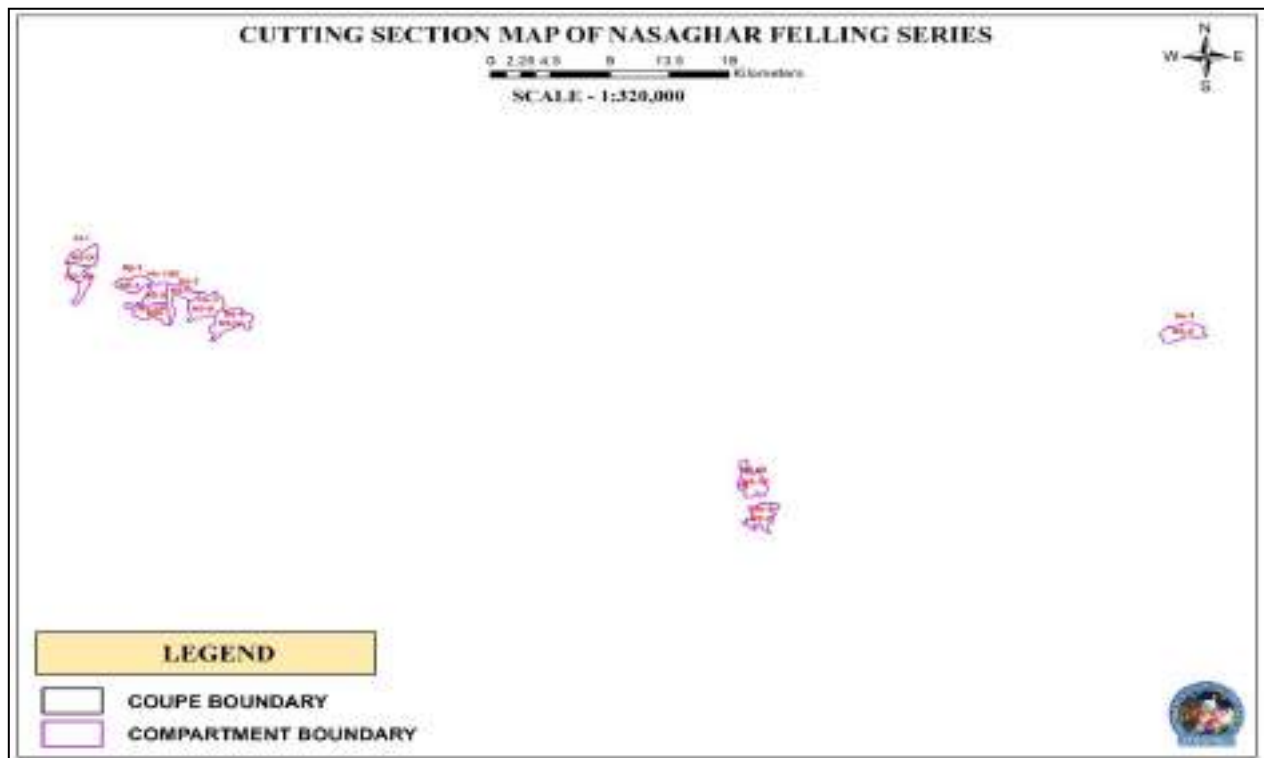




14.4.2 (ii) Cutting Sections of Nasagarh Felling Series

Table No 14.6 Cutting Sections of Nasagarh FS (NFS)

Name of FS	Range	Year of Working	Section	Forest Block	Comp. no	Area in ha	Coupe Area in Ha
Nasagarh FS (NFS)	Daspalla	2021-22	NS-I	Nasagarh RF	1 (Part)	352.04	352.04
		2022-23	NS-II	Nasagarh RF	2	211.2504	211.2504
		2023-24	NS-III	Nasagarh RF	3	384.9720	384.9720
		2024-25	NS-IV	Nasagarh RF	4	478.0713	478.0713
	Khandapada	2025-26	NS-V	Hanumantia RF		329.6100	329.6100
	Mahipur	2026-27	NS-VI	Maicheli Sampada R.F		284.2927	284.2927
	Nayagarh	2027-28	NS-VII	Hatimunda R.F		352.5184	352.5184
	Daspalla	2028-29	NS-VIII	Ambalimba R.F	(Part)	308.82	308.82
		2029-30	NS-IX	Ambalimba R.F	(Balance)	245.599	245.599
		2030-31	NS-X	Nasagarh RF Nephari (PRF)	1 (Bala.)	200.8031 253.7985	454.6016
		Total				3401.7754	3401.7754

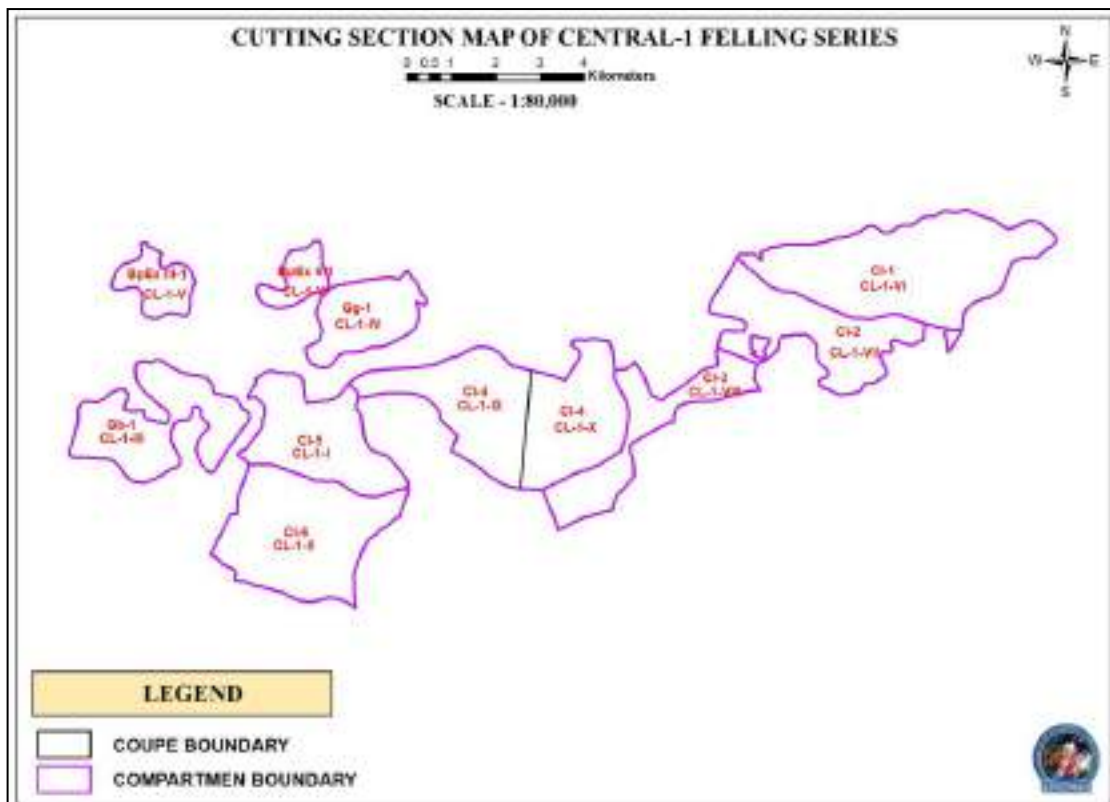




14.4.2 (iii) Cutting Sections of Central-1 Felling Series

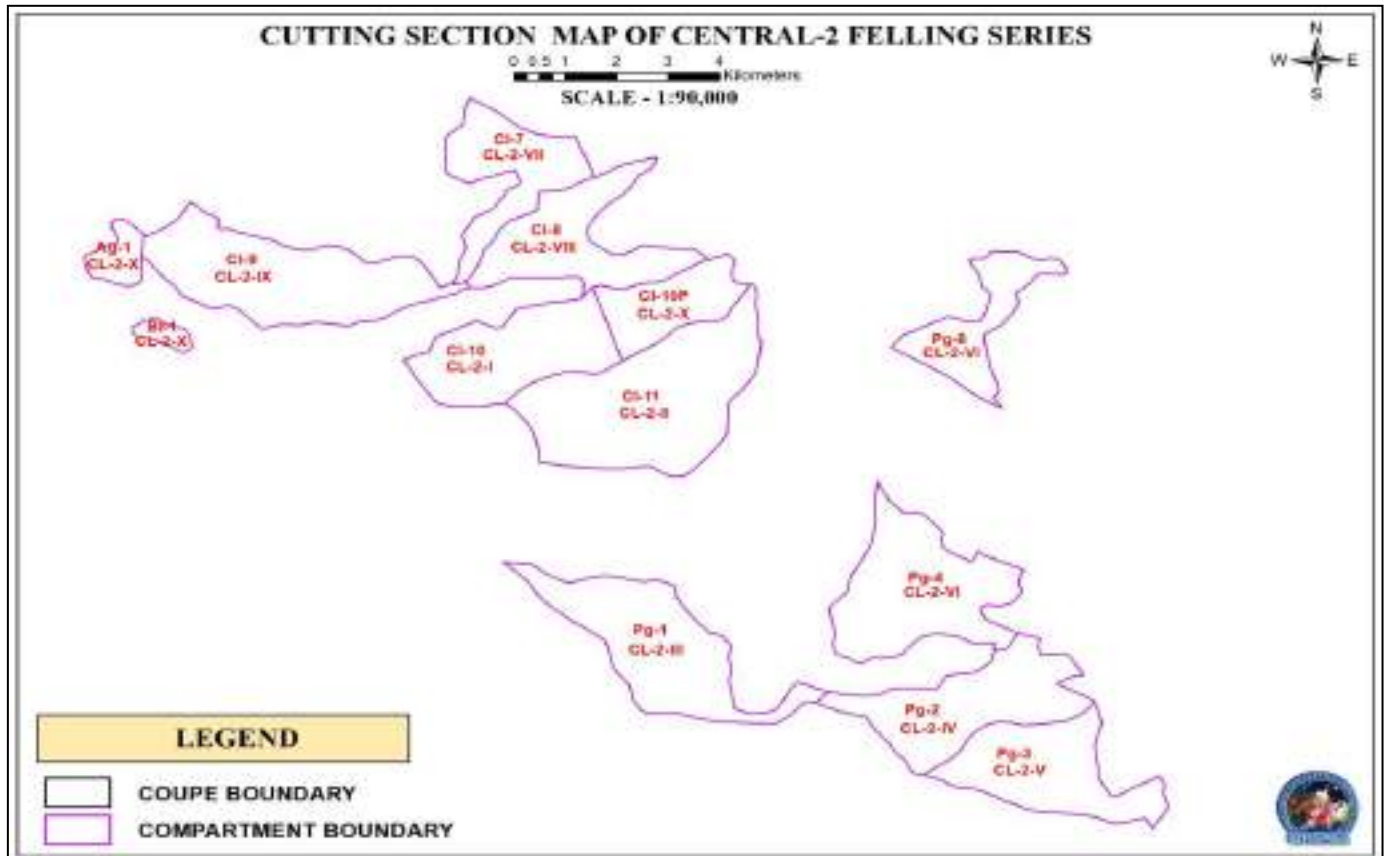
Table No 14.7 Cutting Sections of Central-I FS (CFS-I)

Name of FS	Range	Year of Working	Section	Forest Block	Comp. no	Area in ha	Coupe Area in Ha
Central-I FS	Daspalla	2021-22	CL1- I	Central RF	5	503.6211	503.6211
		2022-23	CL1-II	Central RF	6	644.4631	644.4631
		2023-24	CL 1-III	Gochhabari PRF		522.0140	522.0140
		2024-25	CL 1-IV	Gambhariganda (PRF)		288.2498	288.2498
		2025-26	CL1 -V	Baisipalli Extn-II (PRF)		71.9664	235.6018
				Baisipalli Ext-III (PRF)		163.6354	
		2026-27	CL1-VI	Central RF	1	999.5352	999.5352
		2027-28	CL1-VII	Central RF	2	576.8663	576.8663
		2028-29	CL1-VIII	Central RF	3	463.0487	463.0487
		2029-30	CL1-IX	Central RF	4	400.0	400.0
		2030-31	CL1-X	Central RF	4	414.6640	414.6640
				Total		5048.064	5048.064



**14.4.2 (iv) Cutting Sections of Central-2 Felling Series****Table No 14.8 Cutting Sections of Central-2 FS (CFS-II)**

Name of FS	Range	Year of Working	Section	Forest Block	Comp. no	Area in ha	Coupe Area in Ha
Central-2 FS	Daspalla	2021-22	CL2- I	Central RF	10(P)	538.2959	538.2959
		2022-23	CL2-II	Central RF	11	898.4480	898.4480
		2023-24	CL 2-III	Pokharigochha RF	1	678.1588	678.1588
		2024-25	CL 2-IV	Pokharigochha RF	2	457.7644	457.7644
		2025-26	CL2 -V	Pokharigochha RF	3	521.9499	521.9499
		2026-27	CL2-VI	Pokharigochha RF	4	578.8277	761.6587
				Pokharigochha RF	8	182.8310	
		2027-28	CL2-VII	Central RF	7	366.6703	366.6703
		2028-29	CL2- VIII	Central RF	8	471.2473	471.2473
		2029-30	CL2-IX	Central RF	9	749.1270	749.1270
		2030-31	CL2-X	Central RF	10 (B)	301.06	447.7988
				Aranignda (PRF)		102.1612	
				Baliberena (PRF)		44.5776	
		Total				5891.1191	5891.1191

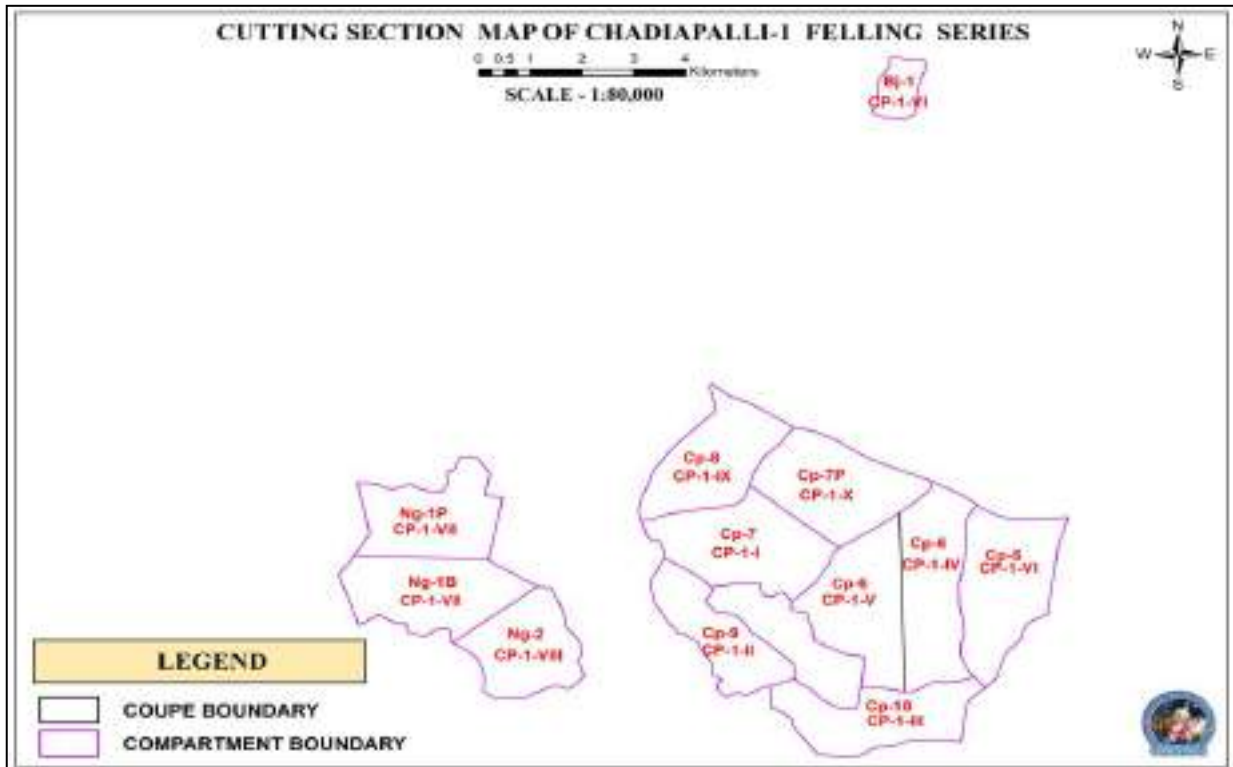




14.4.2 (v) Cutting Sections of Chadiapali-1 Felling Series:

Table No 14.9 Cutting Sections of Cadiapali-1 FS (CPFS-1)

Name of FS	Range	Year of Working	Section	Forest Block	Comp. no	Area in ha	Coupe Area in Ha
Cadiapali-1 FS (CPFS-1)	Daspalla	2021-22	CP1- I	Chadiapali RF	7(P)	576.5103	576.5103
		2022-23	CP1-II	Chadiapali RF	9	316.8639	316.8639
		2023-24	CP1-III	Chadiapali RF	10	422.7530	422.7530
		2024-25	CP1-IV	Chadiapali RF	6	529.58	529.58
		2025-26	CP1 -V	Chadiapali RF	6	401.1882	401.1882
		2026-27	CP1-VI	Baijhari DPF		89.4322	572.5120
				Chadiapalli R.F	CP 5	483.0798	
		2027-28	CP1-VII	Nuagaon RF	1	615.639	615.639
		2028-29	CP1-VIII	Nuagaon RF	2	580.10	580.10
		2029-30	CP1-IX	Chadiapali RF	8	416.7687	416.7687
		2030-31	CP1-X	Chadiapali RF	7(B)	371.30	371.30
		Total				4803.2151	4803.2151

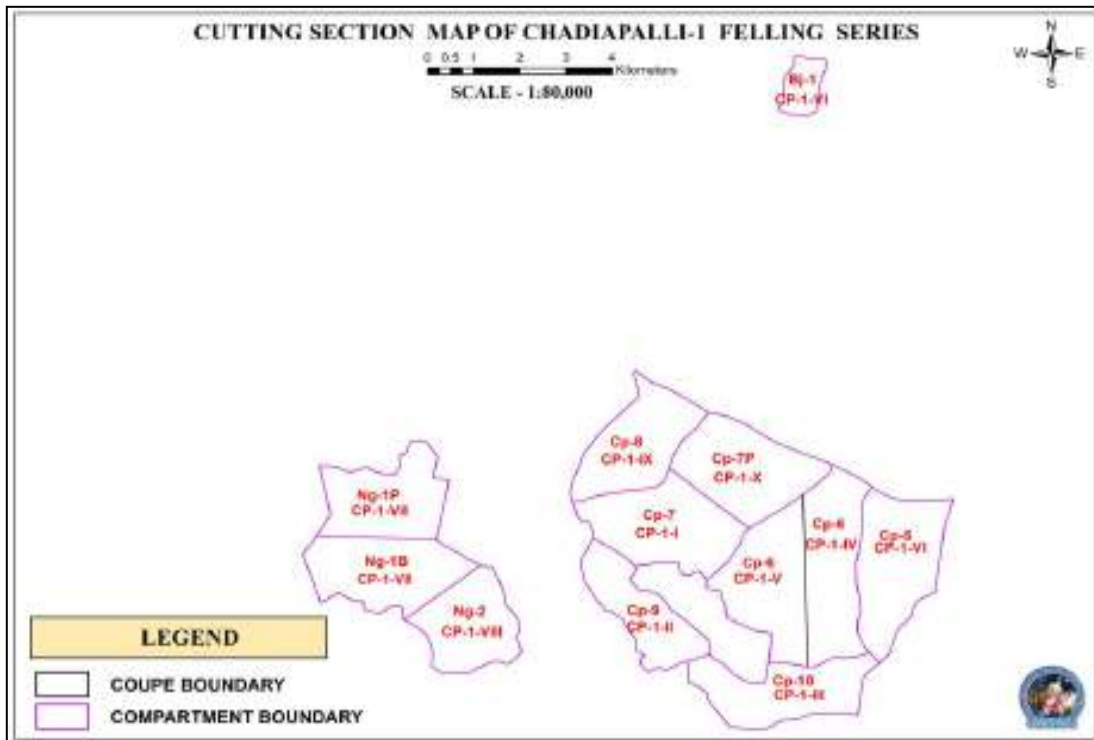




14.4.2 (vi) Cutting Sections of Chadiapali-2 Felling Series

Table No 14.9 Cutting Sections of Cadiapali-2 FS (CPFS-2)

Name of FS	Range	Year of Working	Section	Forest Block	Comp. no	Area in ha	Coupe Area in Ha
Cadiapali-2 FS (CPFS-1)	Daspalla	2021-22	CP2- I	Chadiapali RF	3(1st P)	349.87	349.87
		2022-23	CP2-II	Chadiapali RF	3(2nd P)	305.2387	305.2387
		2023-24	CP2-III	Chadiapali RF	4	408.5561	408.5561
		2024-25	CP2-IV	Central RF	12	587.5344	587.5344
		2025-26	CP2 -V	Central RF	13	420.00	420.00
		2026-27	CP2-VI	Central RF	13	427.5446	427.5446
		2027-28	CP2-VII	Chadiapali RF	1	419.5593	419.5593
		2028-29	CP2-VIII	Chadiapalli Extn (PRF)		378.0971	378.0971
		2029-30	CP2-IX	Chadiapali RF	2	686.0548	686.0548
		2030-31	CP2-X	Chadiapali RF	3(B)	271.91	271.91
		Total				4254.3650	4254.3650



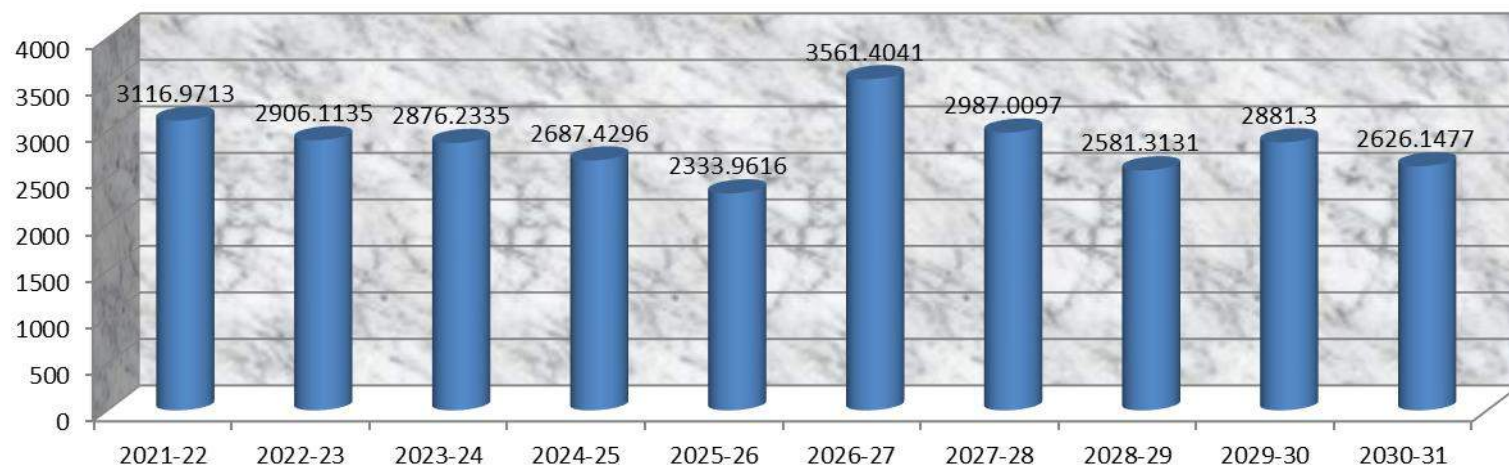


14.4.3 Cutting Series Abstract

The year wise area allotted to various working couples are furnished at Table No 14.10

Table No 14.10 Area assigned for working (Year wise & Felling Series Wise) Nayagarh Division

Name of FS	Year of Working										Total
	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	
Ratadei FS	796.6340	529.84940	459.77960	346.22970	425.6117	515.86090	655.7564	380.0000	383.7505	665.8733	5159.3455
Nasagarh	352.0400	211.2504	384.9720	478.0713	329.6100	284.2927	352.5184	308.8200	245.5990	454.6016	3401.7754
Central-1	503.6211	644.4631	522.0140	288.2498	235.6018	999.5352	576.8663	463.0487	400.0000	414.6640	5048.0640
Central-2	538.2959	898.4480	678.1588	457.7644	521.9499	761.6587	366.6703	471.2473	749.1270	447.7988	5891.1191
Chadiapali-1	576.5103	316.8639	422.7530	529.58	401.1882	572.5120	615.639	580.10	416.7687	371.30	4803.2151
Chadiapali-2	349.87	305.2387	408.5561	587.5344	420.00	427.5446	419.5593	378.0971	686.0548	271.91	4254.3650
Total	3116.9713	2906.1135	2876.2335	2687.4296	2333.9616	3561.4041	2987.0097	2581.3131	2881.3000	2626.1477	28557.8841





14.5 Blocks, compartments and JFM area:

The area assigned to this Working Circle and allotted to JFM (VSS) has been indicated at Table No 14.1. The same is reproduced below for reference. (Table No 14.11)

Table No 14.11 List of Blocks allotted to Selection Working Circle- Nayagarh Division					
Sl No	Block	Compt.	Area for management	SWC	JFM
	RF				
	Daspalla Range				
1	Ambalimba		554.4190	554.4190	100.00
2	Central R.F	Cl 1	999.5352	999.5352	1020.00
3	Central R.F	Cl 2	586.8663	576.8663	200.00
4	Central R.F	Cl 3	483.0487	463.0487	
5	Central R.F	Cl 4	890.664	814.664	
6	Central R.F	Cl 5	551.6211	503.6211	
7	Central R.F	Cl 6	644.4631	644.4631	
8	Central R.F	Cl 7	398.6703	366.6703	250.00
9	Central R.F	Cl 8	543.2473	471.2473	
10	Central R.F	Cl 9	749.1270	749.1270	
11	Central R.F	Cl 10	925.3559	839.3559	
12	Central R.F	Cl 11	964.448	898.448	
13	Central R.F	Cl 12	651.5344	587.5344	
14	Central R.F	Cl 13	957.5446	847.5446	
15	Chadiapalli R.F	Cp 1	419.5593	419.5593	350.00
16	Chadiapalli R.F	Cp 2	686.0548	686.0548	400.00
17	Chadiapalli R.F	Cp 3	927.0187	927.0187	
18	Chadiapalli R.F	Cp 4	510.5561	408.5561	
19	Chadiapalli R.F	Cp 5	483.0798	483.0798	200.00
20	Chadiapalli R.F	Cp 6	930.7682	930.7682	
21	Chadiapalli R.F	Cp 7	947.8103	947.8103	
22	Chadiapalli R.F	Cp 8	416.7687	416.7687	
23	Chadiapalli R.F	Cp 9	316.8639	316.8639	
24	Chadiapalli R.F	Cp 10	422.7530	422.7530	
25	Nuagaon R.F	NG 1	615.639	615.639	300.00
26	Nuagaon R.F	NG2	580.10	580.10	200.0
27	Nasaghar R.F	Ns.1	552.8431	552.8431	0.00
28	Nasaghar R.F	Ns.2	211.2504	211.2504	0.00



29	Nasaghar R.F	Ns 3	384.972	384.972	0.00
30	Nasaghar R.F	Ns 4	478.0713	478.0713	0.00
31	Pokharigochha R.F	Pg 1	732.1588	678.1588	
32	Pokharigochha R.F	Pg 2	593.7644	457.7644	
33	Pokharigochha R.F	Pg 3	521.9499	521.9499	450.00
34	Pokharigochha R.F	Pg 4	728.8277	578.8277	219.40
35	Pokharigochha R.F	Pg 8	182.8310	182.8310	
	Daspalla Range Total		21544.1853	20518.1853	3689.40
	Khandapara Range				
36	Hanumantia R.F		329.6100	329.6100	300.00
	Khandapara Range (Total)		329.6100	329.6100	300.00
	Mahipur Range				
37	Maicheli Sampada R.F		284.2927	284.2927	300.00
38	Ratadei R.F	Rd 2	655.7564	655.7564	456.00
39	Ratadei R.F	Rd 4	763.7505	763.7505	368.00
40	Palva R.F	Pb 1	461.6117	425.6117	
41	Palva R.F	Pb 5	440.3508	394.3508	
42	Palva R.F	Pb 6	402.2832	402.2832	
43	Palva R.F	Pb 8	355.1275	355.1275	
44	Ragadimada R.F	Rm 5	727.8733	665.8733	
	Mahipur Range (Total)		4091.0461	3947.0461	1124.0
	Nayagarh Range				
45	Hatimunda R.F	Hm 20	367.5184	352.5184	352.00
	Nayagarh Range(Total)		367.5184	352.5184	352.00
	Odogaon Range				
46	Bahadajhola R.F		404.5449	204.1200	200.00
47	Gochha R.F	Gc 3	218.7219	174.7219	170.0
48	Gochha R.F	Gc 4	459.7796	459.7796	459.00
49	Gochha R.F	Gc 5	311.7409	311.7409	300.00
50	Gochha R.F	Gc 6	432.2297	346.2297	
	Odogaon Range (Total)		1827.0170	1496.5921	1194.50
	Division Total		28159.3768	26643.9519	6659.90
	of PRF				
	Daspalla Range				
51	Baisipalli Extn-II (PRF)		71.9664	71.9664	70.00
52	Baisipalli Ext-III (PRF)		163.6354	163.6354	160.0
53	Nephari (PRF)		253.7985	253.7985	250.0
54	Gochhabari		522.0140	522.0140	522.0



55	Gambhariganda (PRF)		288.2498	288.2498	280.0
56	Baliberena (PRF)		44.5776	44.5776	40.00
57	Chadiapalli Extn (PRF)		378.0971	378.0971	378.0
58	Aranignda (PRF)		102.1612	102.1612	102.0
	Daspalla Range total		1824.500	1824.500	1802.000
	Div. Total				
	of DPF				
	Daspalla Range				
59	Baijhari (DPF)		89.4322	89.4322	0
	Daspalla Range Total		89.4322	89.4322	0
	Div. Total		89.4322	89.4322	0
	Total		30073.3090	28557.8841	8461.900

14.6 Special objectives of Management:

Special objectives of management of this working Circle is within the general objectives of the Working Plan. The special objectives are outlines below.

- i) To remove mature and silviculturally available trees before they become unsound.
- ii) To create openings in the canopy to allow adequate light so as to allow establishment of light demanding species i.e. principally Sal.
- iii) To thin out the congested pole crop to allow diameter growth and also have interim harvest through which the VSS looking after the area will be benefited.
- iv) To allow natural regeneration and cover the entire area with vegetation of climatic species.
- v) To improve the density of the forest crop as well as stand structure by suitable silvicultural operations.
- vi) To remove dead and unsound trees for creating hygienic condition in the forest.
- vii) To carryout subsidiary silvicultural operations so that conducive situation can be created for better growth of existing crop and natural regeneration.
- viii) To manage the forest to maintain it at this Climatic Stage so as to keep this composition of Forest with majority of Sal.

14.6.1 Analysis of the crop:

The growing Stock of the assigned Blocks/ Compartments is estimated through Sample Point enumeration & subsequent analysis. The crop density (Density Map) has been annexed to this Working Plan for ready reference. From the Satellite data it is observed that most of the blocks / compartments assigned to this working Circle are Sal Forest i.e. Sal



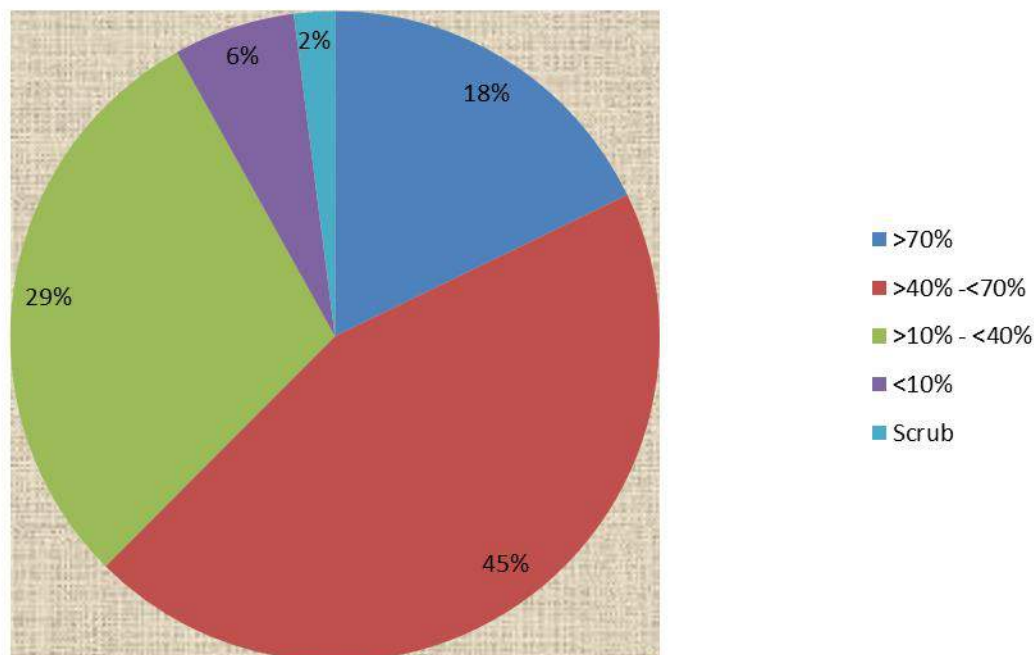
constitutes above 40% The other species seen are associates of Sal i.e. Asan, Arjun, Piasal (Bija), Kuruma (Haldu), Kasi. Crop Density wise forest area as related to Selection Working Circle as reported in the Stock map is furnished at Table No 14. 12

Table No 14.12 Distribution of Area Density Class wise in Forest blocks assigned to SWC- Nayagarh Division

Name of Forest Block	Comp. No	Canopy Density Class					
		>70%	>40% - <70%	>10% - <40%	<10%	Scrub	Total
Ambalimba		152.45	99.52	154.06	3.72	0.00	409.75
Central R.F	CI 1	251.02	362.26	265.24	63.24	60.38	1002.14
Central R.F	CI 2	16.53	213.01	286.31	49.13	10.27	575.25
Central R.F	CI 3	62.25	217.13	153.61	8.46	0.24	441.69
Central R.F	CI 4	214.49	0.00	19.02	0.00	4.36	237.87
Central R.F	CI 5	63.94	135.29	4.75	0.00	0.00	203.98
Central R.F	CI 6	237.78	95.38	74.22	10.77	25.97	444.12
Central R.F	CI 7	209.31	178.60	37.19	25.04	0.00	450.14
Central R.F	CI 8	71.60	307.78	136.01	16.51	0.00	531.90
Central R.F	CI 9	60.25	430.76	270.23	1.76	54.22	817.22
Central R.F	CI 10	255.49	15.99	4.81	17.88	0.00	294.17
Central R.F	CI 11	49.87	502.56	280.20	185.78	0.00	1018.41
Central R.F	CI 12	103.63	452.23	83.10	27.30	0.00	666.26
Central R.F	CI 13	29.56	372.79	455.25	63.87	1.11	922.58
Chadiapalli R.F	Cp 1	308.70	83.99	15.49	0.00	0.00	408.18
Chadiapalli R.F	Cp 2	658.47	227.05	33.71	11.22	1.65	932.10
Chadiapalli R.F	Cp 3	397.34	218.95	18.56	14.23	1.41	650.49
Chadiapalli R.F	Cp 4	314.09	163.25	3.26	12.25	0.00	492.85
Chadiapalli R.F	Cp 5	189.16	198.29	98.13	14.17	0.00	499.75
Chadiapalli R.F	Cp 6	255.45	268.23	361.12	50.14	0.00	934.94
Chadiapalli R.F	Cp 7	195.21	253.48	436.06	72.23	8.75	965.73
Chadiapalli R.F	Cp 8	244.22	10.81	121.30	32.85	0.00	409.18
Chadiapalli R.F	Cp 9	112.92	39.32	162.61	8.21	0.00	323.06
Chadiapalli R.F	Cp 10	101.07	91.50	175.36	43.16	0.00	411.09
Nuagaon R.F	NG 1	0.00	214.62	221.00	6.93	24.18	466.73
Nuagaon R.F	NG2	0.00	278.89	435.92	11.28	71.61	797.70
Nasaghar R.F	Ns.1	0.00	323.76	278.16	0.00	0.00	601.92
Nasaghar R.F	Ns.2	0.00	221.09	83.05	0.00	0.00	304.14
Nasaghar R.F	Ns 3	13.84	321.72	75.33	16.06	11.23	438.18
Nasaghar R.F	Ns 4	134.18	124.57	199.59	0.34	6.44	465.12
Pokharigochha R.F	Pg 1	32.44	418.48	216.88	0.00	42.88	710.68
Pokharigochha R.F	Pg 2	0.00	355.24	184.09	61.50	35.97	636.80



Name of Forest Block	Comp. No	Canopy Density Class					
		>70	>40 - <70	>10 - <40	<10	Scrub	Total
Pokharigochha R.F	Pg 3	0.00	261.62	276.74	25.24	6.86	570.46
Pokharigochha R.F	Pg 4	5.11	475.14	176.16	37.83	43.51	737.75
Pokharigochha R.F	Pg 8	0.00	103.75	125.28	85.14	16.65	330.82
Hanumantia R.F		0.00	0.00	220.18	133.37	0.00	353.55
Maicheli Sampada R.F		0.00	231.53	77.19	32.28	2.24	343.24
Ratadei R.F	Rd 2	56.13	393.43	168.09	109.76	27.01	754.42
Ratadei R.F	Rd 4	56.92	324.42	145.94	216.89	3.76	747.93
Palva R.F	Pb 1	0.00	323.43	104.43	3.35	2.56	433.77
Ragadimada R.F	Rm 5	0.00	650.41	175.73	27.54	0.00	853.68
Hatimunda R.F	Hm 20	0.00	87.32	237.93	50.55	0.00	375.80
Bahadajhola R.F		0.00	292.10	82.60	20.89	22.80	418.39
Gochha R.F	Gc 3	0.00	207.00	11.84	24.71	0.00	243.55
Gochha R.F	Gc 4	0.00	356.99	82.45	14.12	0.00	453.56
Gochha R.F	Gc 5	0.00	322.74	20.74	0.02	1.69	345.19
Gochha R.F	Gc 6	94.60	286.64	15.22	18.94	0.00	415.40
Baisipalli Extn-II (PRF)		0.00	49.83	65.74	21.16	1.52	138.25
Baisipalli Ext-III (PRF)		16.29	44.60	102.47	4.79	0.77	168.92
Nephari (PRF)		6.11	117.91	121.33	2.50	3.99	251.84
Gochhabari		2.44	200.44	310.16	9.38	16.47	538.89
Gambhariganda (PRF)		0.00	156.70	137.29	5.83	25.26	325.08
Baliberena (PRF)		0.00	21.89	18.79	0.65	2.65	43.98
Chadiapalli Extn (PRF)		0.00	241.40	127.21	16.56	3.83	389.00
Aranignda (PRF)		3.23	60.22	17.17	2.20	18.18	101.00
Baijhari (DPF)		0.00	46.75	39.60	0.00	4.90	91.25
Total		4976.09	12452.80	8203.90	1691.73	565.32	27889.84
% of area		17.8	44.6	29.4	6.1	2.0	100.0



From the above data, it is observed that, about 63% of the area is under good forest cover Density >40% and bears good harvestable trees. Besides the above 2% of the area became scrub forest which need immediate attention of the management. 6% of the area are under degradation,. It is in scatted patches and need to be treated under **“High Forest System”**, mainly seed sowing and dispersal of desired seeds.

14.6.2 Silvicultural system:

The Silvicultural System proposed to be adopted is **“Selection System with adequate improvement measures to restock the area in High Forest System”**. Under this adopted system the matured and dead trees will be selectively removed leaving adequate mother trees to have good seed dispersal and natural regeneration. After removal of selected trees, the remaining trees will be treated so as to obtain good established regeneration

Sporadic, wind fallen / uprooted trees, if any, shall also 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 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 shall be obtained from the Regional Office of MoEF&CC, Bhubaneswar. The volume extracted out of wind fallen/ uprooted trees shall be deducted out of the total volume of yield as calculated and permission for felling is allowed for balance volume.

14.6.3 Rotation period:

The Rotation Period of 120 years for Sal is prescribed and followed. In the outgoing Plan 120 years of Rotation age was prescribed for all species. During field visit and growth statistics available it is felt that Except Teak for all other species, the Rotation Period of 120 years is accepted and followed. In case of teak which has been introduced in Block Plantation in blank areas under Economic Plantation, the growth is very encouraging. Due to its high timber value it is in much demand in the locality, in the State and outside. Selective removal by illicit felling is a perceptible threat. Considering all its aspect i.e. Growth Status and Market demand, rotation age of 100 years for teak in this division is suggested.

14.6.4 Harvestable diameters:

Harvestable diameter is being prescribed in different plans for different species from time to time. The criteria considered for recommended “Harvestable Diameter / Girth” are as follows.

- i) The Annual Increment of the Species,
- ii) Development of unsoundness due to climatic and biotic factors,
- iii) Marketability & Demand,
- iv) Site Quality and productivity of Soil

Considering all aspect in the outgoing plan the exploitable Girth (GBH) for Sal was fixed at 120cm and above for all species. Considering the present scenario GBH for exploitation is prescribed as follows.

The exploitable girth of different species is provided in **Table No: 14.12.**



Table No 14.12 Exploitable Girth for different species- Nayagarh Division			
Sl.No.	Species	Exploitable Girth At Breast Height in cm	Diameter in cm
1	Katranga	105	33
2	Piasal, Kurum, Mitikinia, Siris, Asan, Simili	150	48
3	Sissoo, Gambhari,	120	38
4	Bandhan &Teak	120	38
5	Arjun, Phasi, Jamu	150	48
6	Sal and others	150	48

This will be applicable for all Felling Series and all other situation. Plantation under JVP, the timbers required for Chariot Construction will only be harvested when meet specification of Chariot construction manual.

14.6.5 Reducing factors and reduced areas:

The yield will be regulated by equi-productive area. No reduction factor has been prescribed.

14.6.6 Felling cycle:

The Plan period is 10 years i.e. from 2021-2031. The area assigned to this working circle will be covered within the Plan Period i.e. 10 years. Therefore a felling Cycle of 10 years is prescribed and followed.

14.6.7 Division into Periods & allotment to Periodic Block (PB)

There is no shelter wood systems in Nayagarh Forest Division.

Division into Annual Coupes (Cutting Sections):

The area assigned to this Working Circle has been divided to Six Felling Series. Each felling Series has been sub divided to ten (10) Annual Coupes and numbered as I,II, III --- X prefixed with Felling Series abbreviation. The annual Coupe and area assigned has been out lined at Table No 14.4.2 (i) to (vi) under **Para 14.4.2** above.

14.6.8 Calculation of the yield:

Basing on Sample enumeration data number of trees in different girth class available in the assigned compartments has been furnished at Table No 14.2. For Sal exploitable Class is 150cm and above. For all other species the harvestable GBH is also 150cm and above. As Sal



is the principal Species which constitutes about 85% of marked trees, for calculation of yield Approach class is taken from 120cm -150 cm and harvestable class 150 cm and above.

Smythies' Safeguarding Formula:- The yield shall be regulated by area with a percentage check on the removal of exploitable trees as per **"Smythies' Safeguarding Formula"**. As per this Formula the yield available during the felling Cycle is regulated by the number of trees of the lower girth class that may pass into next Girth Class (Exploitable Girth Class) during the felling cycle. The Increment is expressed by the following formula.

$$X = (F/T)x (II-Z\% \text{ of } II) \text{ --- equation No 1}$$

Where

F- is the felling Cycle i.e. 10

T - is the time taken by a II Class tree to reach to exploitable class i.e. Class –I

II – No of Trees in approach Class (120cm- 150cm)

Z – Percentage of class-II trees that do not pass in to Class I in T years due to mortality or removal in between

From the growth data observed in Chapter 6 of this Plan the value of T and Z have been taken as 40 years and 50% respectively. Taking in to account the above value of parameters and considering a felling cycle of 10 years the annual yield y percentage of trees available for removal is computed as follows.

$$Y = \{ x / (I + x/2) \} * 100 + A$$

Where x is defined in equation no-1. Using this formula the availability of trees during the plan period in each compartment assigned to this Working Circle is furnished at table no 14. 13 & 14.14

Calculation of value of x



Table No 14.13 (a) Calculation of x of the Smythies' Safeguarding Formula

Sl No	Forest Block	Comp. No	Area in ha	Approach Class	Exploitable Class	value of $x = (F/T)$ (Trees in Class-II – 50% of Class-II)
				120-150cm – Class- II	>150cm Class-I	
1	Ambalimba		554.4190	12503	7234	1563
2	Central R.F	Cl 1 to 13	9686.1259	186760	111524	23345
3	Chadiapalli R.F	Cp 1 to 10	6061.2328	125182	73986	15648
4	Nuagaon R.F	1 & 2	1195.7390	20397	16358	2550
5	Nasaghar R.F	Ns.1 to 4	1857.3868	36251	21123	4531
6	Pokharigochha R.F	Pg 1 to 4 & 8	3046.0318	53352	26744	6669
7	Hanumantia R.F		329.6100	1913	1285	239
8	Maicheli Sampada R.F		328.9887	3649	2142	456
9	Ratadei R.F	Rd 2 & 4	1419.8849	15398	9217	1925
10	Palva R.F	Pb 1 & 8	816.7392	8552	4460	1069
	Palva R.F	Pb 5	440.35	5084	2750	636
	Palva R.F	Pb 6	402.28	3586	1938	448
11	Ragadimada R.F	Rm 5	727.8733	11157	6900	1395
12	Hatimunda R.F	Hm 20	367.5184	4062	2596	508
13	Bahadajhola R.F		404.5449	4465	2090	558
14	Gochha R.F	Gc 3 to 6	1428.4121	18629	7357	2329
15	Baisipalli Extn-II (PRF)		110.4664	2297	1367	287
16	Baisipalli Ext-III (PRF)		163.6354	2992	1993	374
17	Nephari (PRF)		253.7985	4854	2906	607



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18	Gochhabari		522.0140	9980	6053	1248
19	Gambhariganda (PRF)		325.2898	5940	3457	743
20	Baliberena (PRF)		44.5776	825	484	103
21	Chadiapalli Extn (PRF)		378.0971	7642	4348	955
22	Aranignda (PRF)		102.1612	1739	950	217
23	Baijhari (DPF)		89.4322	1750	1038	219
	Division Total		31056.6130	548959	320300	68620



Table No 14.13 (b) number of trees available for removal as per Smiths' Safe guarding Formula – value of y

Block	Compt no	Area in ha	No of Trees in Class-II (120-150 cm)-approach class	No of Trees in Class-I (>150cm harvestable class)	x	$Y = \{ x / (1 + x/2) \} * 100$
Ambalimba		554.4190	12503	7234	1563	19.50
Central R.F	Cl 1 to 13	9686.1259	186760	111524	23345	18.95
Chadiapalli R.F	Cp 1 to 10	6061.2328	125182	73986	15648	19.13
Nuagaon R.F	1 & 2	1195.7390	20397	16358	2550	14.46
Nasaghar R.F	Ns.1 to 4	1857.3868	36251	21123	4531	19.37
Pokharigochha R.F	Pg 1 to 4 & 8	3046.0318	53352	26744	6669	22.17
Hanumantia R.F		329.6100	1913	1285	239	17.02
Maicheli Sampada R.F		328.9887	3649	2142	456	19.24
Ratadei R.F	Rd 2 & 4	1419.8849	15398	9217	1925	18.91
Palva R.F	Pb 1 & 8	816.7392	8552	4460	1069	21.40
Palva R.F	Pb 5	440.35	5084	2750	636	20.73
Palva R.F	Pb 6	402.28	3586	1938	448	20.72
Ragadimada R.F	Rm 5	727.8733	11157	6900	1395	18.36
Hatimunda R.F	Hm 20	367.5184	4062	2596	508	17.82
Bahadajhola R.F		404.5449	4465	2090	558	23.55
Gochha R.F	Gc 3 to 6	1428.4121	18629	7357	2329	27.33
Baisipalli Extn-II (PRF)		110.4664	2297	1367	287	19.00
Baisipalli Ext-III (PRF)		163.6354	2992	1993	374	17.16
Nephari (PRF)		253.7985	4854	2906	607	18.91
Gochhabari		522.0140	9980	6053	1248	18.69
Gambhariganda (PRF)		325.2898	5940	3457	743	19.41
Baliberena (PRF)		44.5776	825	484	103	19.23
Chadiapalli Extn (PRF)		378.0971	7642	4348	955	19.79
Aranignda (PRF)		102.1612	1739	950	217	20.50
Baijhari (DPF)		89.4322	1750	1038	219	19.08
Division Total		31056.6130	548959	320300	68620	

Harvestable Trees as per Smiths' safeguard formula Is furnished below.



Table No 14.14 Number of trees available for harvesting (Smithis' safeguarding Formula)

Block	Compt no	Area in ha	No of Trees in Class-I (>150cm)	x	$Y = \{ x / (I + x/2) \} * 100$	Number of harvestable trees = y% of Class-I trees	Taking 28.57% for harvest	No of trees / ha for harvesting
Ambalimba		554.4190	7234	1563	19.50	1411	403	0.73
Central R.F	Cl 1 to 13	9686.1259	111524	23345	18.95	21134	6038	0.62
Chadiapalli R.F	Cp 1 to 10	6061.2328	73986	15648	19.13	14154	4044	0.67
Nuagaon R.F	1 & 2	1195.7390	16358	2550	14.46	2365	676	0.57
Nasaghar R.F	Ns.1 to 4	1857.3868	21123	4531	19.37	4092	1169	0.63
Pokharigochha R.F	Pg 1 to 4 & 8	3046.0318	26744	6669	22.17	5929	1694	0.56
Hanumantia R.F		329.6100	1285	239	17.02	219	62	0.19
Maicheli Sampada R.F		328.9887	2142	456	19.24	412	118	0.36
Ratadei R.F	Rd 2 & 4	1419.8849	9217	1925	18.91	1743	498	0.35
Palva R.F	Pb 1 & 8	816.7392	4460	1069	21.40	954	273	0.33
Palva R.F	Pb 5	440.35	2750	636	20.73	570	163	0.37
Palva R.F	Pb 6	402.28	1938	448	20.72	402	115	0.29
Ragadimada R.F	Rm 5	727.8733	6900	1395	18.36	1267	362	0.50
Hatimunda R.F	Hm 20	367.5184	2596	508	17.82	463	132	0.36
Bahadajhola R.F		404.5449	2090	558	23.55	492	141	0.35
Gochha R.F	Gc 3 to 6	1428.4121	7357	2329	27.33	2011	574	0.40
Baisipalli Extn-II (PRF)		110.4664	1367	287	19.00	260	74	0.67



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Baisipalli Ext-III (PRF)		163.6354	1993	374	17.16	342	98	0.60
Nephari (PRF)		253.7985	2906	607	18.91	550	157	0.62
Gochhabari		522.0140	6053	1248	18.69	1131	323	0.62
Gambhariganda (PRF)		325.2898	3457	743	19.41	671	192	0.59
Baliberena (PRF)		44.5776	484	103	19.23	93	27	0.61
Chadiapalli Extn (PRF)		378.0971	4348	955	19.79	860	246	0.65
Aranignda (PRF)		102.1612	950	217	20.50	195	56	0.55
Baijhari (DPF)		89.4322	1038	219	19.08	198	57	0.64
Division Total		31056.6130	320300	68620		61916	17690	0.57



14.6.8.1 Felling Series Wise Yield Calculation

Table No 14.15 Yield Calculation of Ratadei FS

Table No 14.15 Yield Calculation of Ratadei FS										
Name of FS	Range	Year of Working	Section	Forest Block	Comp. no	Area in ha	Coupe Area in Ha	No of trees / Ha for harvesting	No of Trees suggested for Harvesting	
Ratadei FS (RFS)	Mahipur	2021-22	RD-I	Palva RF	5	394.3508	796.634	0.37	146	263
				Palva RF	6	402.2832		0.29	117	
	Odogaon	2022-23	RD-II	Palva RF	8	355.1275	529.8494	0.33	117	187
				Gocha RF	3	174.7219		0.40	70	
	Odogaon	2023-24	RD-III	Gocha RF	4	459.7796	459.7796	0.40	184	
		2024-25	RD-IV	Gocha RF	6	346.2297	346.2297	0.40	138	
		2025-26	RD-V	Palva RF	1	425.6117	425.6117	0.33	140	
		2026-27	RD-VI	Bahadajhola	(part)	204.1200	515.8609	0.35	71	196
				Gocha RF	5	311.7409		0.40	125	
	Mahipur	2027-28	RD-VII	Ratadei RF	2	655.7564	655.7564	0.35	230	
		2028-29	RD-VIII	Ratadei RF	4 (P)	380.00	380.00	0.35	133	
		2029-30	RD-IX	Ratadei RF	4 (B)	383.7505	383.7505	0.35	134	
		2030-31	RD-X	Ragadimada RF	5	665.8733	665.8733	0.50	333	
		Total				5159.3455	5159.3455	0.38	1938	



Table No 14.16 Yield calculation of Nasagarh FS (NFS)

Table No 14.16 Yield calculation of Nasagarh FS (NFS)										
Name of FS	Range	Year of Working	Section	Forest Block	Comp. no	Area in ha	Coupe Area in Ha	No of trees / Ha for harvesting	No of Trees suggested for Harvesting	
Nasagarh FS (NFS)	Daspalla	2021-22	NS-I	Nasagarh RF	1 (Part)	352.04	352.04	0.63	222	
		2022-23	NS-II	Nasagarh RF	2	211.2504	211.2504	0.63	133	
		2023-24	NS-III	Nasagarh RF	3	384.9720	384.9720	0.63	243	
		2024-25	NS-IV	Nasagarh RF	4	478.0713	478.0713	0.63	301	
	Khandapada	2025-26	NS-V	HanumantiaRF		329.6100	329.6100	0.19	63	
	Mahipur	2026-27	NS-VI	Maicheli Sampada R.F		284.2927	284.2927	0.36	102	
	Nayagarh	2027-28	NS-VII	Hatimunda R.F		352.5184	352.5184	0.36	127	
	Daspalla	2028-29	NS-VIII	Ambalimba R.F	(Part)	308.82	308.82	0.73	225	
		2029-30	NS-IX	Ambalimba R.F	(Balance)	245.599	245.599	0.73	179	
		2030-31	NS-X	Nasagarh RF	1 (Bala.)	200.8031	454.6016	0.63	127	284
				Nephari (PRF)		253.7985		0.62	157	
		Total				3401.7754	3401.7754	0.55	1879	



Table No 14.17 Yield calculation of Central-I FS (CFS-I)

Table No 14.17 Yield calculation of Central-I FS (CFS-I)										
Name of FS	Range	Year of Working	Section	Forest Block	Comp. no	Area in ha	Coupe Area in Ha	No of trees / Ha for harvesting	No of Trees suggested for Harvesting	
Central-I FS	Daspalla	2021-22	CL1- I	Central RF	5	503.6211	503.6211	0.62	312	
		2022-23	CL1-II	Central RF	6	644.4631	644.4631	0.62	400	
		2023-24	CL 1-III	Gochhabari PRF		522.0140	522.0140	0.62	324	
		2024-25	CL 1-IV	Gambhariganda (PRF)		288.2498	288.2498	0.59	170	
		2025-26	CL1 -V	Baisipalli Extn-II (PRF)		71.9664	235.6018	0.67	48	146
				Baisipalli Ext-III (PRF)		163.6354		0.60	98	
		2026-27	CL1-VI	Central RF	1	999.5352	999.5352	0.62	620	
		2027-28	CL1-VII	Central RF	2	576.8663	576.8663	0.62	358	
		2028-29	CL1-VIII	Central RF	3	463.0487	463.0487	0.62	287	
		2029-30	CL1-IX	Central RF	4	400.0	400.0	0.62	248	
		2030-31	CL1-X	Central RF	4	414.6640	414.6640	0.62	257	
				Total		5048.064	5048.064	0.62	3121	



Table No 14.18 Yield calculation of Central-2 FS (CFS-II)

Table No 14.18 Yield calculation of Central-2 FS (CFS-II)										
Name of FS	Range	Year of Working	Section	Forest Block	Comp. no	Area in ha	Coupe Area in Ha	No of trees / Ha for harvesting	No of Trees suggested for Harvesting	
Central-2 FS	Daspalla	2021-22	CL2- I	Central RF	10(P)	538.2959	538.2959	0.62	334	
		2022-23	CL2-II	Central RF	11	898.4480	898.4480	0.62	557	
		2023-24	CL 2-III	Pokharigochha RF	1	678.1588	678.1588	0.56	380	
		2024-25	CL 2-IV	Pokharigochha RF	2	457.7644	457.7644	0.56	256	
		2025-26	CL2 -V	Pokharigochha RF	3	521.9499	521.9499	0.56	292	
		2026-27	CL2-VI	Pokharigochha RF	4	578.8277	761.6587	0.56	324	426
				Pokharigochha RF	8	182.8310		0.56	102	
		2027-28	CL2-VII	Central RF	7	366.6703	366.6703	0.62	227	
		2028-29	CL2-VIII	Central RF	8	471.2473	471.2473	0.62	292	
		2029-30	CL2-IX	Central RF	9	749.1270	749.1270	0.62	464	
		2030-31	CL2-X	Central RF	10 (B)	301.06	447.7988	0.62	187	270
				Aranignda (PRF)		102.1612		0.55	56	
				Baliberena (PRF)		44.5776		0.61	27	
		Total				5891.1191	5891.1191	0.59	3498	



Table No 14.19 Yield Calculation of Cadiapali-1 FS (CPFS-1)

Table No 14.19 Yield Calculation of Cadiapali-1 FS (CPFS-1)										
Name of FS	Range	Year of Working	Section	Forest Block	Comp. no	Area in ha	Coupe Area in Ha	No of trees / Ha for harvesting	No of Trees suggested for Harvesting	
Cadiapali-1 FS (CPFS-1)	Daspalla	2021-22	CP1- I	Chadiapali RF	7(P)	576.5103	576.5103	0.67	386	
		2022-23	CP1-II	Chadiapali RF	9	316.8639	316.8639	0.67	212	
		2023-24	CP1-III	Chadiapali RF	10	422.7530	422.7530	0.67	283	
		2024-25	CP1-IV	Chadiapali RF	6	529.58	529.58	0.67	355	
		2025-26	CP1 -V	Chadiapali RF	6	401.1882	401.1882	0.67	269	
		2026-27	CP1-VI	Baijhari DPF		89.4322	572.5120	0.64	57	381
				Chadiapalli R.F	CP 5	483.0798		0.67	324	
		2027-28	CP1-VII	Nuagaon RF	1	615.639	615.639	0.57	351	
		2028-29	CP1-VIII	Nuagaon RF	2	580.10	580.10	0.57	331	
		2029-30	CP1-IX	Chadiapali RF	8	416.7687	416.7687	0.67	279	
		2030-31	CP1-X	Chadiapali RF	7(B)	371.30	371.30	0.67	249	
		Total				4803.2151	4803.2151	0.64	3096	



Table No 14.20 Yield Calculation of Cadiapali-2 FS (CPFS-2)

Name of FS	Range	Year of Working	Section	Forest Block	Comp. no	Area in ha	Coupe Area in Ha	No of trees / Ha for harvesting	No of Trees suggested for Harvesting
Cadiapali-2 FS (CPFS-2)	Daspalla	2021-22	CP2- I	Chadiapali RF	3(1 st P)	349.87	349.87	0.67	234
		2022-23	CP2-II	Chadiapali RF	3(2 nd P)	305.2387	305.2387	0.67	205
		2023-24	CP2-III	Chadiapali RF	4	408.5561	408.5561	0.67	274
		2024-25	CP2-IV	Central RF	12	587.5344	587.5344	0.62	364
		2025-26	CP2 -V	Central RF	13	420.00	420.00	0.62	260
		2026-27	CP2-VI	Central RF	13	427.5446	427.5446	0.62	265
		2027-28	CP2-VII	Chadiapali RF	1	419.5593	419.5593	0.67	281
		2028-29	CP2-VIII	Chadiapalli Extn (PRF)		378.0971	378.0971	0.65	246
		2029-30	CP2-IX	Chadiapali RF	2	686.0548	686.0548	0.67	460
		2030-31	CP2-X	Chadiapali RF	3(B)	271.91	271.91	0.67	182
		Total				4254.3650	4254.3650	0.65	2771



14.6.9 Table of felling;

Year wise area to be felled has been furnished at table no 14.21 above.

Table No 14.21 Area assigned for working (Year wise & Felling Series Wise & expected yield) Nayagarh Division											
Name of FS	Year of Working										Total
	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	
Ratadei FS	796.6340	529.84940	459.77960	346.22970	425.6117	515.86090	655.7564	380.0000	383.7505	665.8733	5159.3455
#	263	187	184	138	140	196	230	133	134	333	1938
Nasagarh	352.0400	211.2504	384.9720	478.0713	329.6100	284.2927	352.5184	308.8200	245.5990	454.6016	3401.7754
#	222	133	243	301	63	102	127	225	179	284	1879
Central-1	503.6211	644.4631	522.0140	288.2498	235.6018	999.5352	576.8663	463.0487	400.0000	414.6640	5048.0640
#	312	400	324	170	146	620	358	287	248	257	3121
Central-2	538.2959	898.4480	678.1588	457.7644	521.9499	761.6587	366.6703	471.2473	749.1270	447.7988	5891.1191
#	334	557	380	256	292	426	227	292	464	270	3498
Chadiapali-1	576.5103	316.8639	422.7530	529.58	401.1882	572.5120	615.639	580.10	416.7687	371.30	4803.2151
#	386	212	283	355	269	381	351	331	279	249	3096
Chadiapali-2	349.87	305.2387	408.5561	587.5344	420.00	427.5446	419.5593	378.0971	686.0548	271.91	4254.3650
#	234	205	274	364	260	265	281	246	460	182	2771
Total	3116.9713	2906.1135	2876.2335	2687.4296	2333.9616	3561.4041	2987.0097	2581.3131	2881.3000	2626.1477	28557.8841
# (Total)	1751	1694	1688	1584	901	1990	1574	1514	1764	1575	16303
Timber in Cum @0.45cum/ tree	787.95	762.3	759.6	712.8	405.45	895.5	708.3	681.3	793.8	708.75	7336.35
FW in MT \$	525.3	508.2	506.4	475.2	270.3	597	472.2	454.2	529.2	472.5	4890.9

No of Trees to be marked

\$ 5 tree= 1 stack of FW (12'x3'x3')= 1.50 T

Sal:Non sal ratio for marking tree is 4:1(it is out of 5 trees marked will be of one of Non sal)



14.6.10 Method of executing the Felling:

a) Demarcation of Annual Coupe:

The annual coupes as outlines above shall be demarcated in the preceding year season or working on the ground by clearing 3-meter width. Stone cairns of (75cm +45cm)/2 x 60cm are to be placed at a visible distance and important turning points. The coupe line clearance shall be restricted to clear visibility only without removing the trees (30cm GBH and above) coming within the coupe line. A double coal tar ring shall be put on the breast height or the standing trees on the line at visible distance. In case of line coinciding with that of compartment line, the compartment line will be maintained by marking with double band of white paint at breast height of the trees standing on boundary at visible distance. In case of overlapping with two or more compartments/forests blocks, each compartment shall be treated as separate unit and such unit shall be demarcated with single coal tar ring on the trees standing on the boundary of compartment/forest blocks. After demarcation of Coupe line a sign board indicating Name of the Range, Felling Series, Coupe No, Area in ha, Year of Working is / are to be placed at entrance of the coupe, Roads adjacent to the coupe line for ease identification.

b) Marking Rules:

The forests to be worked out in this working circle are Sal and Non Sal forests. The crop is of irregular age class and pole crops are generally encountered. Marking should be taken up preferably by Forest Ranger and in no case it shall be below the rank of Forester. It shall be checked by Assistant Conservator of Forests up to 40% of the marking. The Divisional Forest Officer shall also ensure test check of required percentage at least 10% of the marked trees to ensure the application of Marking Rules. The marking should be in a conservative basis not on **“Enhanced Production Approach”**

- i. All trees to be marked for felling shall be blazed at two places, one at breast height and the other at just above ground level.
- ii. The blaze should be of size 15 cm x 15 cm and marked with departmental marking hammer and numbered serially.
- iii. If a tree is forked below the breast height, then it should be treated as separate tree but if forked above breast height, then it should be treated as one tree.



- iv. During marking, the trees shall be classified as sound and unsound basing on the external appearance.
- v. The trees standing on open/blank areas without established natural regeneration shall be excluded from marking.
- vi. The trees standing on the hilly terrain of 30° slopes or more should not be marked for felling except dead, uprooted trees.
- vii. Trees which cannot be dragged out from the stump site should not be marked.
- viii. Trees standing on nalla banks or eroded areas also should not be marked as this will lead to further soil erosion and gaps.
- ix. Marking also should not be made within 50 meters of public road on both sides, key habitat of wildlife such as game tank, water holes, salt licks and den etc. Area near to spring origin should be left without marking.
- x. The marking of trees shall be restricted to those trees whose removal will not create permanent gap in the canopy and will not affect in the regeneration of the principal species.
- xi. In case of a tree is marked for felling, no other tree shall be marked within 30 meters Radius of that tree subject to further restriction on removal of trees as per limit stipulated.
- xii. Marking should be done with all the dead, diseased, hollow and even uprooted trees except in case of requirement on the wild life point of view. The tree is reckoned as dead if its crown is completely leafless and the bark is peeled of partly or completely. Similarly, a tree is treated as diseased, if its main truck is affected with borer and powdery deposit on the stem or base and/or Sambar Akhia or there is visual evidence of affected bole. So also, a tree is considered as hollow, when the hollowness is established through naked eye.
- xiii. Two trees out of available 7 (Seven) i.e. 28.6% of the available mark able trees are to be marked for removal. The overall limit of number of trees in a compartment is to be regulated as per **Table No 14.21**
- xiv. The fruit yielding trees like Mango, Kendu, Char, Mahula, Tamarind, Kusum, Bela etc. shall not be marked during its productive age.
- xv. Trees marked and removed for Chariot construction during last three years from the coupe area, the number of such trees removed are to be adjusted against markable trees.



c) Improvement marking:

The improvement marking shall be carried out mainly to improve the crop composition and enhance diameter growth without aiming at any yield from it. The following rules are prescribed for the circle.

All dead, diseased and defective trees will be marked for felling. However some dead standing trees as prescribed in the Wildlife Overlapping Working Circle will be retained in the interest of wild life purpose.

The marking and removal shall be subject to the following conditions:

- The marked trees shall form part of congested crop and principle of thinning warrants its removal.
- There shall be established seedlings, sapling or poles to replace the removal. No marking of fruit bearing trees such as Mango, Tamarind, Mahula, Kendu, Bela, Char, Kusum etc shall be done for its removal. The marking of trees shall be always of inferior species interfering or likely to hinder growth of principal species. The principle of thinning as described below to be followed.

d) Execution of Marking & Thinning:

The objectives of taking of thinning are

- i) To improve the hygienic condition.
- ii) To create best conditions of growth & obtain diameter growth of remaining trees.
- iii) Salvage the anticipated losses of the merchantable volume.
- iv) To obtain a desirable composition of crops.
- v) Retaining seed bearers.
- vi) Improvement in wood quality.
- vii) To obtain intermediate yield and increase net yield and financial out-turn.
- viii) Decomposition of raw hummus.
- ix) To reduce the risk of diseases and pests.

After thinning, the results expected are

- **Reduced competition in root and crown,**
- **Reduced weed growth,**
- **Improved quality of wood,**
- **Regulation of rate of growth,**



- Increase seed production,
- Reduction in the net cost of growing,
- Reducing the risk of fire and diseases,
- Encouraging the advanced growth,
- Fulfilling the market demands.

For undertaking thinning the following aspects are to be kept in mind.

- I. Before planning the nature and intensity of thinning preference between the intensity of thinning and quality of thinning should be decided.
- II. The trees remaining after the thinning should be able to compensate for the loss in increment by trees removed in thinning.
- III. There will be an optimum stocking for a given site and species.
- IV. For this individual trees are classified by height and size of crown and thinning is decided on the basis of which classes of trees are fit to be removed for maintaining the desired qualitative and quantitative nature of the thinning.
- V. The main purpose of the thinning is to release more space for future development of trees; the freedom of crown is the guiding factor for thinning purpose.
- VI. The retention of trees per unit should be decided first and then the number of trees to be removed should be marked accordingly.
- VII. The development of crown and stem are the deciding factor for sub-classification of the dominance classes of trees for the given site and species.
- VIII. Tree classification in regular forests are done as under

1. Classification based on height:

i) Dominant trees (D or D1)

It includes the trees that form the uppermost leaf canopy. They are the tallest trees that determine the top level of canopy they are also called pre-dominant trees.

ii) Co-dominant trees (CD or D2)

These are shorter than dominant. About $5/6^{\text{th}}$ of the height of the dominant.

iii) Sub-dominant trees (SD or D3)

They do not form part of the uppermost leaf canopy. Their height is about $3/4^{\text{th}}$ that of the tallest trees. They are also called dominated trees.



iv) Suppressed trees (S)

The height of the suppressed trees is about $\frac{1}{2}$ to $\frac{5}{8}$ th of the height of the best trees. Suppressed trees grown below the crowns of the other trees in the stand. The leading shoots are over-topped by their neighboring trees or at least shaded on all sides by them.

v) Wolf trees (W)

The wolf trees are large, coarse and mishapen trees.

vi) Whips (Wh)

This class comprises bent over and badly leaning trees. Whips have tall, thin stems which are unstable and may cause damage to other trees when they sway.

vii) Dead, dying and moribund trees (m)

This category consists of trees that are dead or at the point of death.

viii) Disease trees (k)

It includes trees that are infected with parasites and their growth is seriously affected due to infection.

ix) Reproduction or Regeneration (r)

It consists of recruits or regeneration.

x) Over mature or veterans.

Classification on the Basis of Crown

The crown spread may be taken as better indication than canopy position to understand growth potentialities of a tree. For this tree may be classified on the basis of the crown with average stem spacing as shown below:-

I. Spaced

Trees with free crown spreading having less than or equal to $\frac{3}{4}$ th that of spacing.

II. Co-spaced



Trees with a free crown spread having $3/4^{\text{th}}$ to $1/2$ (50-75%) that of the available spacing.

III. Sub-spaced

Trees with the spread of free crown less than half but more than one-fourth $1/4^{\text{th}}$ of the spaced.

IV. Mal-spaced

Trees with a very small spread of trees crown which is less than a quarter of the spaced.

V. De-spaced

Trees will no free crown with little vigor.

VI. Dead, dying and low yielding trees

In the present situation, it is recommended to follow an ordinary thinning as described below.

This is known as “THINNING FROM THE LOW” and consists of the removal of inferior individuals starting from the suppressed class, then taking the dominated class and ultimately some of the dominant class.

It is a very common form of selective thinning in regular crops. It has been devised to be in line with nature because only those trees which have been unsuccessful in the struggle for growth are removed first.

i) Grade of Ordinary Thinning

The thinning grades are defined by the spacing class removed so that a check may be made by comparing yield table numbers for the mean diameter in question. There are various grades of thinning e.g. A, B, C, D, E, grades.

I. A-Grade

Light thinning- removal of dead, dying, diseased and suppressed trees.

II. B-Grade:



Moderate thinning - In addition to trees in A-grade further removal of defective dominated stems and whips. Advance growth which cannot be pruned or lopped may also be removed.

III. C- Grade (Heavy thinning):

This includes trees in grade A and B and all remaining dominated defective, co-dominants that may be removed without making lasting gaps in canopy. The C grade thinning is the standard grade in vogue for yield table compilation.

IV. D-Grade (Very Heavy Thinning):

This includes trees of all above grades and some good dominants so that no lasting or permanent gap develops in canopy. The left over trees are with good boles and crowns, well spaced and evenly distributed over the site for future development.

V. E-Grade (Extremely Heavy Thinning):

This type of thinning is adopted mainly for research purposes. This is the heaviest thinning that can be made in the crop without creating permanent gaps in the canopy. Many dominant stems are also removed.

It is always better to make C-grade or D-grade thinning in a dense crop in which thinning has been unduly delayed. The removal of trees should be Economic or Hygienic value. In addition to above classes the intermediate grades of thinning such as C/D may be carried out.

Precautions in First Thinning

The first thinning is very important for any crop. The following factors should be considered at the time of first thinning.

- The thinning should take place before adjoining trees check one another's growth.
- The thinning should not be postponed on the ground that the poles obtained will be non-saleable or uneconomic.
- The age of first thinning should be taken on the basis of height or size attained.
- The heavy thinning should not be carried on poorer sites, drier areas and steeper slopes, because the gaps may not fill up due to poor growth of trees.
- All thinning should be done on the silvicultural lines.



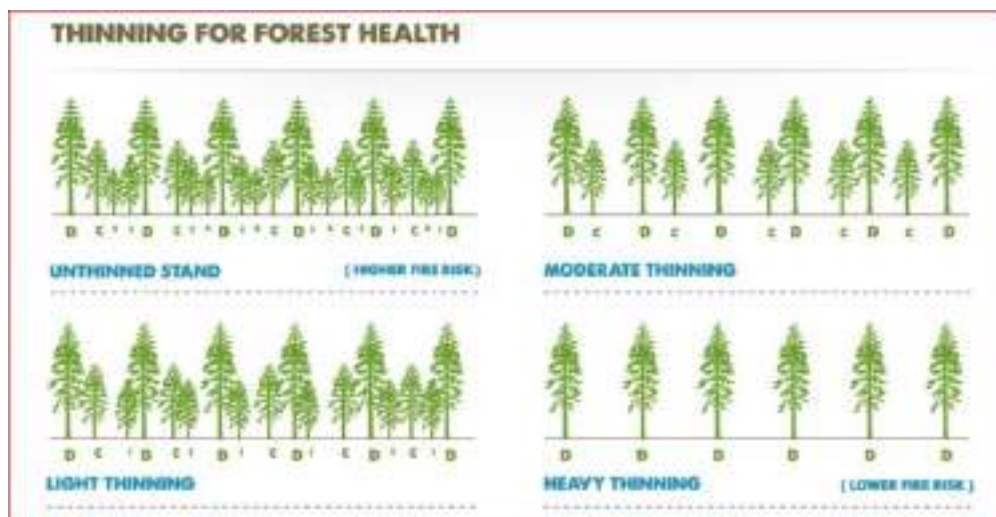
- The light demander species may require heavier thinning as compared to the shade bearer species.
- It is best to carry out silvicultural thinning. Some admixture of secondary species may be retained where this is desired on silvicultural or protection grounds.

ii) Thinning In Irregular Crops:

It is difficult to classify tree in an irregular crop. The general classifications which are used for the research purposes are THREE crown positions. It is suggested that in regular crops the degree of crown freedom and their further classification into large, medium and small crown sizes, should be taken in account.

Crown Freedom	Free	Restricted	Confine
Crown development or crown size	Well developed or large	Average or medium	Poor or small

- The crown freedom is judged irrespective of the size of the tree and its position in the stratification.
- The thinning in an irregular crop is done by selection method.
- The trees to be cut are that which restrict the growth of their neighbors on all sides and should be more valuable than their neighbors.
- The aim should be to maintain a crop of all diameter classes in a sufficient number of



maximum sustained yield.



- The valuable species are retained whereas inferior trees of all diameter classes are removed.
- The removal of trees is carried out in diameter classes.
- It aims at continuous improvement by repeated removal of inferior stems in all diameter classes so that basal area or standing volume becomes more or less equal to theoretical ideal value.

iii) Factors Affecting Thinning Practice:

The following factors may be considered before the thinning practice:

1. Site Factors
2. Nature of species
3. Age

1. Site Factors

The site quality influence on thinning practice is that a relatively close canopy on the poorer sites should be maintained. On low quality sites heavy openings should not be made. The spacing out widely in earlier stages should not be carried out on hot, dry, slopes, on poor soils and on all sites where grass and other weed invasion is likely to occur. A poor site will usually support less stems per hectare than a good one.

2. Nature of Species

The shade-bearers are more tolerant of crown than the light demanders therefore more frequent thinning is needed for light demander species. Light demanders usually show good response to ordinary thinning where as shade-bearers to crown thinning. Sal, Sisoo, Asan, Teak, being light demanders require heavier grades of ordinary thinning.

3. Age

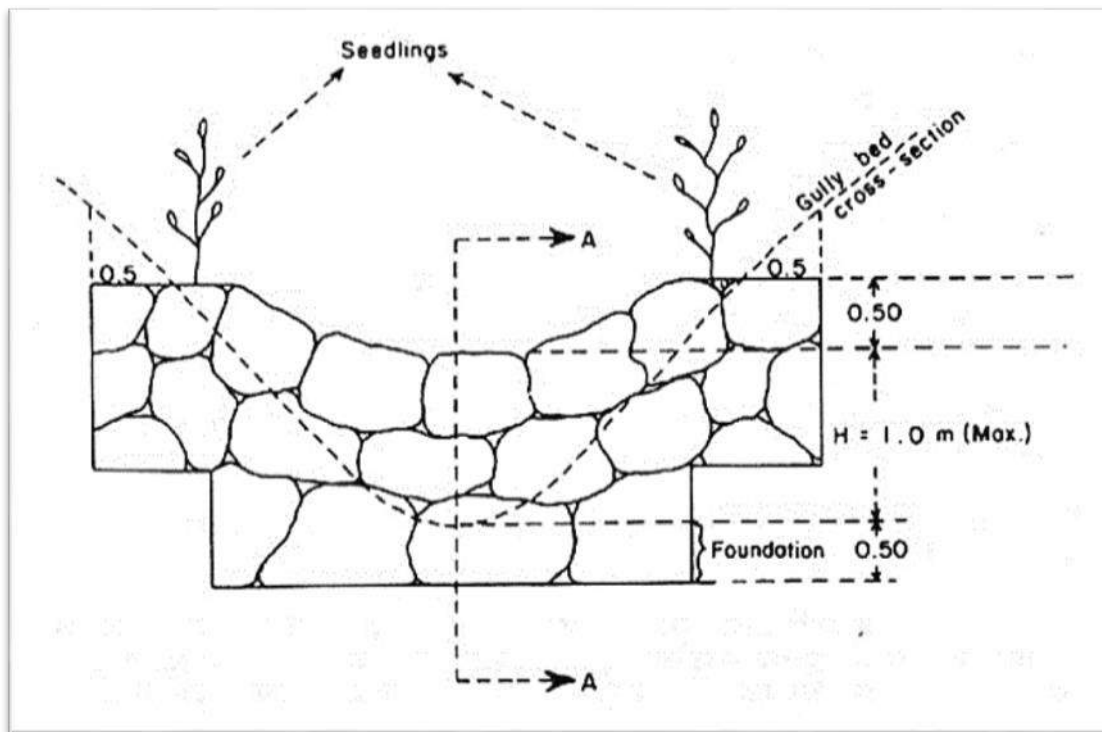
The crown formation depends on age and in young ages when the crown formation is not completed mechanical thinning or sticks thinning may be done with succession. The light demander species require heavier grade of thinning at frequent intervals in younger crops. On the other hand some species in middle age or maturity require crown thinning.



14.6.11 Subsidiary silvicultural operations (Cleaning & Thinning):

After Coupe working, the coupe area is required to be improved through Subsidiary Silvicultural Operation. The following works are required to be taken up under Subsidiary Silvicultural Operation (SSO)

- (i) All marked trees those have not been removed by the OFDC Ltd during coupe working are required to be removed without considering its economic value.
- (ii) All debris, barks etc are to be removed from the coupe area and may be dumped in pits for natural decay and formation of humus.
- (iii) All diseased tree parts should be removed from the coupe and preferable burnt in order to check its outbreak.
- (iv) High stumps of living trees if found, it should be cut back at a height 30-40cm above the ground level.
- (v) Silvicultural Cleaning and thinning are two major subsidiary silvicultural operations being prescribed. Cleaning is being taken up in Sapling Crops whereas thinning is prescribed in Pole Crops. If such crop is available within the coupe cleaning / thinning if required to be taken up.
- (vi) Soil & Moisture Conservation work is required to be taken up. The forests assigned to this working circle are mostly matured with advance growth in pole stage. Hence thinning as required is prescribed. The details of thinning have been described under Para- 14.6.10.4 above.
- (vii) Soil & Moisture Conservation: Moisture regime of a forest block greatly influences the crop composition, quality class and productivity of the forests. The dryer the tract – poorer is the vegetation. The forests included in this working circle are the best available forest blocks of the division. It is recommended to improve soil moisture regime in forests to improve the vigour of the crop, allow the species towards a climatic climax with increased biodiversity. It is recommended to treat all the available seasonal nallas to enhance period of water flow, check soil erosion in slopes, increase the humus layer in forest floor. The following activities are prescribed
 - a) Vegetative / brushwood Check dams on nalla bed.
 - b) Loose boulder Check dams (LBCD)
 - c) Percolation Pits.
 - d) Create & Maintain Humus layers to reduce run off and enhance time of collection.



(A) Vegetative / Brushwood check dams:

Brushwood check dams made of posts and brush are placed across the gully / Nalla bed. The main objective of brushwood check dams is to hold fine material carried by flowing water in the gully / nalla. Small gully heads, no deeper than one meter, can also be stabilized by brushwood check dams. Brushwood check dams are temporary structures.

They can be employed in connection with land use changes such as improved range management until vegetative and slope treatment measures become effective.

This type of check dams can be constructed by using fallen materials on forest floor.

(B) Loose Boulder Check Dams (LBCD):

Loose stone check dams made of relatively small rocks are placed across the gully. The main objectives for these dams are to control channel erosion along the gully bed and to stop

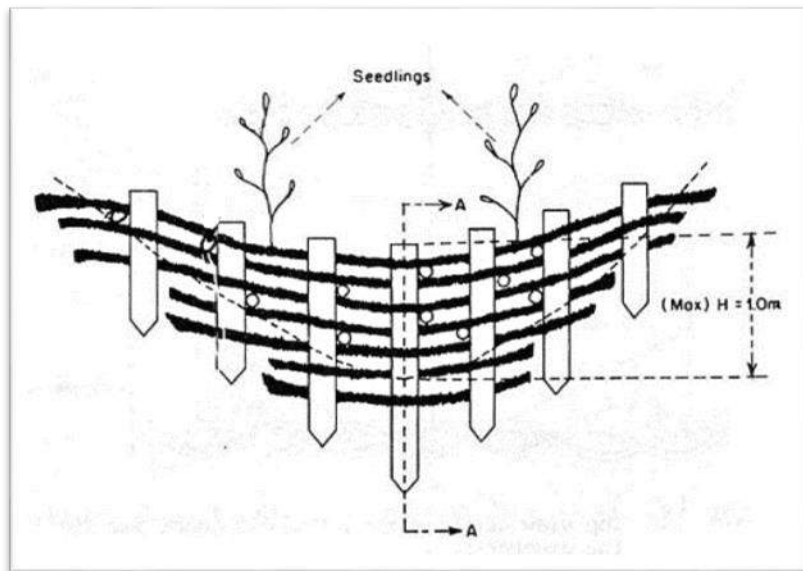


waterfall erosion by stabilizing gully heads. Loose stone check dams are used to stabilize the incipient and small gullies and the branch gullies of a continuous gully or gully network.

(C) Percolation Pits / trench:

A percolation trench, also called an infiltration trench, is a type of Best Management Practice (BMP) that is used to manage storm water runoff, prevent flooding and downstream erosion, and improve water quality in an adjacent river, stream. It is a shallow excavated trench filled with gravel or crushed stone that is designed to infiltrate storm water through permeable soils into the groundwater aquifer.

A percolation trench is similar to a dry well, which is typically an excavated hole filled with gravel.



(D) Create & Maintain Humus layers:

The forest floor, also called detritus, duff and the O horizon, is one of the most distinctive features of a forest ecosystem. It mainly consists of shed vegetative parts, such as leaves, branches, bark, and stems, existing in various stages of decomposition above the soil surface. Although principally composed of non-living organic material, the forest floor also teems with a wide variety of fauna and flora. It is one of the richest components of the ecosystem from the standpoint of biodiversity because of the large number of decomposers and predators present, mostly belonging to invertebrates, fungi, algae,



bacteria. Certain (adapted) plants may be more apparent in tropical forests, where rates of metabolism and species diversity are much higher than in colder climates.

The major compartments for the storage of organic matter and nutrients within systems are the living vegetation, forest floor, and soil. The forest floor serves as a bridge between the above ground living vegetation and the soil, and it is a crucial component in nutrient transfer through the biogeochemical cycle. Much of the energy and carbon fixed by forests is periodically added to the forest floor through litter fall, and a substantial portion of the nutrient requirements of forest ecosystems is supplied by decomposition of organic matter in the forest floor and soil surface. The sustained productivity of forests is closely linked with the decomposition of shed plant parts, particularly the nutrient-rich foliage.

The amount of material in the forest floor depends on the balance between inputs from litter production and outputs from decomposition, and amounts also reflect the site's disturbance history. Both litter production and decomposition are functions of the site (e.g., wet versus dry; cold versus warm; nutrient rich versus nutrient poor) and the vegetation that occupies the site (e.g., conifer versus broadleaf). A site's forest floor is determined by its areal weight, depth, and nutrient content. Typically, forest floors are heaviest and deepest in boreal forests and mountain forests where decomposition rates are slow. In contrast, the lightest and thinnest forest floors usually occur in tropical forests where decomposition rates are rapid.

Key soil functions SOM provide for include:

Nutrient Supply.

Upon decomposition, nutrients are released in a plant-available form while maintaining current levels.

Water-Holding Capacity.

Organic matter behaves somewhat like a sponge. It has the ability to absorb and hold up to 90 percent of its weight in water. Another great advantage of organic matter is that it releases nearly all of the water it holds for use by plants. In contrast, clay holds great quantities of water, but much of it is unavailable to plants.



Soil Aggregation.

Organic matter improves soil aggregation, which improves soil structure. With better soil structure, water infiltration through the soil improves, which improves soil's ability to take up and hold water.

Erosion Prevention.

Because of increased water infiltration and stable soil aggregates erosion is reduced with increased organic matter. Estimating Organic Material Needed to Increase Soil Organic Matter.

In Sal forests heavy leaf fall during January / February covers the entire forest floor. Frequent forest fire break the nutrition cycle in forest resulting poor forest growth. In order to enhance decomposition of leaf litters it is recommended to check burning of leaf litters, allow moderate grazing in February/ March for trampling and breaking of curacious leaf.

14.6.12 Regeneration:

a) Sowing of Seeds:

In the assigned forest blocks there are blank areas. It is recommended to cover the blank areas more than 0.50Ac to be covered under sowing of seeds. Seeds of Sal, Piasal, Sisoo, Asan, Arjun, Jamu, Kusum are to be sown on line or thali in June 1st / 2nd week just after few pre-monsoon shower. This arrangement will allow recruits to come up. Subsequently little care in form of weeding may fill up the gaps.

The silvicultural system adopted for this working circle is a **“High Forest System”**. For regeneration, the seed bearers are to be well maintained and covering of blank areas by sowing of seeds with after care is prescribed. Collection of genetically good seeds is to be stressed. The standard guideline for selecting a mother tree is furnished below.

- Collect seed lots from between 15 and 25 individuals that are spaced at least 100 meters distance from any other collection tree of the same species.
- Choose trees in vigorous health and avoid any that are diseased, suppressed, deformed, environmentally stressed, or in otherwise poor health.
- Collect from trees that are well formed and either dominant or co-dominant in the canopy.
- Avoid individuals that are isolated from others of the same species.
- Harvest only mature seed from ripened fruits.



- To ensure genetic variation, collect fruits equally from all parts of the crown--top, sides, and bottom--as these parts may have been pollinated at varying times from different sources.
- Collect throughout a species' normal habitat, noting variations in site.
- Man-made stands, including live fencing, plantations, or windbreaks, should be carefully reviewed as to their establishment before being selected as a seed source.

b) Closing to Grazing:

The area assigned to a particular year is required to be closed to grazing for three to protect the natural regeneration to attain a sapling stage. This should be strictly adhering to. **A formal “Close to Grazing” order is to be issued and circulated to local offices / villages and VSS.**

Table no. 14.22 Closing to Grazing										
Year										
Coupe	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31
I	Closed									
II		Closed								
III			Closed							
IV				Closed						
V					Closed					
VI						Closed				
VII							Closed			
VIII								Closed		
IX									Closed	
X										Closed

c) Fire Protection Measure:

Strict Fire Protection measures are required to be taken up / ensured for 1st three years. All possible measures at hand are required to be utilized to enforce Fire Protection. The following methods may be adopted depending upon extent of fire / time/ resource at hand.

- a) Control burning of debris,
- b) Fire line maintenance,
- c) Counter Firing,
- d) Beating out of Fire and use of blower machines,
- e) Use of Chemical extinguishers to control large in assessable fires.



As many forest blocks / large area have been assigned to VSS for protection etc, their assistance to be availed for fighting against fire. A Standard Operating Procedure (SOP) is required to be drawn up to meet any eventuality on Fire.

14.6.13 Associated regulations and measures:

Fire, grazing though two important site degraders, it can be judiciously use in high forest system to initiate a good regeneration. This aspect is to be seriously thought up and implemented to have a better stand.

Villagers / VSS are to be actively involved in all operations in assigned area. Their contribution will have a better result at a long run.

14.6.13.1 Annual Control Form:

The forest blocks assigned to a particular year for operation shall be taken up in the assigned year. After execution of prescribed work, an annual Report to be furnished in the form prescribed below. In case any deviation, the reason for such deviation is to be recorded. In case of spill over to next year for taking up the assigned operation, necessary approval of deviation is required to be obtained from PCCF, Odisha / CCF (P&SM) before executing the work. A copy of approved deviation shall find place in the Compartment History File.

Working circle- periodic block-		Felling- series cutting section	Localities prescribed localities suggested				Coupe control form		
							Coupe No.		Page
			As carried out				Excess(+) or deficit (-)		
Prescription in brief	W.P. para	Year due	Year	Block/ Compt.	Area	Volum e	Area	Volume	Remarks and Sanction
1	2	3	4	5	6	7	8	9	10



FELLING CONTROL FORM

128. The format of felling control form is as under:

Working circle- periodic block		Felling series- cutting section		Localities prescribed localities suggested (with areas)				Coupe control form	
								Coupe No.	Page
Range wise	Area	Species	Diameter class	Trees marked	Unit factor	Volume marked	Trees retained	% Trees retained	Remarks
1	2	3	4	5	6	7	8	9	10

14.6.13.2 Deviation Statement:

Any large and unusual operation from yield and target for plantation/ regeneration/ and or other activities provided in control forms of the working plan constitutes a deviation. These should also be spelt out. The check is through control forms and reporting is through deviation statements. Deviation beyond 20% of the target is considered a major deviation.

Statement showing deviations from working plan prescriptions

Year

Division

Serial No. of deviation	Control book name, form no. page	Reference to working plan		Nature of deviation requiring sanction
		Paragraph	Nature of prescription	



CHAPTER-15

REHABILITATION WORKING CIRCLE (RWC)

15.1 Name of working circle:

The Forest Blocks previously managed under Rehabilitation Working Circle and still in open forest category i.e. crop density below 40% are required to be treated further. Many forest blocks could not be treated in the previous plan period. The areas treated under working plan prescriptions but have not yielded desired result. Observing the present crop condition, status of regeneration and over all juvenility of vegetation and soil moisture regime, it is felt to provide adequate silvicultural treatment to bring the crop to Medium Dense Forest. It is recommended to treat the forest blocks under “**Rehabilitation Working Circle**”.

15.2 General constitution of working circle:

The Forest blocks of the Division i.e. Reserved Forests, Proposed Reserved Forests and Demarcated Protected Forests having crop density less than 40% and heavily affected by biotic interference are included in this Working Circle. The total area included in this working circle is **70241.8414** hectare which is 65.21% of the total forest area under management prescriptions of this plan. The Forest Block assigned to this Working Circle and area allotted is furnished in **Table No 15.1**

Table No 15.1 Area assigned to Rehabilitation Working Circle- Nayagarh Division (Area in ha)				
Block	Compt.	Area for management	RWC	JFM
Reserved Forest				
Daspalla Range				
Chhades RF		1676.4470	1676.4470	460.00
Poibari R.F		1619.8440	1459.8440	
Pokharigochha R.F	Pg 5	513.7106	491.7106	
Pokharigochha R.F	Pg 6	181.2128	131.2128	100.00
Pokharigochha R.F	Pg 7	394.8244	356.8244	20.60
Daspalla Range Total		4386.0388	4116.0388	580.60
Gania range				
Bankamunda R.F	Bm 1	602.6840	442.6840	515.00
Bankamunda R.F	Bm-2	370.8514	370.8514	300.00
Bankamunda R.F	Bm-3	288.7945	288.7945	200.00



Bankamunda R.F	Bm-4	597.4703	597.4703	221.00
Gania R.F		342.8016	162.8016	308.50
Matia R.F		643.6100	633.6100	
Makarprasad R.F		1157.6710	1157.6710	
Manibhadra R.F		527.9488	517.9488	
Gania Range Total		4531.8316	4171.8316	1544.50
Khandapara Range				
Bandara R.F		216.6869	166.6869	87.80
Barakhola R.F		787.6532	787.6532	162.70
Chadeibasa R.F		92.1845	72.1845	80.00
Dengabahada R.F	Db 1	451.8845	436.8845	409.40
Dengabahada R.F	Db 2	320.3681	310.3681	220.00
Guriabari R.F	Gb 1	353.1513	308.5313	250.00
Guriabari R.F	Gb 2	182.4876	182.4876	180.00
Mainsibindha R.F		637.3768	637.3768	400.00
Similibanka R.F		216.9048	216.9048	200.00
Pathara R.F		49.0167	49.0167	30.00
Pithakhai R.F		363.1600	353.1600	300.00
Sapua R.F	Sp 3	701.7006	701.7006	600.00
Sapua R.F	Sp 4	555.9740	555.9740	450.00
Sapua R.F	Sp 5	805.3868	805.3868	700.00
Sapua R.F	Sp 6	725.3056	725.3056	
Sapua R.F	Sp 7	883.4660	883.4660	
Sapua R.F	Sp 8	386.2498	386.2498	300.00
Sapua R.F	Sp 9	650.3146	650.3146	
Sapua R.F	Sp 10	481.2428	481.2428	225.61
Sapua R.F	Sp 11	521.5492	511.5492	
Sapua R.F	Sp 12	721.5915	721.5915	24.00
Sapua R.F	Sp 13	711.9831	711.9831	
Sikharpur R.F		1374.1130	1349.1130	
Patrabani Jamubani R.F		210.3444	209.6394	
Khandapara Range (Total)		12400.0958	12214.7708	4619.51
Mahipur Range				
Hatimunda R.F	Hm 1	603.1684	603.1684	300.00
Hatimunda R.F	Hm 2	475.0121	475.0121	250.00
Hatimunda R.F	Hm 3	273.4262	273.4262	
Hatimunda R.F	Hm 4	218.0725	218.0725	200.00
Hatimunda R.F	Hm 5	386.9039	386.9039	300.00



Hatimunda R.F	Hm 6	319.8856	319.8856	
Hatimunda R.F	Hm 7	478.4259	443.4259	200.00
Hatimunda R.F	Hm 8	589.0450	589.0450	400.00
Hatimunda R.F	Hm 9	707.7462	692.7462	550.00
Hatimunda R.F	Hm 10	222.6502	222.6502	200.00
Hatimunda R.F	Hm 11	461.1620	451.1620	360.00
Hatimunda R.F	Hm 12	498.5381	498.5381	400.00
Ratadei R.F	Rd 1	314.8743	284.6043	215.00
Ratadei R.F	Rd 3	349.6245	349.6245	300.00
Palva R.F	Pb 2	337.6271	313.6271	
Palva R.F	Pb 3	293.4185	267.4185	
Palva R.F	Pb 4	429.9870	403.9870	
Palva R.F	Pb 7	394.3466	294.3466	
Sulia R.F	Sl 1	647.5751	647.5751	
Sulia R.F	Sl 2	502.3064	402.3064	
Ragadimada R.F	Rm 1	403.9182	403.9182	
Ragadimada R.F	Rm 2	661.2036	661.2036	360.00
Ragadimada R.F	Rm 3	405.1577	405.1577	
Ragadimada R.F	Rm 4	427.5547	321.5547	
Ragadimada R.F	Rm 6	481.1499	481.1499	
Ragadimada R.F	Rm 7	544.5512	544.5512	430.25
Ragadimada R.F	Rm 8	267.8752	201.8752	
Ragadimada R.F	Rm 9	530.9555	530.9555	145.00
Panchupandav R.F	Pp 1	324.7043	324.7043	
Panchupandav R.F	Pp 2	417.0817	417.0817	
Mahipur Range (Total)		12967.9476	12429.6776	4610.25
Nayagarh Range				
Balaram RF		339.5281	289.5281	320.95
Hatimunda R.F	Hm 13	312.9783	312.9783	306.00
Hatimunda R.F	Hm 14	338.5783	338.5783	330.00
Hatimunda R.F	Hm 15	360.3932	360.3932	300.00
Hatimunda R.F	Hm 16	200.2457	200.2457	130.00
Hatimunda R.F	Hm 17	255.3059	255.3059	250.00
Hatimunda R.F	Hm 18	155.5424	75.5424	150.00
Hatimunda R.F	Hm 19	546.4431	546.4431	532.10
Rukhi R.F		220.8998	220.8998	200.00
Sulia R.F	Sl 3	738.3452	648.3452	720.00
Sapua R.F	Sp 1	337.4165	337.4165	269.00



Sapua R.F	Sp 2	555.9866	555.9866	580.00
Patharakata R.F	Pk 1	135.0238	120.0238	135.00
Nayagarh Range(Total)		4496.6869	4261.6869	4223.05
Odogoon Range				
Bahadajhola R.F		404.5449	190.4249	234.50
Balisinsa Badhulipur R.F	Bb 1	92.2116	92.2116	92.00
Balisinsa Badhulipur R.F	Bb 2	313.8678	313.8678	300.00
Gayalsingh R.F	Gs 1	324.3672	324.3672	300.00
Gayalsingh R.F	Gs 2	393.3122	363.3122	350.00
Gayalsingh R.F	Gs 3	361.3458	356.3458	361.00
Gayalsingh R.F	Gs 4	320.5606	300.5606	
Gochha R.F	Gc 1	452.5743	362.5743	400.00
Gochha R.F	Gc 2	412.9092	330.9092	
Gochha R.F	Gc 7	877.2780	723.2780	450.00
Gochha R.F	Gc 8 (a)	823.0117	671.8217	
Gochha R.F	Gc 18	396.7640	296.7640	157.00
Sulia R.F	Sl 4	915.8674	905.8674	
Sulia R.F	Sl 8	477.5446	372.5446	
Sulia R.F	Sl 9	668.6969	648.6969	
Odogoon Range (Total)		7234.8562	6253.5462	2644.50
Panchirida Range				
Gochha R.F	Gc 9	956.5656	856.5656	856.00
Gochha R.F	Gc 10	842.4302	754.4302	
Gochha R.F	Gc 11	740.4688	660.4688	
Gochha R.F	Gc 12	774.6294	724.6294	454.00
Gochha R.F	Gc 13	447.7130	447.7130	
Gochha R.F	Gc 14	779.5681	625.5681	564.00
Gochha R.F	Gc 15	654.5882	524.5882	600.00
Gochha R.F	Gc 16	465.5781	465.5781	430.00
Gochha R.F	Gc 17	446.5627	446.5627	
Khatia Damasahi R.F		268.2350	223.2350	208.00
Patharaganda R.F	Pd 1	316.8457	316.8457	303.00
Patharaganda R.F	Pd 2	273.4276	219.4276	
Patharaganda R.F	Pd 3	298.5558	298.5558	246.00
Patharaganda R.F	Pd 4	394.0514	384.0514	375.00
Sulia R.F	Sl 6	1328.8260	1328.8260	909.00
Sulia R.F	Sl 7	885.2014	735.2014	
Panchirida Range (Total)		9873.2470	9012.2470	4945.00



Division Total		55890.7039	52459.7989	23167.41
of PRF				
Daspalla Range				
Khamana (PRF)		116.8569	116.8569	50.00
Boni (PRF)		79.3134	79.3134	
Gumurukhola (PRF)		270.9614	270.9614	
Pankalasahi (PRF)		68.1276	68.1276	
Baisipalli Extn-I (PRF)		73.2720	73.2720	
Dhundugadia PRF		756.7991	756.7991	
Daspalla Range total		1365.3304	1365.3304	50.00
Gania Range				
Phasi Extn-I (PRF)		23.4961	23.4961	20.00
Phasi Extn-II (PRF)		112.0323	112.0323	
Phasi Extn-III (PRF)		58.8719	58.8719	40.00
Matia (PRF)		54.8403	34.8403	26.00
Bankamunda Extn-I (PRF)		205.6272	205.6272	
Baisipalli Ext-IV		609.1446	489.1446	
Palava (PRF)		59.8702	59.8702	
Ragadimada (PRF)		76.8970	76.8970	
Gania Range Total		1200.7796	1060.7796	86.00
Odogoon Range				
Makarapalli (PRF)		1124.3900	1104.3900	200.00
Odogoon Range total		1124.3900	1104.3900	200.00
Panchirida Range				
Banijhari (PRF)		2756.6170	2756.6170	756.00
Sukarmala (PRF)		2525.8950	2495.8950	719.00
Ambamundia (PRF)		297.7760	297.7761	
Panchirida Range Total		5580.2880	5550.2881	1475.00
Nayagarh Range				
Barabanka (PRF)		579.9189	549.9189	200.00
Nayagarh Range Total		579.9189	549.9189	200.00
Div. Total		9850.7069	9630.7070	2011.00
of DPF				
Daspalla Range				
Kuradhinisa Ext		2615.4160	2615.4160	
Kuradhinisha (DPF)		505.1108	505.1108	
Kerabari (DPF)		39.6854	39.6854	
Nandagadu (DPF)		54.4770	54.4770	
Nuagaon (DPF)		49.4510	49.4514	



Sirisabadi (DPF)		934.9828	934.9828	
Sikharpanga (DPF)		87.6165	87.6165	
Ranga (DPF)		305.9649	305.9649	
Daspalla Range Total		4592.7044	4592.7048	
Gania Range				
Matia Extn (DPF)		546.1503	546.1503	17.50
Bankamunda Extn-II (DPF)		546.6233	546.6233	95.00
Arakhataila		253.3231	218.3231	
Ambaghathi-I		1.1650	1.1650	
Ambaghathi-II		11.8504	11.8504	
Ambaghathi-III		1.9600	1.9600	
Ambaghathi-IV		60.3667	60.3667	
Makarprasad		125.2948	125.2948	
Gania Range Total		1546.7336	1511.7336	112.50
Odogaoon Range				
Dhadi (DPF)		232.8733	232.8733	132.00
Takarakhai (DPF)		78.8052	78.8052	56.06
Kurala (DPF)		677.3515	637.3515	152.00
Nariamba		774.0590	744.0594	112.00
Odogaoon Range (Total)		1763.0890	1693.0894	452.06
Mahipur Range				
Bhagabati (DPF)		62.0763	62.0763	
Mahipur Range (Total)		62.0763	62.0763	0.00
Panchirida Range				
Binjhagiri (DPF)		250.2270	150.2270	50.00
Netabandha (DPF)		141.5044	141.5044	25.00
Panchirida Range (Total)		391.7314	291.7314	75.00
Division Total		8356.3347	8151.3355	639.56
Total		74097.7455	70241.8414	25817.97

The total area assigned to this working circle is 70241.8414 ha which about 65.21% of the total forest area.



15.3 General characteristics of vegetation:

The Blocks assigned to this working circle are degraded forest with crop density less than 40%. The crop is mostly Sal forest, Mixed Forests and enriched by mixed Plantations. Due to biotic interference and prolonged dry spell, crop composition is changing from Sal to mixed crops in patches. Some mixed plantations and bamboo plantations have been tried. The crop is quite uneven. Trees of all age class are noticed. Due to coppice origin, growth is stunted and in a pole stage. Due to Biotic interference, annual fire, the soil is mostly regressed. The open spaces created due to unplanned felling have been infested with heavy weeds. Now natural regeneration is moderate. There are plantations within RF/ PRF/ DPF during last plan period as enrichment plantations. The growth is not so prominent than the surroundings. It became difficult to prescribe management practices for such plantations. An intensive silvicultural operation with strict fire protection may improve the condition.

15.4 Rehabilitation Series / Rehabilitation Section:

For convenience of treatment and well distributed working the following Treatment Series are constituted. These are as follows. (Table No 15.2)

Table No 15.2 (i) Constitution of Rehabilitation Series Daspalla Range						
Name of Range	Sl No	Rehabilitation Series	Block	Comp. No	Area in Ha	Total of Series
Daspalla	1	Chhadesha RS	Chhades RF		1676.4470	3136.2910
			Poibari R.F		1459.8440	
	2	Pokharigochha RS	Pokharigochha R.F	Pg 5	491.7106	2345.0782
			Pokharigochha R.F	Pg 6	131.2128	
			Pokharigochha R.F	Pg 7	356.8244	
			Khamana (PRF)		116.8569	
			Boni (PRF)		79.3134	
			Gumurukhola (PRF)		270.9614	
			Pankalasahi (PRF)		68.1276	
			Baisipalli Extn-I (PRF)		73.2720	
			Dhundugadia PRF		756.7991	
	3	Kuradhinisa RS	Kuradhinisa Ext		2615.416	2615.416
	4	Sirisabadi RS	Kuradhinisha (DPF)		505.1108	1977.2888
			Kerabari (DPF)		39.6854	
			Nandagadu (DPF)		54.477	
			Nuagaon (DPF)		49.4514	
			Sirisabadi (DPF)		934.9828	
			Sikharpanga (DPF)		87.6165	
			Ranga (DPF)		305.9649	
		Total 4 RS			10074.074	10074.074



Table No 15.2 (ii) Constitution of Rehabilitation Series Gania Range						
Name of Range	Sl No	Rehabilitation Series	Block	Comp. No	Area in Ha	Total of Series
Gania	5	Manibhadra RS	Manibhadra R.F		517.9488	2663.2924
			Matia R.F		633.61	
			Matia Extn (DPF)		546.1503	
			Bankamunda Extn-II (DPF)		546.6233	
			Arakhataila		218.3231	
			Ambaghati-I		1.165	
			Ambaghati-II		11.8504	
			Ambaghati-III		1.96	
			Ambaghati-IV		60.3667	
			Makarprasad		125.2948	
			Gania	6	Makarprasad RS	
Bankamunda R.F	Bm-2	370.8514				
Bankamunda R.F	Bm-3	288.7945				
Bankamunda R.F	Bm-4	597.4703				
Gania R.F		162.8016				
Makarprasad R.F		1157.671				
Gania	7	Baisipali RS	Phasi Extn-I (PRF)		23.4961	1060.7796
			Phasi Extn-II(PRF)		112.0323	
			Phasi Extn-III(PRF)		58.8719	
			Matia (PRF)		34.8403	
			Bankamunda Extn-I (PRF)		205.6272	
			Baisipalli Ext-IV		489.1446	
			Palava (PRF)		59.8702	
			Ragadimada (PRF)		76.8970	
Total 3 Series (Gania Range)					6744.3448	6744.3448



Table No 15.2 (iii) Constitution of Rehabilitation Series Mahipur Range						
Name of Range	Sl No	Rehabilitation Series	Block	Comp. No	Area in Ha	Total of Series
Mahipur	8	Mahipur RS	Hatimunda R.F	Hm 1	603.1684	2276.4687
			Hatimunda R.F	Hm 2	475.0121	
			Hatimunda R.F	Hm 3	273.4262	
			Hatimunda R.F	Hm 4	218.0725	
			Hatimunda R.F	Hm 5	386.9039	
			Hatimunda R.F	Hm 6	319.8856	
	9	Hatimunda RS	Hatimunda R.F	Hm 7	443.4259	2897.5674
			Hatimunda R.F	Hm 8	589.045	
			Hatimunda R.F	Hm 9	692.7462	
			Hatimunda R.F	Hm 10	222.6502	
			Hatimunda R.F	Hm 11	451.162	
			Hatimunda R.F	Hm 12	498.5381	
Mahipur	10	Sulia -1 RS	Ratadei R.F	Rd 1	284.6043	2963.4895
			Ratadei R.F	Rd 3	349.6245	
			Palva R.F	Pb 2	313.6271	
			Palva R.F	Pb 3	267.4185	
			Palva R.F	Pb 4	403.987	
			Palva R.F	Pb 7	294.3466	
			Sulia R.F	Sl 1	647.5751	
			Sulia R.F	Sl 2	402.3064	
Mahipur	11	Ragadimada RS	Ragadimada R.F	Rm 1	403.9182	2272.9841
			Ragadimada R.F	Rm 2	661.2036	
			Ragadimada R.F	Rm 3	405.1577	
			Ragadimada R.F	Rm 4	321.5547	
			Ragadimada R.F	Rm 6	481.1499	
	12	Panchupandav RS	Ragadimada R.F	Rm 7	544.5512	2081.2442
			Ragadimada R.F	Rm 8	201.8752	
			Ragadimada R.F	Rm 9	530.9555	
			Panchupandav R.F	Pp 1	324.7043	
			Panchupandav R.F	Pp 2	417.0817	
Bhagabati (DPF)				62.0763		
Total 5 RS (Mahipur range)					12491.7539	12491.7539



Table No 15.2 (iv) Constitution of Rehabilitation Series Nayagarh Range						
Name of Range	Sl No	Rehabilitation Series	Block	Comp. No	Area in Ha	Total of Series
Nayagarh	13	Balaram RS	Balaram RF		289.5281	2379.0150
			Hatimunda R.F	Hm 13	312.9783	
			Hatimunda R.F	Hm 14	338.5783	
			Hatimunda R.F	Hm 15	360.3932	
			Hatimunda R.F	Hm 16	200.2457	
			Hatimunda R.F	Hm 17	255.3059	
			Hatimunda R.F	Hm 18	75.5424	
			Hatimunda R.F	Hm 19	546.4431	
Nayagarh	14	Sulia -2RS	Rukhi R.F		220.8998	2432.5908
			Sulia R.F	Sl 3	648.3452	
			Sapua R.F	Sp 1	337.4165	
			Sapua R.F	Sp 2	555.9866	
			Patharakata R.F	Pk 1	120.0238	
			Barabanka (PRF)		549.9189	
Total 2 Series (Nayagarh Range)					4811.6058	4811.6058



Table No 15.2 (v) Constitution of Rehabilitation Series Khandapara Range						
Name of Range	Sl No	Rehabilitation Series	Block	Comp. No	Area in Ha	Total of Series
Khandapara	15	Barakhol RS	Bandara R.F		166.6869	2264.7961
			Barakhola R.F		787.6532	
			Chadeibasa R.F		72.1845	
			Dengabahada R.F	Db 1	436.8845	
			Dengabahada R.F	Db 2	310.3681	
			Guriabari R.F	Gb 1	308.5313	
			Guriabari R.F	Gb 2	182.4876	
Khandapara	16	Sikarpur RS	Mainsibindha R.F		637.3768	2605.5713
			Similibanka R.F		216.9048	
			Pathara R.F		49.0167	
			Pithakhai R.F		353.1600	
			Sikharpur R.F		1349.113	
	17	Sapua -1 RS	Sapua R.F	Sp 3	701.7006	2063.0614
			Sapua R.F	Sp 4	555.9740	
			Sapua R.F	Sp 5	805.3868	
	18	Sapua -2 RS	Sapua R.F	Sp 6	725.3056	1995.0214
			Sapua R.F	Sp 7	883.466	
			Sapua R.F	Sp 8	386.2498	
	19	Sapua -3 RS	Sapua R.F	Sp 9	650.3146	1643.1066
			Sapua R.F	Sp 10	481.2428	
			Sapua R.F	Sp 11	511.5492	
Khandapara	20	Sapua Patrabani RS	Sapua R.F	Sp 12	721.5915	1643.2140
			Sapua R.F	Sp 13	711.9831	
			Patrabani			
			Jamubani R.F		209.6394	
Total 6 RS (Khandapada Range)					12214.7708	12214.7708



Table No 15.2 (vi) Constitution of Rehabilitation Series Odogaon Range Range						
Name of Range	Sl No	Rehabilitation Series	Block	Comp. No	Area in Ha	Total of Series
Odogaon	21	Gayalsingh RS	Bahadajhola R.F		190.4249	1941.0901
			Balisinsa Badhulipur R.F	Bb 1	92.2116	
			Balisinsa Badhulipur R.F	Bb 2	313.8678	
			Gayalsingh R.F	Gs 1	324.3672	
			Gayalsingh R.F	Gs 2	363.3122	
			Gayalsingh R.F	Gs 3	356.3458	
			Gayalsingh R.F	Gs 4	300.5606	
	22	Gochha RS	Gochha R.F	Gc 1	362.5743	2385.3472
			Gochha R.F	Gc 2	330.9092	
			Gochha R.F	Gc 7	723.278	
			Gochha R.F	Gc 8 (a)	671.8217	
			Gochha R.F	Gc 18	296.7640	
	23	Sulia-3 RS	Sulia R.F	Sl 4	905.8674	1927.1089
			Sulia R.F	Sl 8	372.5446	
			Sulia R.F	Sl 9	648.6969	
	24	Makarapalli RS	Makarapalli (PRF)		1104.3900	2797.4794
			Dhadi (DPF)		232.8733	
			Takarakhai (DPF)		78.8052	
			Kurala (DPF)		637.3515	
			Nariamba		744.0594	
Total 4 RS (Odogaon Range)					9051.0256	9051.0256



Table No 15.2 (vii) Constitution of Rehabilitation Series Panchirida Range						
Name of Range	Sl No	Rehabilitation Series	Block	Comp. No	Area in Ha	Total of Series
Panchirida	25	Sulia-4 RS	Sulia RF	Sl 6	1328.826	2064.0274
			Sulia RF	Sl 7	735.2014	
Panchirida	26	Panchirida-1 RS	Gochha R.F	Gc 9	856.5656	2996.0940
			Gochha R.F	Gc 10	754.4302	
			Gochha R.F	Gc 11	660.4688	
			Gochha R.F	Gc 12	724.6294	
	27	Panchirida -2 RS	Gochha R.F	Gc 13	447.7130	2510.0101
			Gochha R.F	Gc 14	625.5681	
			Gochha R.F	Gc 15	524.5882	
			Gochha R.F	Gc 16	465.5781	
			Gochha R.F	Gc 17	446.5627	
	28	Patharaganda RS	Khatia Damasahi R.F		223.235	2031.6230
			Patharaganda R.F	Pd 1	316.8457	
			Patharaganda R.F	Pd 2	219.4276	
			Patharaganda R.F	Pd 3	298.5558	
			Patharaganda R.F	Pd 4	384.0514	
			Ambamundia (PRF)		297.7761	
			Binjhagiri (DPF)		150.227	
			Netabandha (DPF)		141.5044	
	29	Banijhari RS	Banijhari (PRF)		2756.6170	2756.6170
	30	Sukarmala RS	Sukarmala (PRF)		2495.8950	2495.8950
Total 6 RS (Panchirida Range)					14854.2665	14854.2665

**15.4.1 Rehabilitation Series Abstract:**

Table No 15.3 Abstract of Rehabilitation Series Constituted : Nayagarh Division			
Range	Sl No	Rehabilitation Series	Area in ha
Daspalla	1	Chhadesha RS	3136.2910
Daspalla	2	Pokharigochha RS	2345.0782
Daspalla	3	Kuradhinisa RS	2615.4160
Daspalla	4	Sirisabadi RS	1977.2888
Gania	5	Manibhadra RS	2663.2924
Gania	6	Makarprasad RD	3020.2728
Gania	7	Baisipali RS	1060.7796
Mahipur	8	Mahipur RS	2276.4687
Mahipur	9	Hatimunda RS	2897.5674
Mahipur	10	Sulia -1 RS	2963.4895
Mahipur	11	Ragadimada RS	2272.9841
Mahipur	12	Panchupandav RS	2081.2442
Nayagarh	13	Balaram RS	2379.0150
Nayagarh	14	Sulia -2RS	2432.5908
Khandapara	15	Barakhhol RS	2264.7961
Khandapara	16	Sikarpur RS	2605.5713
Khandapara	17	Sapua -1 RS	2063.0614
Khandapara	18	Sapua -2 RS	1995.0214
Khandapara	19	Sapua -3 RS	1643.1066
Khandapara	20	Sapua Patrabani RS	1643.2140
Odogaon	21	Gayalsingh RS	1941.0901
Odogaon	22	Gochha RS	2385.3472
Odogaon	23	Sulia-3 RS	1927.1089
Odogaon	24	Makarapalli RS	2797.4794
Panchirida	25	Sulia-4 RS	2064.0274
Panchirida	26	Panchirida-1 RS	2996.0940
Panchirida	27	Panchirida -2 RS	2510.0101
Panchirida	28	Patharaganda RS	2031.6230
Panchirida	29	Banijhari RS	2756.6170
Panchirida	30	Sukarmala RS	2495.8950
Total		30 Rehabilitation Series	70241.8414



15.5 Blocks, compartments and JFM area:

The blocks Compartments allotted to Rehabilitation Working Circle and area assigned to VSS has been furnished at Table No 15.1.

15.6 Special objectives of Management:

The Special Objectives of Management set out for this Working Circle within the ambit of the general objectives of management are as follows.

- (i) To induce natural regeneration & improve the condition of existing forests through protection against encroachment, grazing, fires and illicit felling.
- (ii) To improve the crop density to more than 50% from the present position through protection, Silvicultural practices.
- (iii) To enhance soil enrichment through Soil & Moisture Conservation measures.
- (iv) To regulate the surface water runoff to enhance percolation and water availability down the streams.
- (v) To protect against the River Bank / Stream Bank erosion through vegetative measures.
- (vi) To restock available barren areas within the forest through artificial regeneration with most desirable indigenous species.
- (vii) To have partnership with the local community in protection and management of the forests.
- (viii) To increase the water retaining capacity of the soil & bring the crop to climax species composition.
- (ix) To Control / eradicate the weeds and check its invasion.
- (x) To restore and improve the microclimate and micro edaphic condition of forests.
- (xi) To increase the biodiversity and heterogeneity in the forest crop by encouraging natural regeneration.

15.6.1 Analysis of the crop:

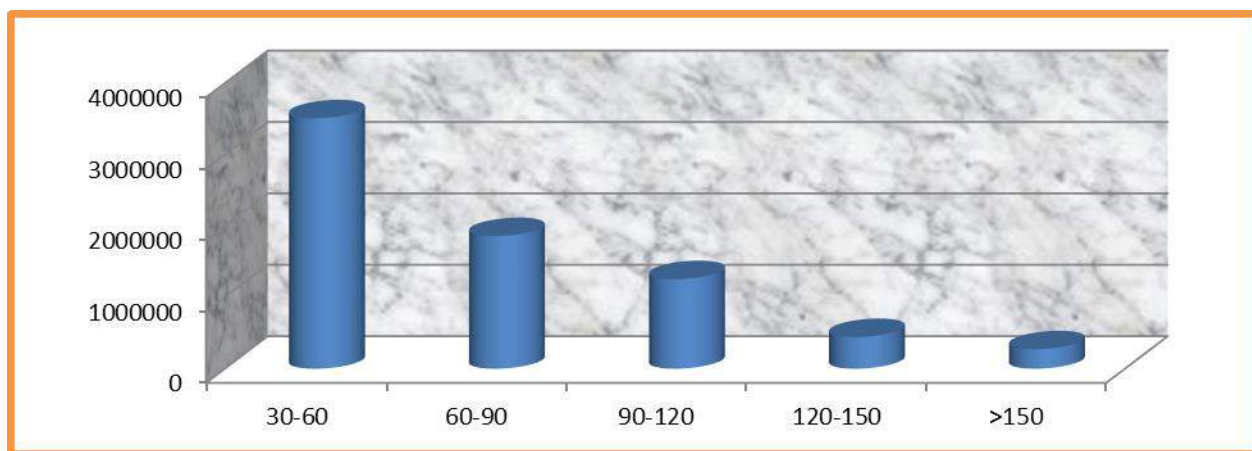
Basing on Sample Point enumeration data, the NRSC Report indicates most of the forest blocks as degraded and the overall report on crop density, Strata as found out is furnished below.

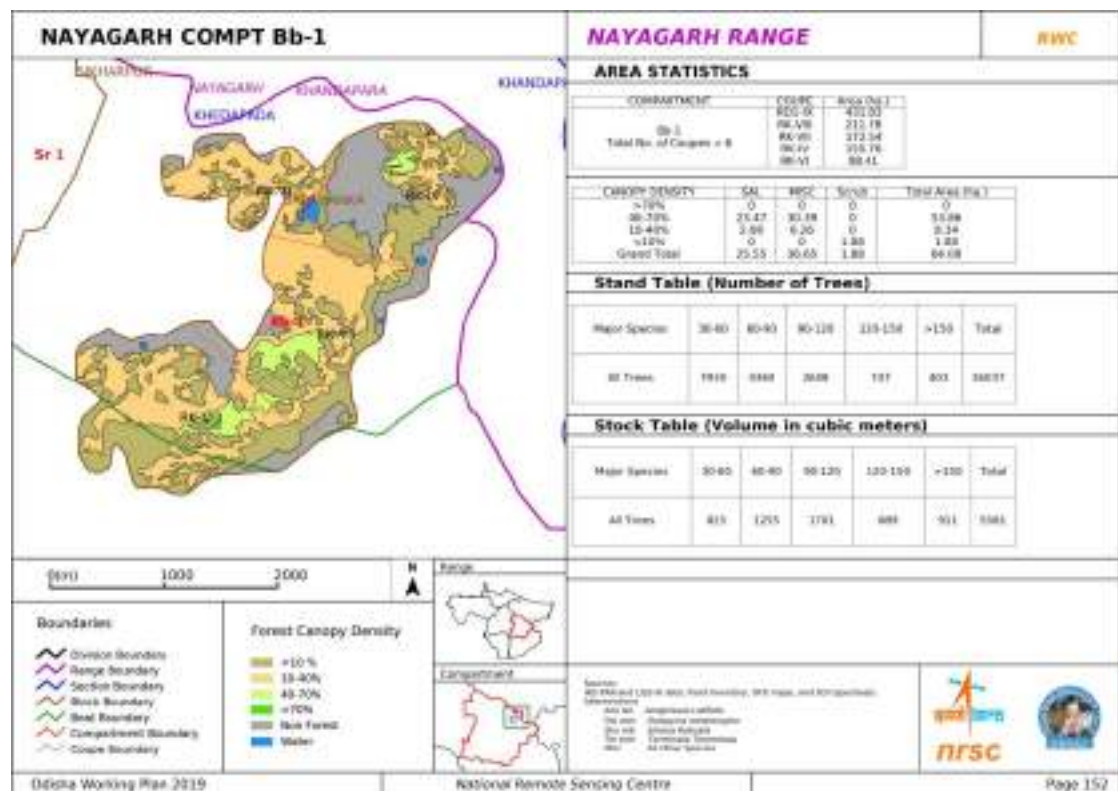
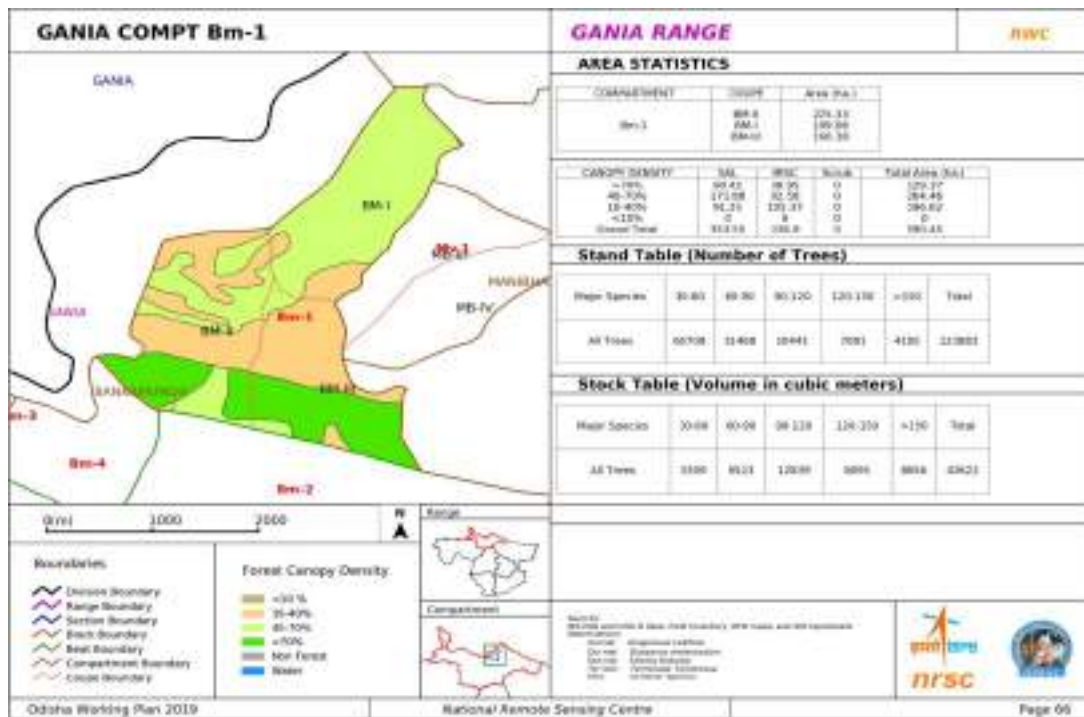
This is subjected to biotic pressure. The tree distribution in the block is as follows.

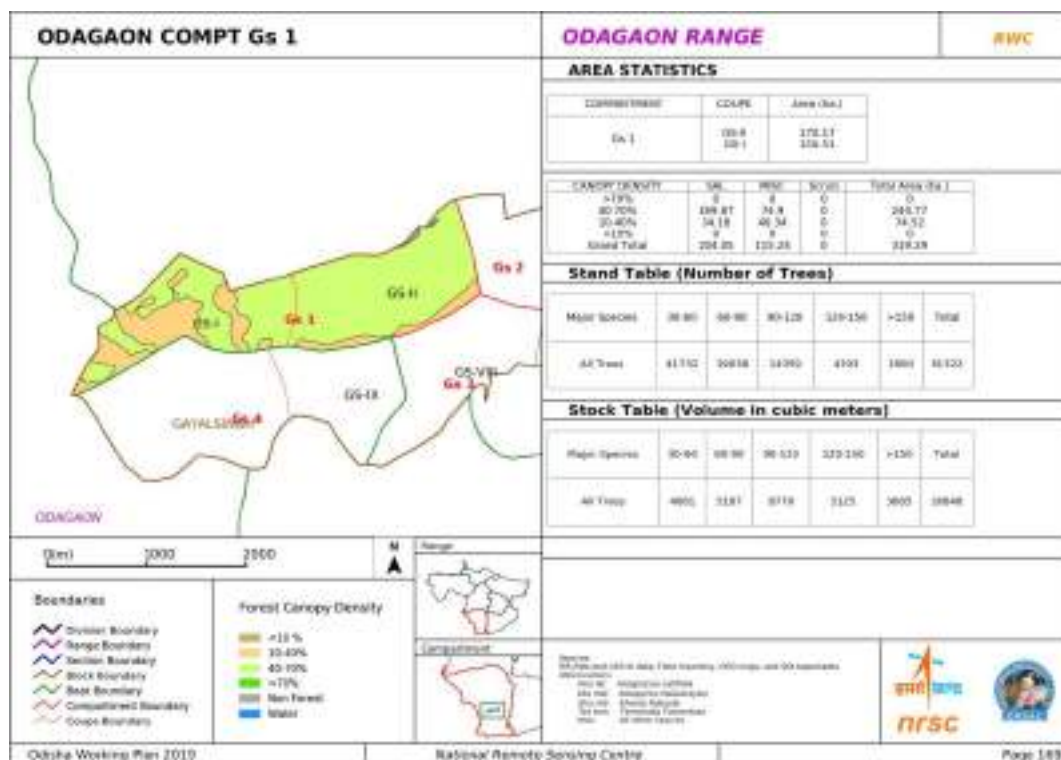
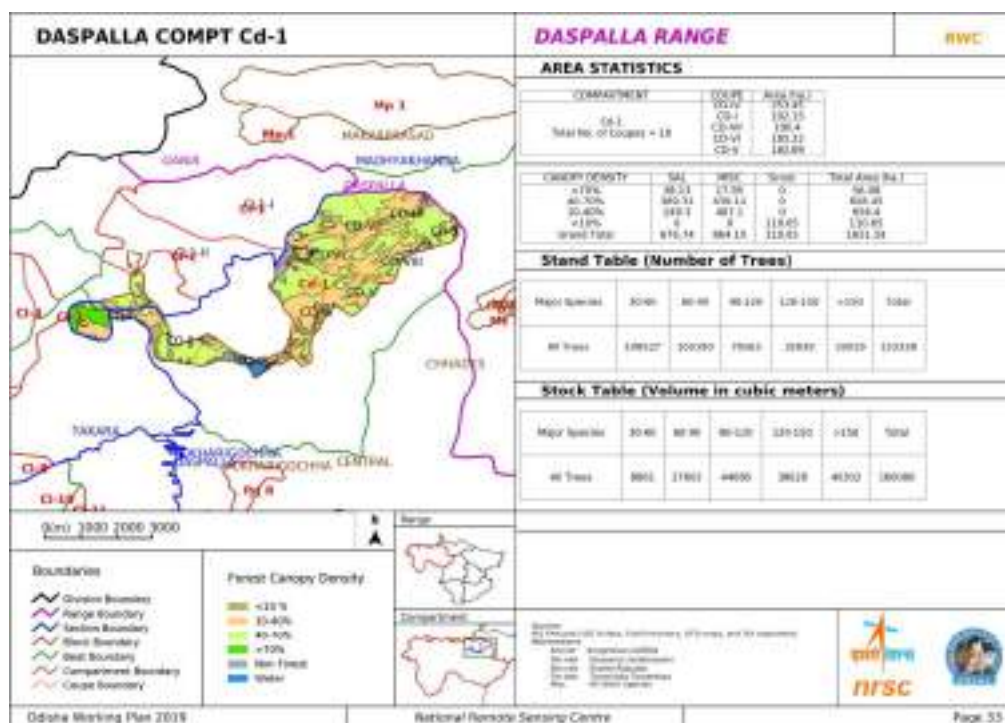


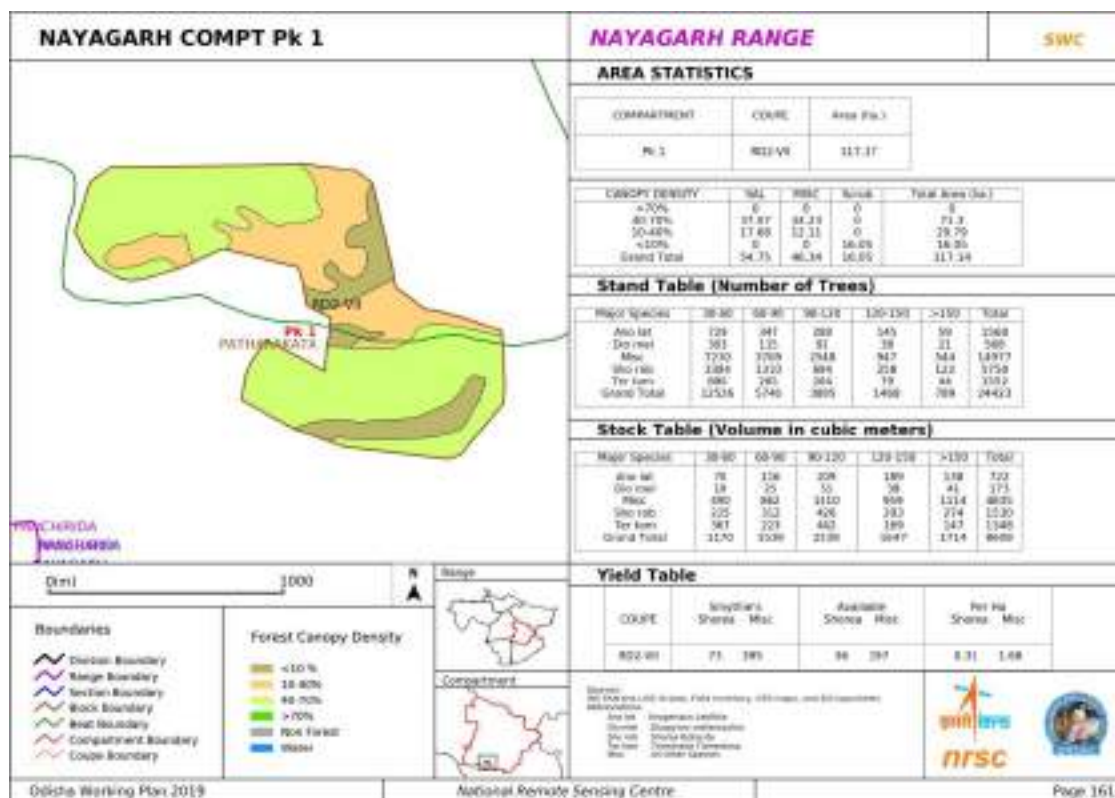
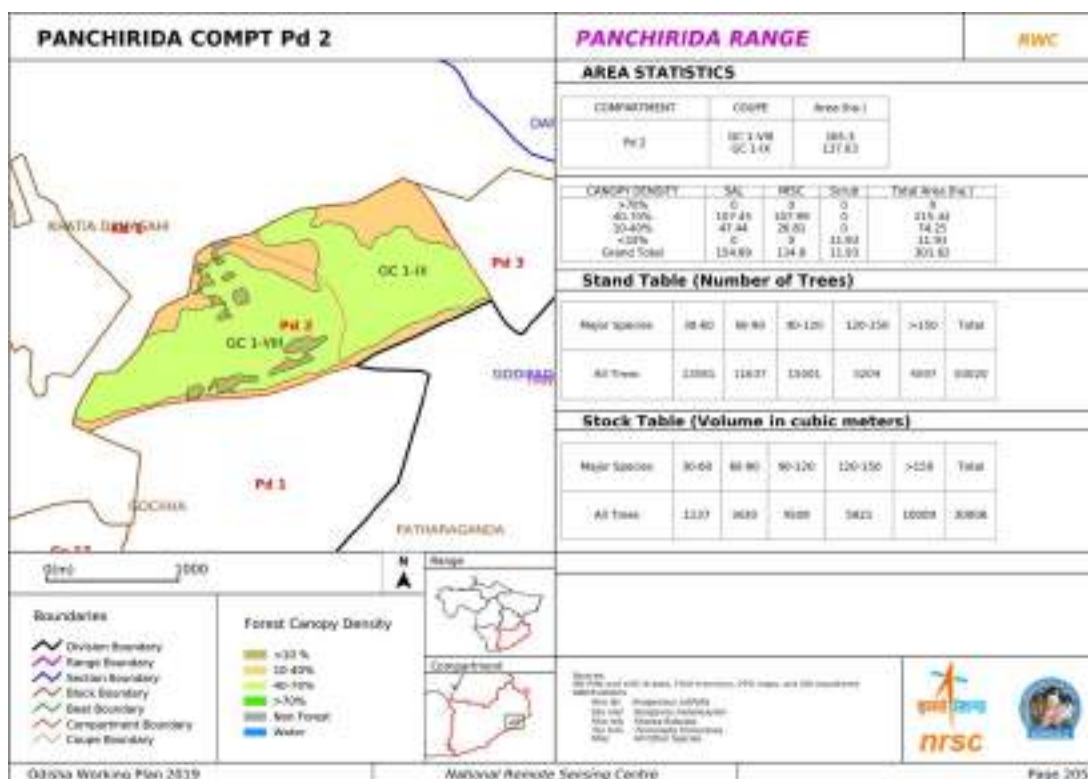
Table No 15.4 Girth Class wise tree distribution in various blocks

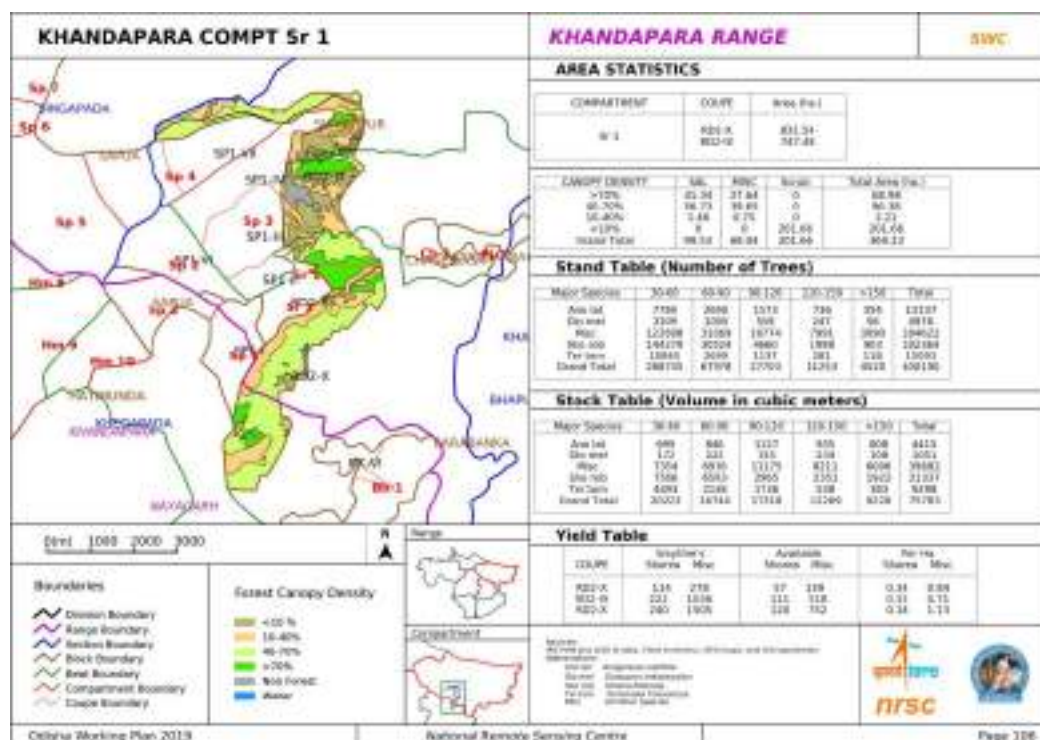
Sl No	Forest block	Girth class wise tree distribution					
		30-60	60-90	90-120	120-150	>150	Total
1	Bankamunda R.F	165682	89365	60398	21812	13090	350347
2	Barabanka (PRF)	29387	14757	10322	3987	2459	60912
3	Chhades RF	96359	98110	68467	32083	18466	313485
4	Gayalsingh R.F	157531	81322	58787	19386	9749	326775
5	Hatimunda R.F	395305	217510	136478	44696	27251	821240
6	Khamana (PRF)	2168	2026	1353	612	414	6573
7	Kurala (DPF)	35553	17335	12627	4168	2141	71824
8	Nuagaon (DPF)	77266	66623	38816	20397	16358	219460
9	Palava (PRF)	320846	183181	114527	35010	19623	673187
10	Patharaganda R.F	72422	54068	59623	22248	18955	227316
11	Patharakata R.F	10789	5125	3591	1358	708	21571
12	Ragadimada R.F	522311	273827	170578	52433	29734	1048883
13	Sikharpur R.F	208610	56989	24475	10073	3976	304123
14	Sukarmala (PRF)	154311	87029	72202	26990	19032	359564
15	Sulia R.F	145813	66961	46083	17777	9245	285879
	Total	2394353	1314228	878327	313030	191201	5091139
	Percentage	47.0	25.8	17.3	6.1	3.8	100.0

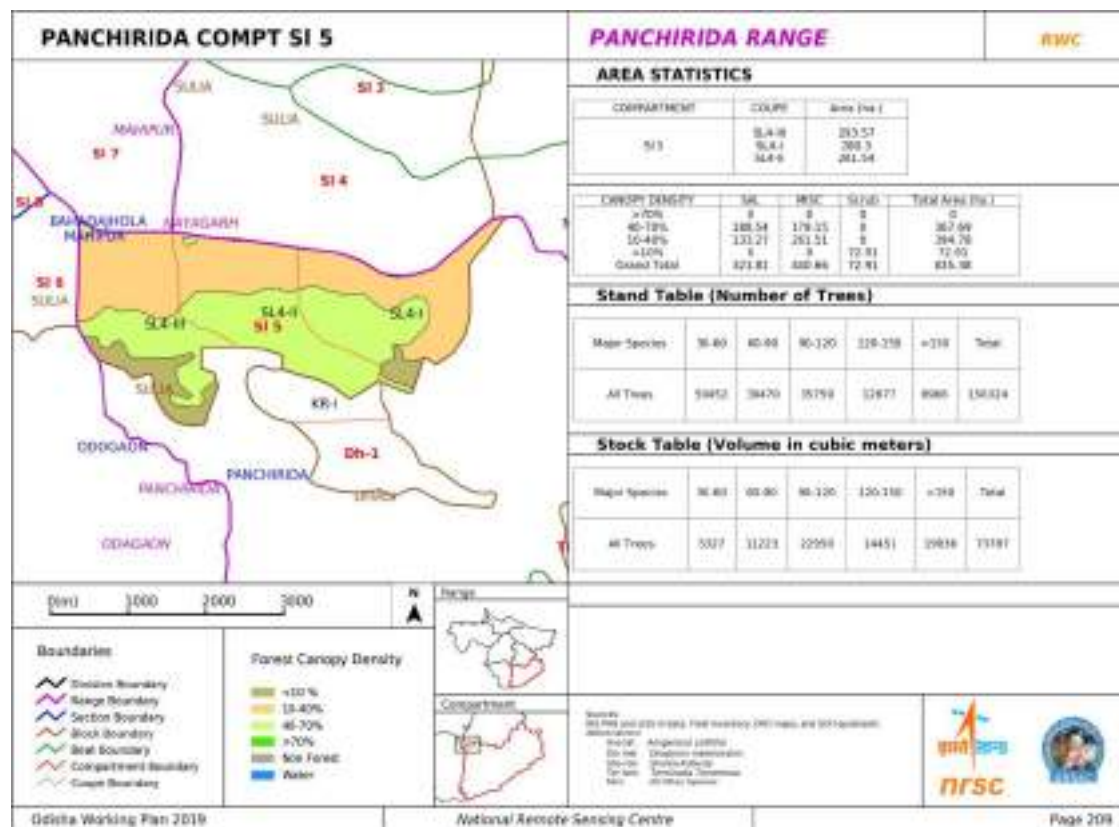
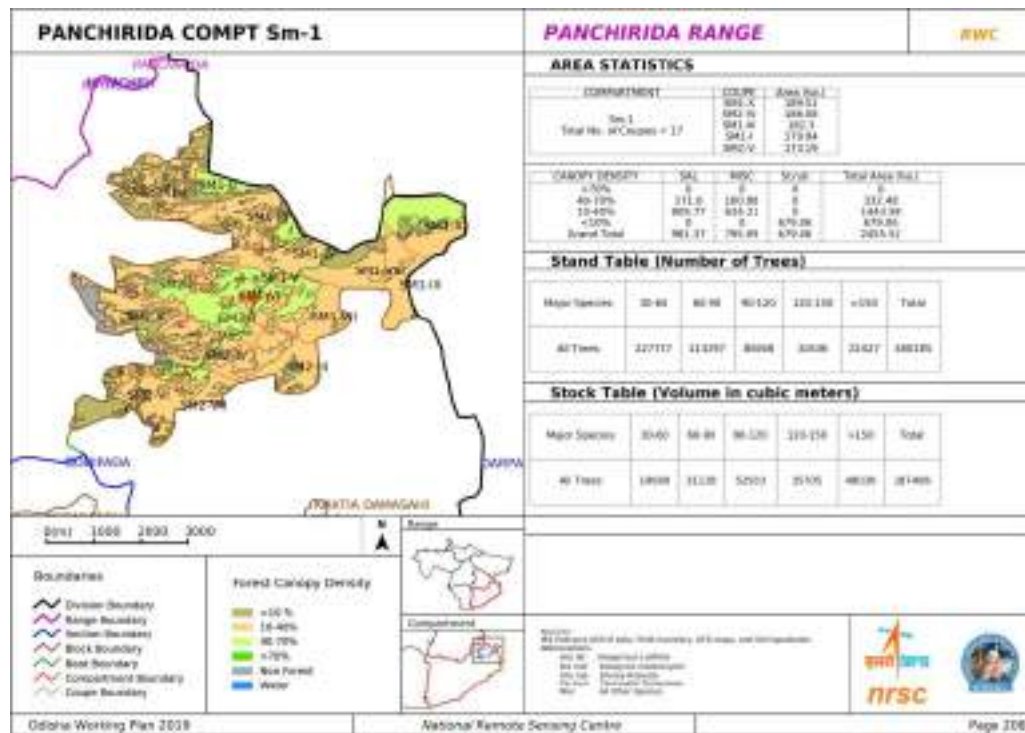














15.6.2 Silvicultural System:

The Silvicultural System to be adopted for this working Circle is ***“Silvicultural Cleaning, Tending followed by Aided Natural Regeneration supplemented with enrichment Plantation in available gap”***

a) Silvicultural Cleaning:

Silvicultural Cleaning operation includes

- Removal of Soft stem Weeds (Annual in nature).
- Singling of Shoots.
- The species / plant if considered to be a good coppicer and in malformed, it may be cut flush to ground. This will induce a good promising shoot with high probability of **“Established Regeneration”**.
- Cut back the living high stumps to produce good coppice shoot.
- The annual climbers which hinders with the establishment of regeneration to be removed.
- Woody Climbers interlinking the trees above 10 m height may not be removed as it will help to sustain wind pressure during Cyclone.
- Eradication of weeds as a priority.

b) Silvicultural Tending:

Silvicultural Tending involves

- Thinning of natural growth in a congested patch (Above Sapling Stage i.e. in a pole crop to enhance diameter growth.)
- Advance growth / Natural growth are to be retained.
- Pruning in heavily branched individuals to allow faster height growth. Pruning should be restricted to one third height of the individual plant. ($1/3^{\text{rd}}$ of the Plant height)
- Woody climbers affecting poles below 5m height required to be cut down.
- List disturbance to Ground Flora.

c) 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.
- Extensive Soil & Moisture Conservation measures to be taken up. Besides Contour trenches, contour bonding, gully plugging, Vegetative check dams, percolation pits are required to be taken up to improve soil moisture regime. Individual plants of **Natural Origin** need to be provided with **Half Moon Trench**, Soil Mulching etc.

d) Enrichment Plantation

- In Blanks seedlings of indigenous species matching with the natural seedlings / saplings / vegetation available to be planted. Planting of teak inside natural forest to be avoided.
- Prepare the soil in blanks, around the existing seeding trees (Mother Trees) to receive seeds and allow the seeds to germinate and grow.

15.6.3 Rotation period:

The present crop is not to be harvested during this plan period. No rotation period is prescribed at present. The entire area will be treated in a **Ten Year Cycle**.

15.6.4 Harvestable diameters:

From enumeration / sampling data, it is observed that only 6.1 % of trees are above 120 cm and below 150 cm and 3.1 % above 150cm girth class. Under this condition no removal of trees is prescribed from the forests assigned to this Working Circle. Hence the harvestable diameter for any species has not been fixed in this plan for this Working Circle. Harvestable Diameter (Girth) has been prescribed for Selection Working circle (Para 14.6.4). The same is applicable for the entire division for other purpose. These forests are included under Car Timber Overlapping Working Circle. Specific timber like Phasi, Dhaura, Asan, Kumbhi, Simili etc are required on annual basis. Timbers of these species or as required by **Puri Jagannath Temple Management** for Chariot construction will be allowed for removal. The details discussed under Chapter 23 (Car Timber (Overlapping) Working Circle).

15.6.5 Reducing factors and reduced areas:

As no yield is expected from the annual treatment area, there is no yield regulation hence no reducing factor assessed.

**15.6.6 Rehabilitation Cycle:**

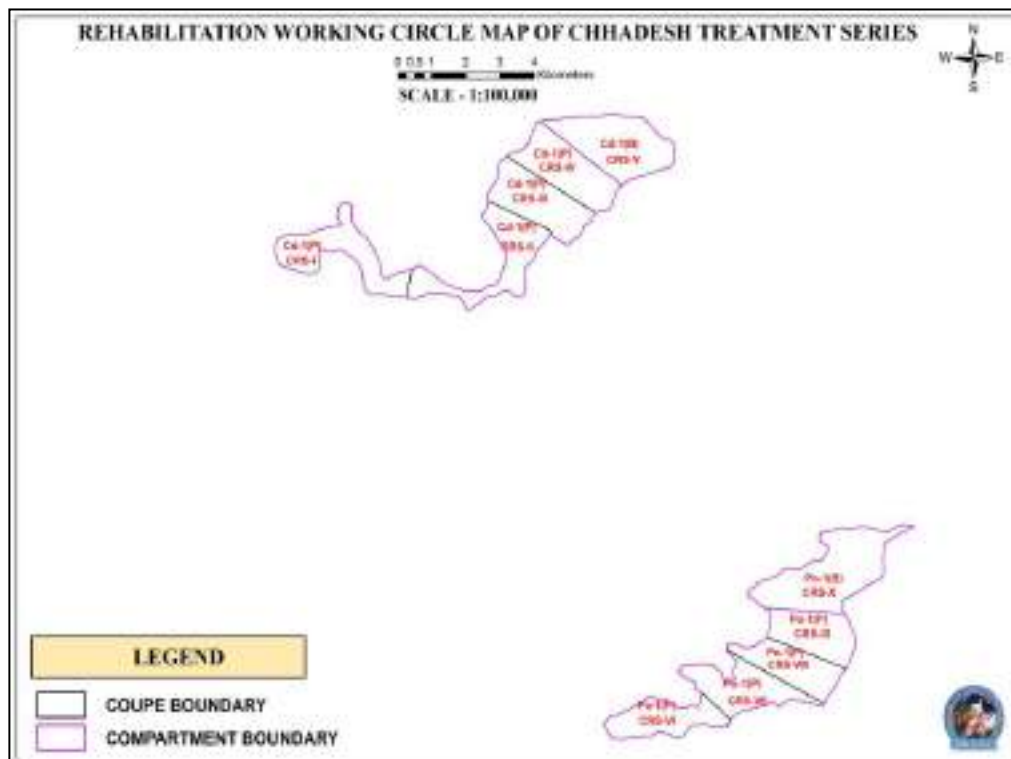
A Rehabilitation Cycle of 10 years i.e. co terminous with Plan period is prescribed.

15.6.7 Division into Rehabilitation Sections:

Under Para 15.4 the assigned area has been allotted to different Rehabilitation series. All total thirty (30) Rehabilitation series have been constituted. Each series is now subdivided to 10 sections with year of allotment as below. [Table No 15.5(1) to 15.5 (30)].

15.6.7.1 Chhadesha Rehabilitation Series (RS).

Table No 15.5(I) Sections of Chhadesha Rehabilitation Series (CRS)						
Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Chhadesha Rehabilitation Series (BRS)	2021-22	CRS-I	Chadesh	1 st P	335.00	335.00
	2022-23	CRS-II	Chadesh	2 nd P	335.00	335.00
	2023-24	CRS-III	Chadesh	3 rd P	335.00	335.00
	2024-25	CRS-IV	Chadesh	4 th P	335.00	335.00
	2025-26	CRS- V	Chadesh	Balance	336.4470	336.4470
	2026-27	CRS-VI	Poibari RF	1 st P	290.00	290.00
	2027-28	CRS-VII	Poibari RF	2 nd P	290.00	290.00
	2028-29	CRS-VIII	Poibari RF	3 rd P	290.00	290.00
	2029-30	CRS-IX	Poibari RF	4 th P	290.00	290.00
	2030-31	CRS-X	Poibari RF	Balance	299.844	299.844
Total RS					3136.2910	3136.2910

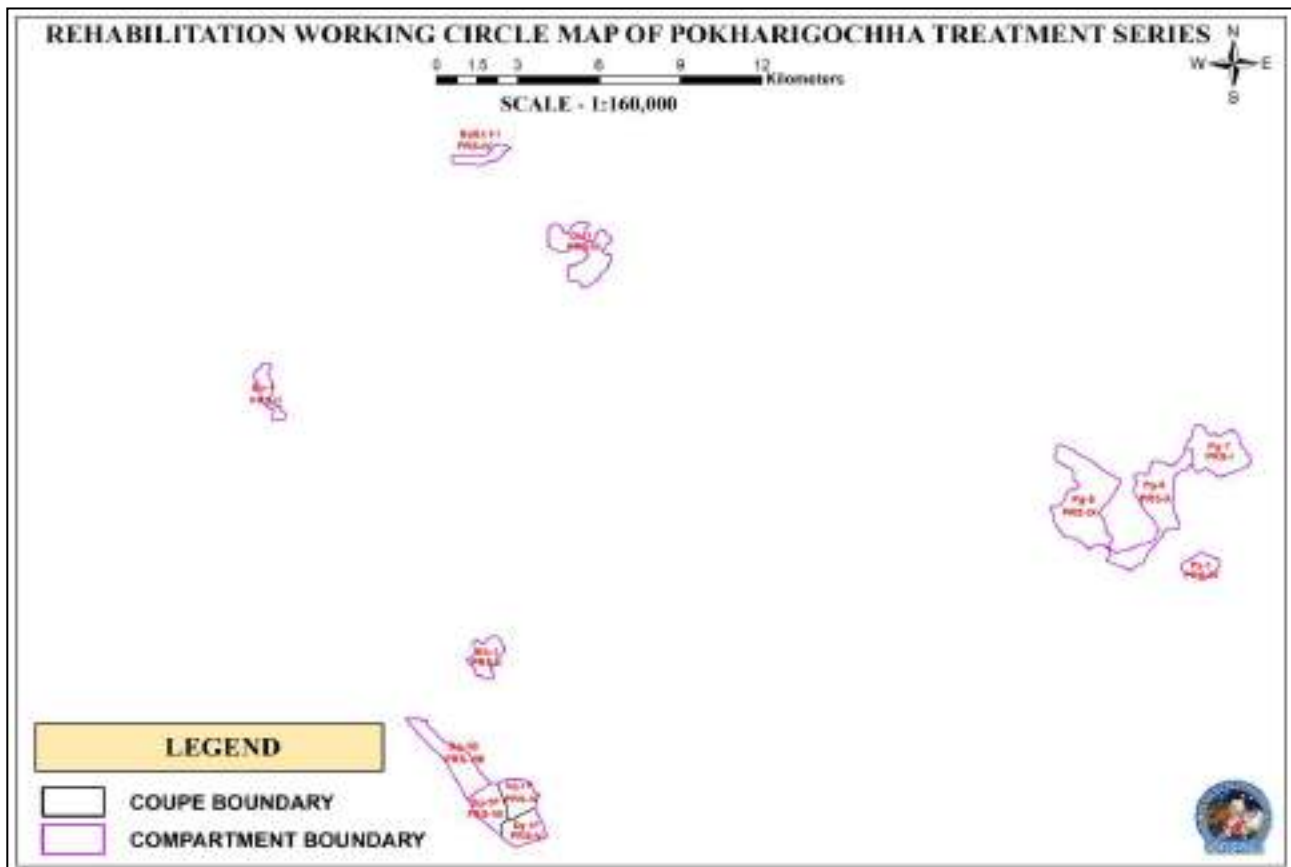




15.6.6 15.6.7.2 Pokharigochha RS

Table No 15.5(II) Sections of Pokharigochha Rehabilitation Series (PRS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Pokharigochha Rehabilitation Series (PRS)	2021-22	PRS-I	Pokharigochha R.F	Pg 7	356.8244	356.8244
	2022-23	PRS-II	Khamana (PRF)		116.8569	196.1703
			Boni (PRF)		79.3134	
	2023-24	PRS-III	Gumurukhola (PRF)		270.9614	270.9614
	2024-25	PRS-IV	Pankalasahi (PRF)		68.1276	141.3996
			Baisipalli Extn-I (PRF)		73.2720	
	2025-26	PRS- V	Dhundugadia PRF	1 st P	190.0	190.0
	2026-27	PRS-VI	Dhundugadia PRF	2 nd P	190.0	190.0
	2027-28	PRS-VII	Dhundugadia PRF	3 rd P	190.0	190.0
	2028-29	PRS-VIII	Dhundugadia PRF	Bal.	186.7991	186.7991
	2029-30	PRS-IX	Pokharigochha R.F	Pg 5	491.7106	491.7106
	2030-31	PRS-X	Pokharigochha R.F	Pg 6	131.2128	131.2128
Total RS					2345.0782	2345.0782



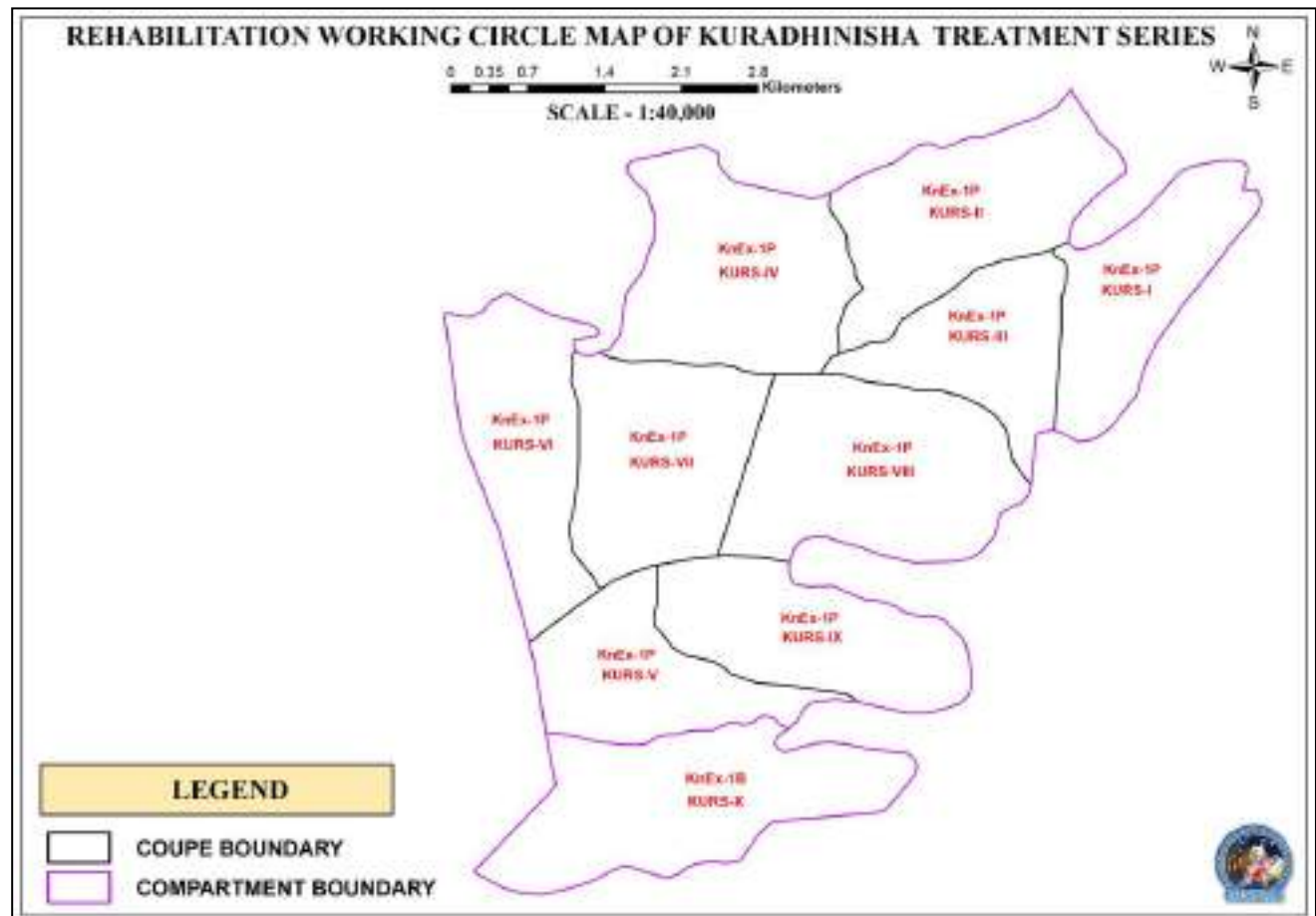


15.6.7

15.6.7.3 Kuradhinisa RS

Table No 15.5(III) Sections of Kuradhinisa Rehabilitation Series (KuRS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Kuradhinisa Rehabilitation Series (KuRS)	2021-22	KURS-I	Kuradhinisa Ext	1 st P	260.0	260.0
	2022-23	KURS-II	Kuradhinisa Ext	2 nd P	260.0	260.0
	2023-24	KURS-III	Kuradhinisa Ext	3 rd P	260.0	260.0
	2024-25	KURS-IV	Kuradhinisa Ext	4 th P	260.0	260.0
	2025-26	KURS- V	Kuradhinisa Ext	5 th P	260.0	260.0
	2026-27	KURS-VI	Kuradhinisa Ext	6 th P	260.0	260.0
	2027-28	KURS-VII	Kuradhinisa Ext	7 th P	260.0	260.0
	2028-29	KURS-VIII	Kuradhinisa Ext	8 th P	260.0	260.0
	2029-30	KURS-IX	Kuradhinisa Ext	9 th P	260.0	260.0
	2030-31	KURS-X	Kuradhinisa Ext	Balan.	275.416	275.416
	Total RS				2615.416	2615.4160





15.6.7.4 Sirisabadi RS

Table No 15.5(IV) Sections of Sirisabadi Rehabilitation Series (SRS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Sirisabadi Rehabilitation Series (SRS)	2021-22	SRS-I	Kuradhinisha (DPF)	1 st P	170.0	170.0
	2022-23	SRS-II	Kuradhinisha (DPF)	2 nd P	170.0	170.0
	2023-24	SRS-III	Kuradhinisha (DPF)	Bal	165.1108	165.1108
	2024-25	SRS-IV	Kerabari (DPF)		39.6854	231.2303
			Nandagadu (DPF)		54.477	
			Nuagaon (DPF)		49.4514	
			Sikharpanga (DPF)		87.6165	
	2025-26	SRS- V	Sirisabadi (DPF)		235.0	235.0
	2026-27	SRS-VI	Sirisabadi (DPF)		235.0	235.0
	2027-28	SRS-VII	Sirisabadi (DPF)		235.0	235.0
	2028-29	SRS-VIII	Sirisabadi (DPF)		229.9828	229.9828
	2029-30	SRS-IX	Ranga (DPF)		150.0	150.0
	2030-31	SRS-X	Ranga (DPF)		155.9649	155.9649
	Total RS				1977.2888	1977.2888

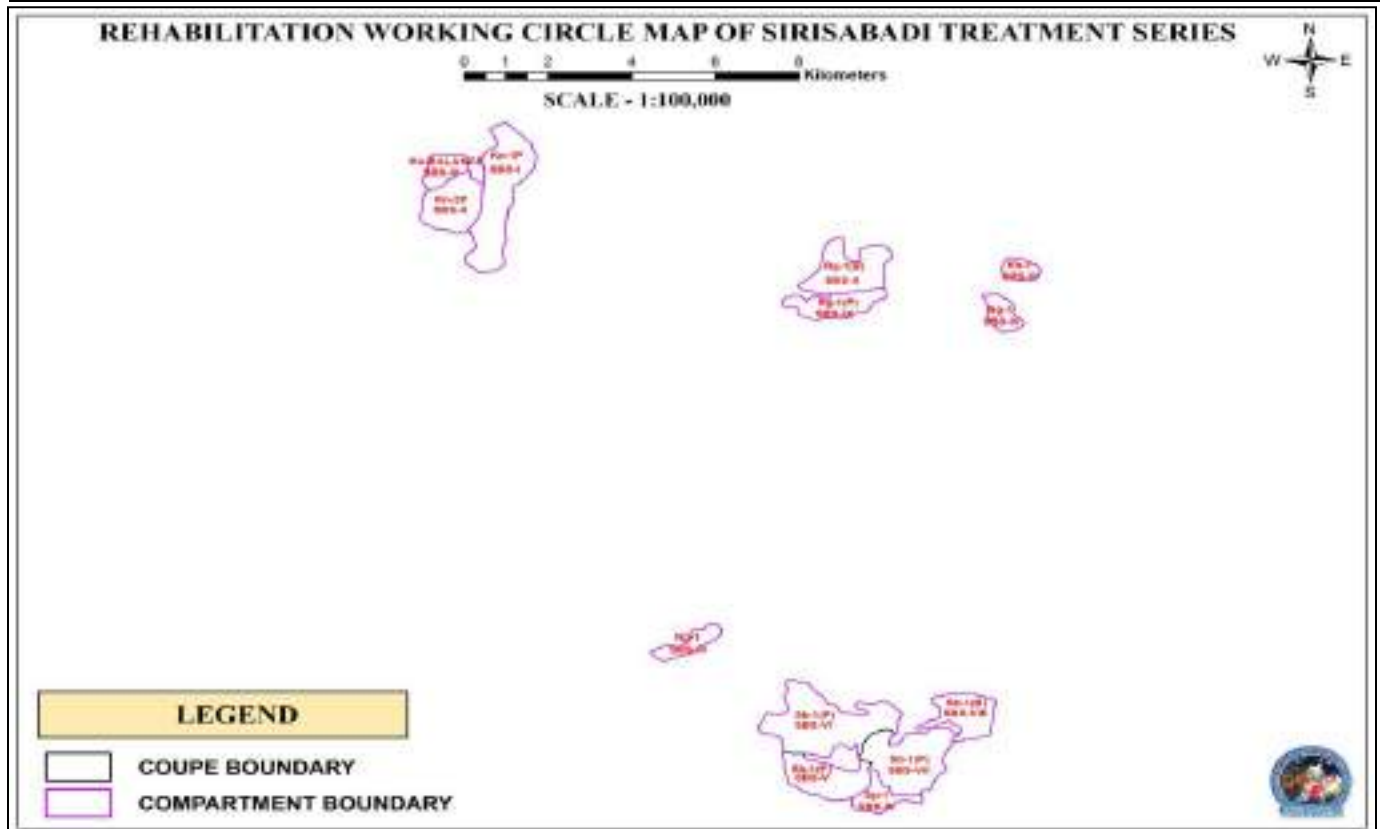
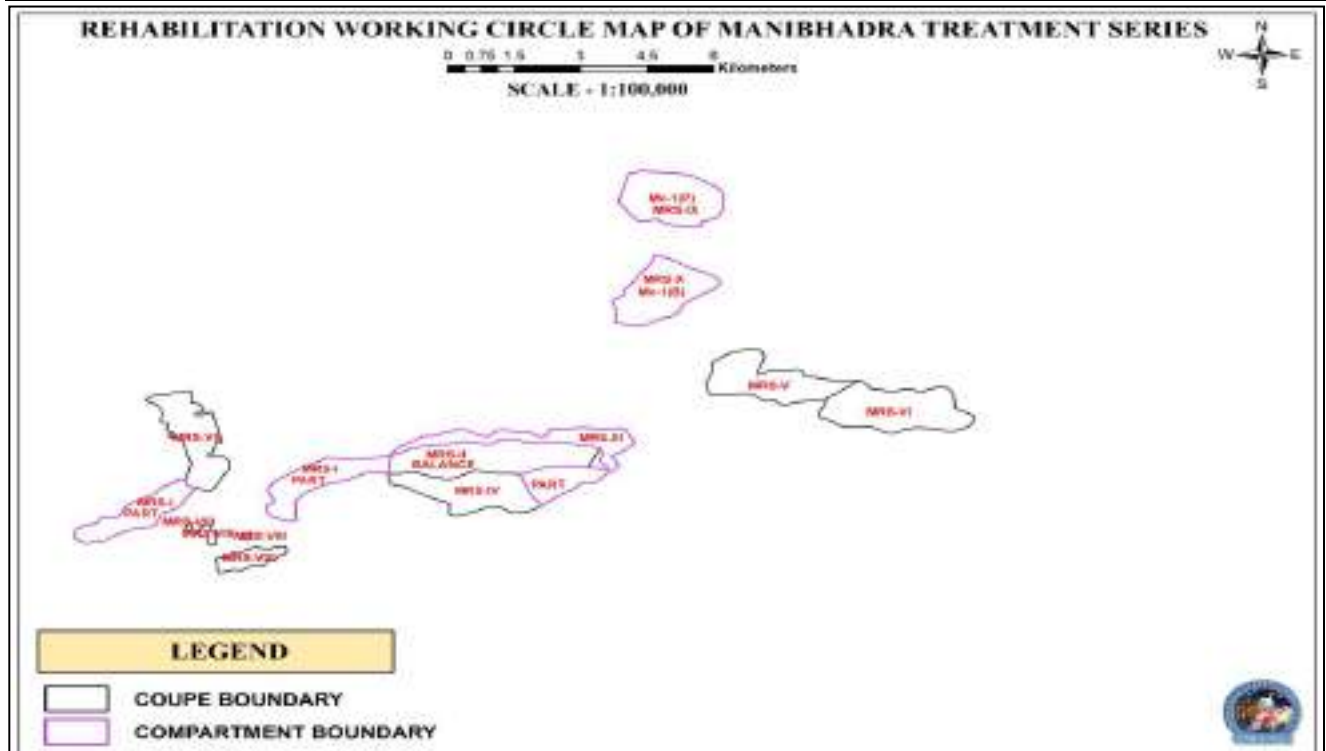




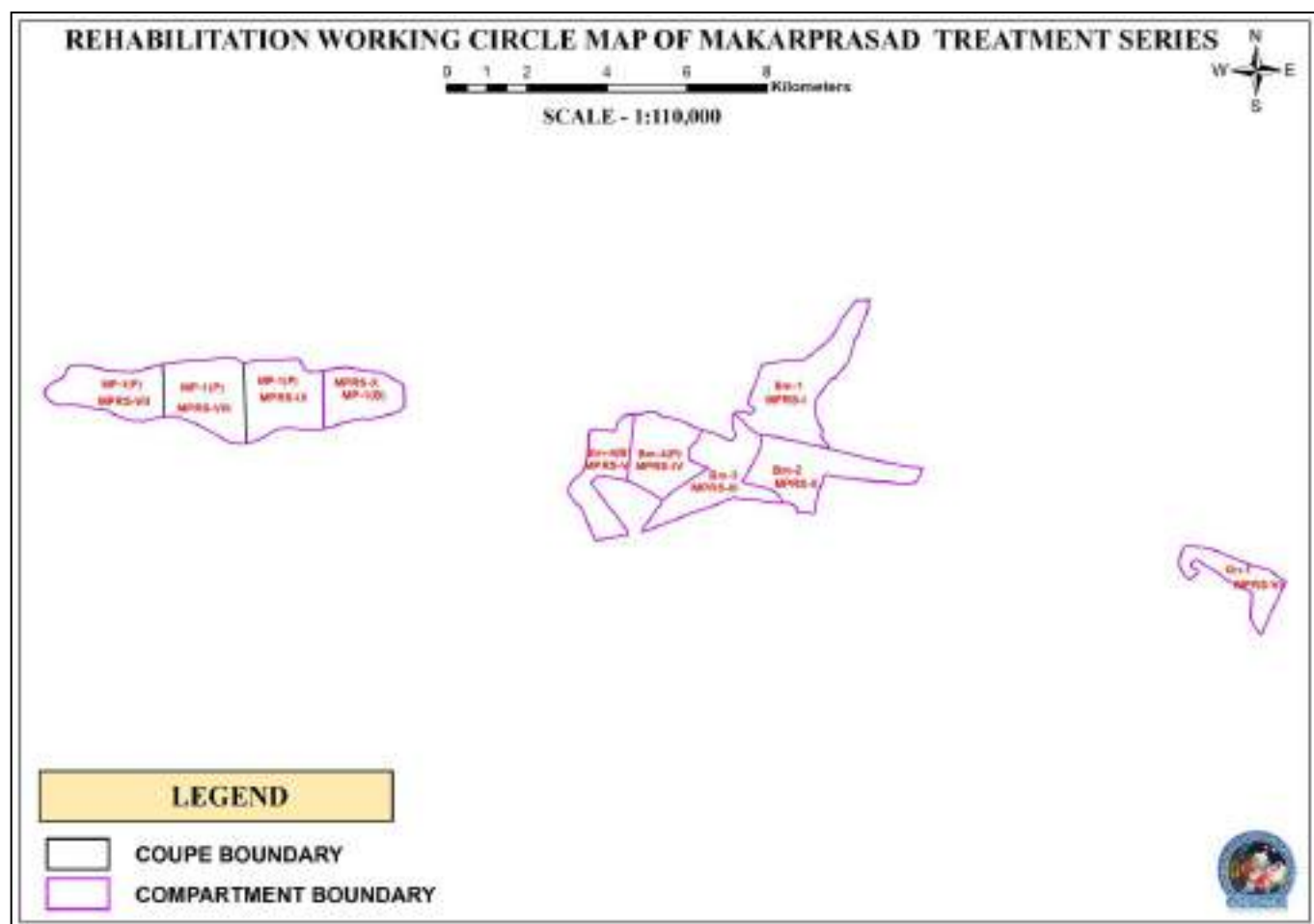
Table No 15.5(V) Sections of Manibhadra Rehabilitation Series (MRS)						
Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp . No	Area in ha	Coupe Area
Manibhadra Rehabilitation Series (MRS)	2021-22	MRS-I	Matia R.F	Part	320.0	320.0
	2022-23	MRS-II	Matia R.F	Bal	313.61	313.61
	2023-24	MRS-III	Matia Extn (DPF)	Part	275.0	275.0
	2024-25	MRS-IV	Matia Extn (DPF)	Bal	271.1503	271.1503
	2025-26	MRS- V	Bankamunda Extn-II (DPF)		275.0	275.0
	2026-27	MRS-VI	Bankamunda Extn-II (DPF)		271.6233	271.6233
	2027-28	MRS-VII	Arakhataila		218.3231	218.3231
	2028-29	MRS-VIII	Ambaghathi-I		1.165	200.6369
			Ambaghathi-II		11.8504	
			Ambaghathi-III		1.96	
			Ambaghathi-IV		60.3667	
			Makarprasad		125.2948	
	2029-30	MRS-IX	Manibhadra R.F		260.0	260.0
2030-31	MRS-X	Manibhadra R.F		257.9488	257.9488	
Total RS				2663.2924	2663.2924	





15.6.7.6 Makarprasad RS

Table No 15.5(VI) Sections of Makarprasad Rehabilitation Series (MPRS)						
Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp . No	Area in ha	Coupe Area
Makarprasad Rehabilitation Series (MPRS)	2021-22	MPRS-I	Bankamunda R.F	Bm 1	442.6840	442.6840
	2022-23	MPRS-II	Bankamunda R.F	Bm-2	370.8514	370.8514
	2023-24	MPRS-III	Bankamunda R.F	Bm-3	288.7945	288.7945
	2024-25	MPRS-IV	Bankamunda R.F	Bm-4	300.0	300.0
	2025-26	MPRS- V	Bankamunda R.F	Bm-4	297.4703	297.4703
	2026-27	MPRS-VI	Gania R.F		162.8016	162.8016
	2027-28	MPRS-VII	Makarprasad R.F		290.0	290.0
	2028-29	MPRS-VIII	Makarprasad R.F		290.0	290.0
	2029-30	MPRS-IX	Makarprasad R.F		290.0	290.0
	2030-31	MPRS-X	Makarprasad R.F		287.6710	287.6710
	Total RS				3020.2728	3020.2728

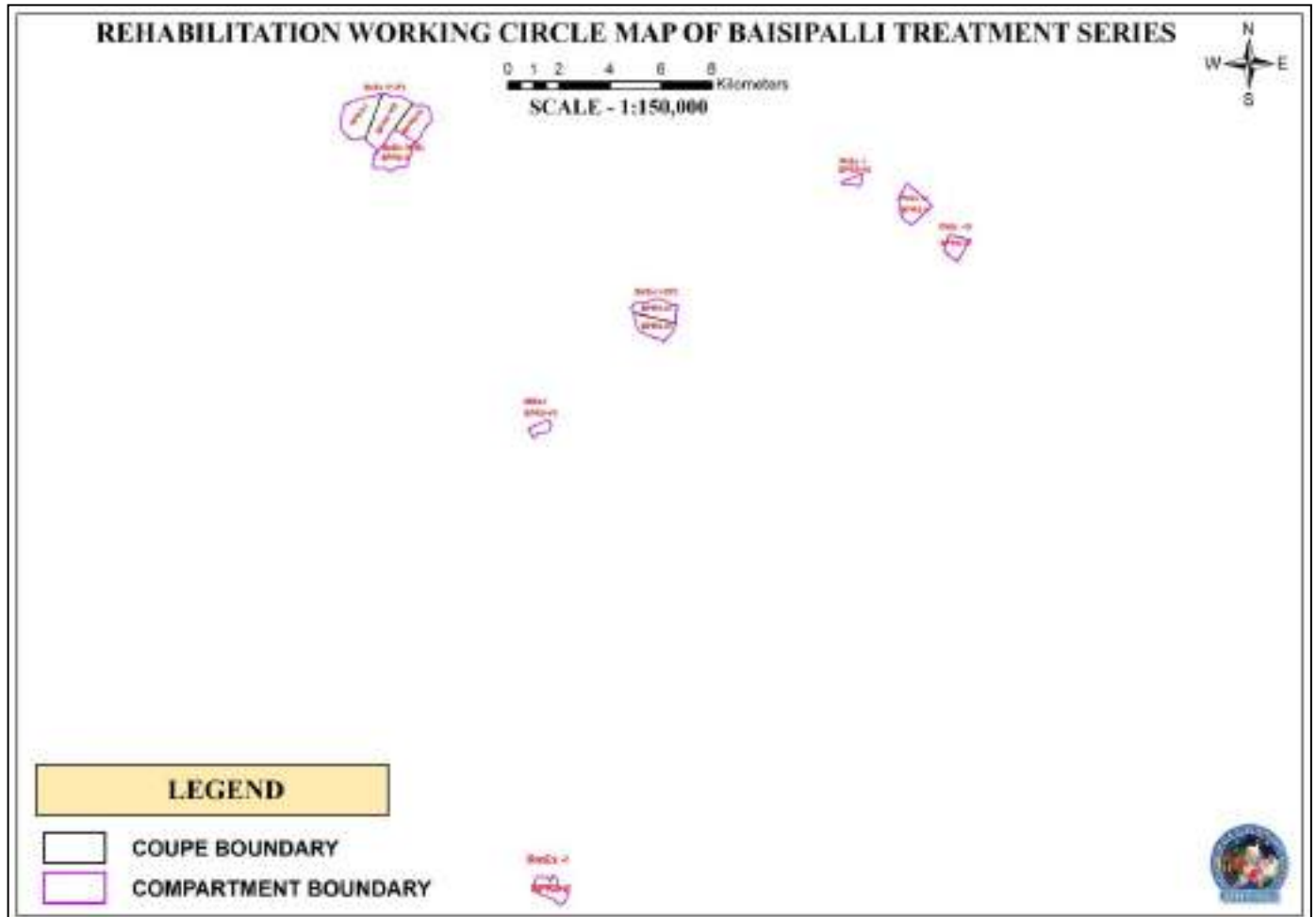




15.6.7.7 Baisipali RS

Table No 15.5(VII) Sections of Baisipali Rehabilitation Series (BPRS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Baisipali Rehabilitation Series (BPRS)	2021-22	BPRS-I	Baisipalli Ext-IV		134.00	134.00
	2022-23	BPRS-II	Palava (PRF)		59.8702	136.7672
			Ragadimada (PRF)		76.8970	
	2023-24	BPRS-III	Bankamunda Extn-I (PRF)		100.0	100.0
	2024-25	BPRS-IV	Bankamunda Extn-I (PRF)		105.6272	105.6272
	2025-26	BPRS- V	Phasi Extn-II(PRF)		112.0323	112.0323
	2026-27	BPRS-VI	Phasi Extn-III(PRF)		58.8719	58.8719
	2027-28	BPRS-VII	Phasi Extn-I (PRF)		23.4961	58.3364
			Matia (PRF)		34.8403	
	2028-29	BPRS-VIII	Baisipalli Ext-IV		120.0	120.0
	2029-30	BPRS-IX	Baisipalli Ext-IV		120.0	120.0
	2030-31	BPRS-X	Baisipalli Ext-IV		115.1446	115.1446
Total RS					1060.7796	1060.7796

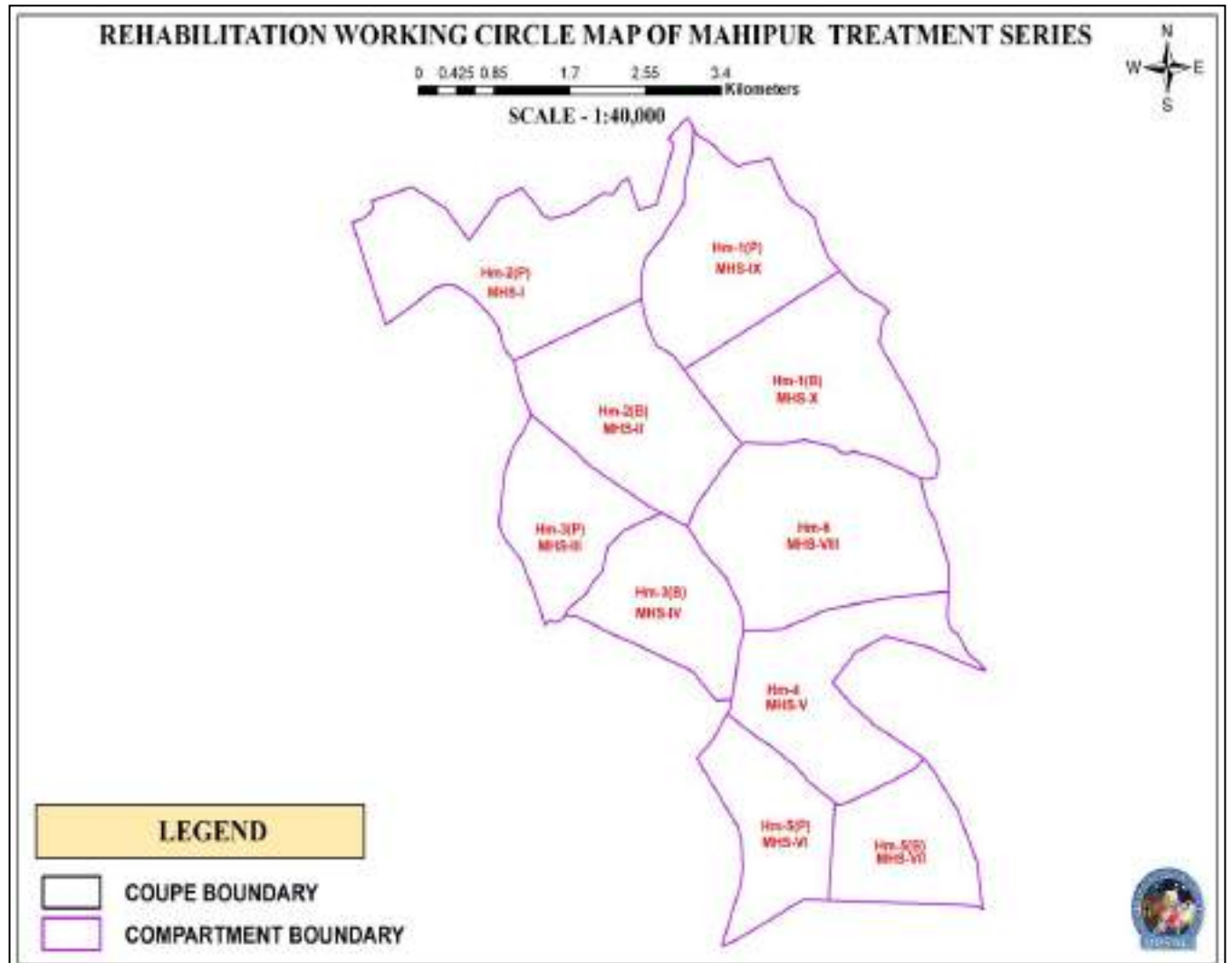




15.6.7.8 Mahipur RS

Table No 15.5(VIII) Sections of Mahipur Rehabilitation Series (MRS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Mahipur Rehabilitation Series (MRS)	2021-22	MRS-I	Hatimunda R.F	Hm 2	250.00	250.00
	2022-23	MRS-II	Hatimunda R.F	Hm 2	225.0121	225.0121
	2023-24	MRS-III	Hatimunda R.F	Hm 3	140.00	140.00
	2024-25	MRS-IV	Hatimunda R.F	Hm 3	133.4262	133.4262
	2025-26	MRS- V	Hatimunda R.F	Hm 4	218.0725	218.0725
	2026-27	MRS-VI	Hatimunda R.F	Hm 5	190.0	190.0
	2027-28	MRS-VII	Hatimunda R.F	Hm 5	196.9039	196.9039
	2028-29	MRS-VIII	Hatimunda R.F	Hm 6	319.8856	319.8856
	2029-30	MRS-IX	Hatimunda R.F	Hm 1	300.00	300.00
	2030-31	MRS-X	Hatimunda R.F	Hm 1	303.1684	303.1684
Total RS					2276.4687	2276.4687

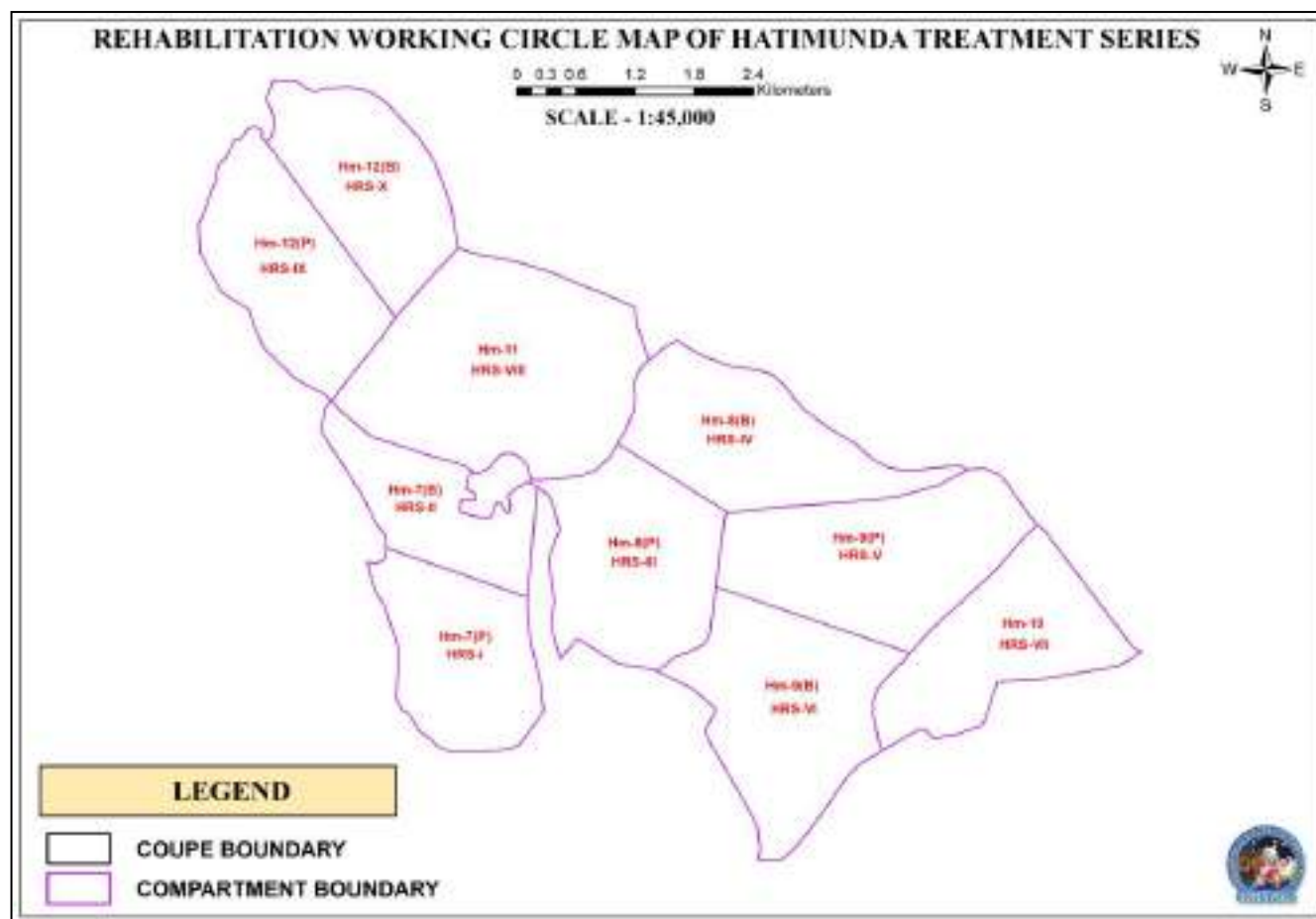




15.6.7.9 Hatimunda RS

Table No 15.5(IX) Sections of Hatimunda Rehabilitation Series (HRS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Hatimunda Rehabilitation Series (HRS)	2021-22	HRS-I	Hatimunda R.F	Hm 7	230.0	230.0
	2022-23	HRS-II	Hatimunda R.F	Hm 7	213.4259	213.4259
	2023-24	HRS-III	Hatimunda R.F	Hm 8	300.00	300.00
	2024-25	HRS-IV	Hatimunda R.F	Hm 8	289.045	289.045
	2025-26	HRS- V	Hatimunda R.F	Hm 9	350.0	350.0
	2026-27	HRS-VI	Hatimunda R.F	Hm 9	342.7462	342.7462
	2027-28	HRS-VII	Hatimunda R.F	Hm 10	222.6502	222.6502
	2028-29	HRS-VIII	Hatimunda R.F	Hm 11	451.162	451.162
	2029-30	HRS-IX	Hatimunda R.F	Hm 12	250.0	250.0
	2030-31	HRS-X	Hatimunda R.F	Hm 12	248.5381	248.5381
	Total RS				2897.567	2897.5674





15.6.7.10 Sulia -1 RS

Table No 15.5(X) Sections of Sulia -1 Rehabilitation Series (SRS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp . No	Area in ha	Coupe Area
Sulia -1 Rehabilitation Series (SRS)	2021-22	SRS-I	Ratadei R.F	Rd 1	284.6043	284.6043
	2022-23	SRS-II	Ratadei R.F	Rd 3	349.6245	349.6245
	2023-24	SRS-III	Palva R.F	Pb 2	313.6271	313.6271
	2024-25	SRS-IV	Palva R.F	Pb 3	267.4185	267.4185
	2025-26	SRS- V	Palva R.F	Pb 4	403.987	403.987
	2026-27	SRS-VI	Palva R.F	Pb 7	294.3466	294.3466
	2027-28	SRS-VII	Sulia R.F	Sl 1	210.0	210.0
	2028-29	SRS-VIII	Sulia R.F	Sl 1	210.0	210.0
	2029-30	SRS-IX	Sulia R.F	Sl 1	227.5751	227.5751
	2030-31	SRS-X	Sulia R.F	Sl 2	402.3064	402.3064
	Total RS				2963.4895	2963.4895

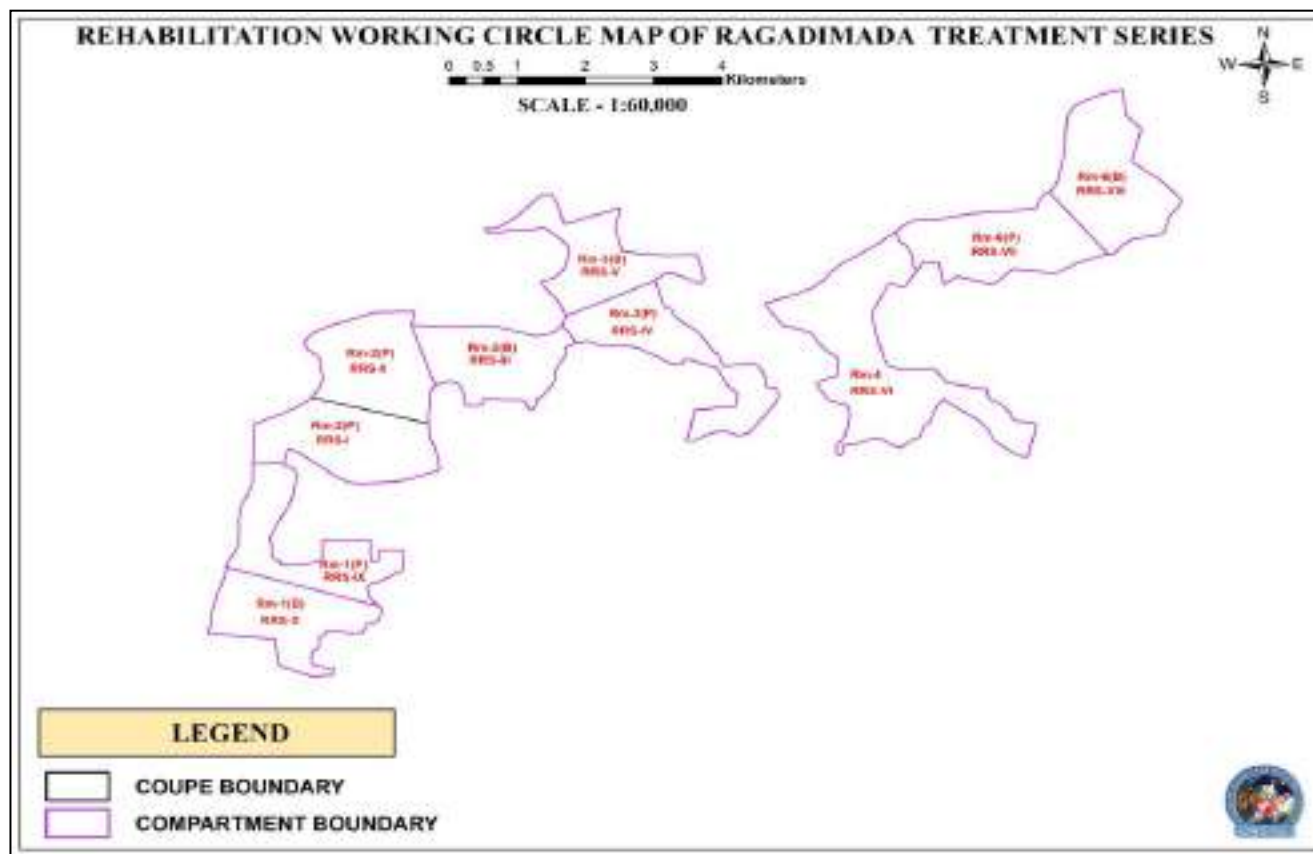




15.6.7.11 Ragadimada RS

Table No 15.5(XI) Sections of Ragadimada Rehabilitation Series (RRS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Ragadimada Rehabilitation Series (SRS)	2021-22	RRS-I	Ragadimada R.F	Rm 2	220.0	220.0
	2022-23	RRS-II	Ragadimada R.F	Rm 2	220.0	220.0
	2023-24	RRS-III	Ragadimada R.F	Rm 2	221.2036	221.2036
	2024-25	RRS-IV	Ragadimada R.F	Rm 3	205.0	205.0
	2025-26	RRS- V	Ragadimada R.F	Rm 3	200.1577	200.1577
	2026-27	RRS-VI	Ragadimada R.F	Rm 4	321.5547	321.5547
	2027-28	RRS-VII	Ragadimada R.F	Rm 6	240.00	240.00
	2028-29	RRS-VIII	Ragadimada R.F	Rm 6	241.1499	241.1499
	2029-30	RRS-IX	Ragadimada R.F	Rm 1	200.0	200.0
	2030-31	RRS-X	Ragadimada R.F	Rm 1	203.9182	203.9182
	Total RS				2292.9841	2292.9841

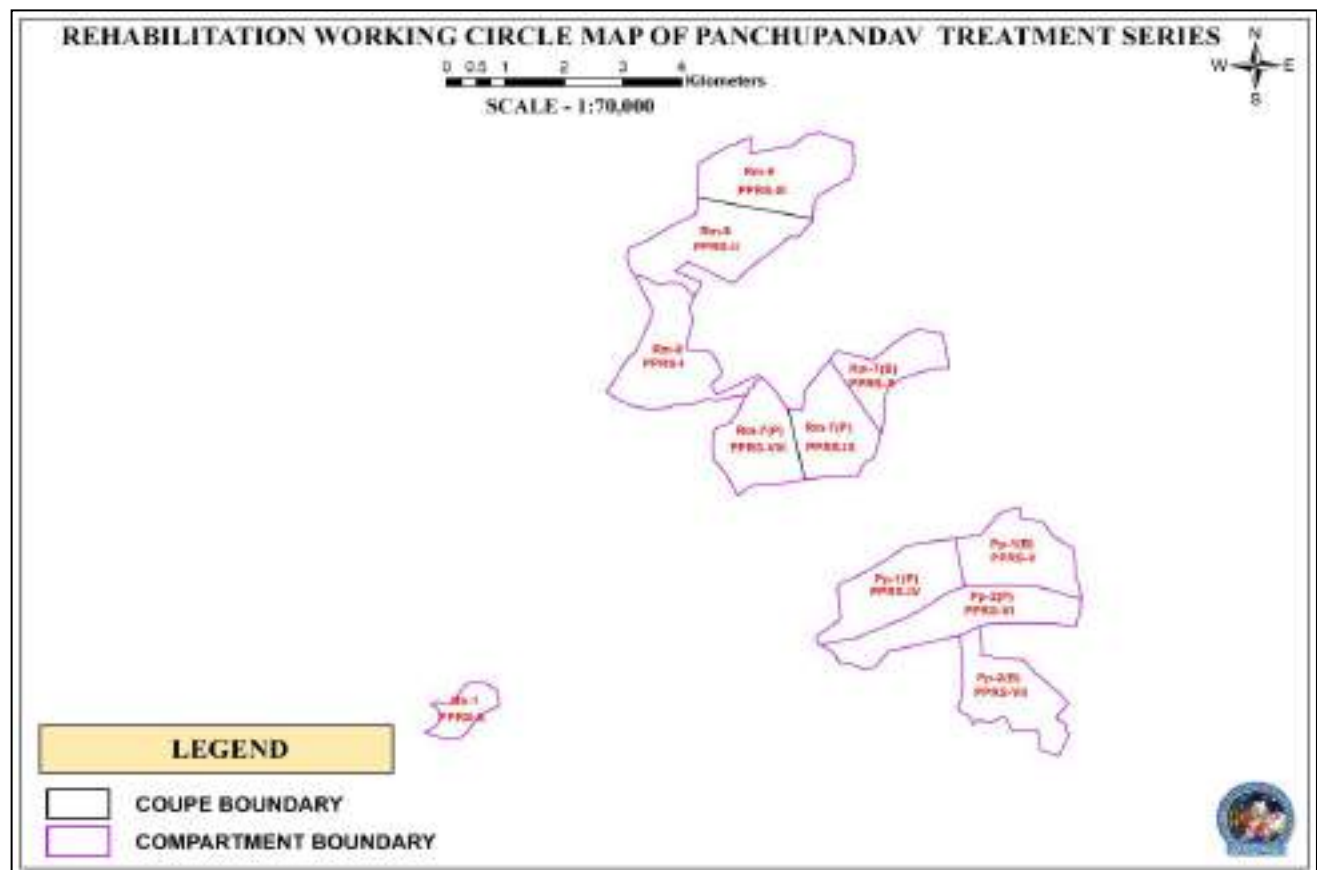




15.6.7.12 Panchupandav RS

Table No 15.5(XII) Sections of Panchupandav Rehabilitation Series (PPRS)

Table No 15.5(XII) Sections of Panchupandav Rehabilitation Series (PPRS)						
Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Panchupandav Rehabilitation Series (PPRS)	2021-22	PPRS-I	Ragadimada R.F	Rm 8	201.8752	201.8752
	2022-23	PPRS-II	Ragadimada R.F	Rm 9	265.0	265.0
	2023-24	PPRS-III	Ragadimada R.F	Rm 9	265.9555	265.9555
	2024-25	PPRS-IV	Panchupandav R.F	Pp 1	160.0	160.0
	2025-26	PPRS- V	Panchupandav R.F	Pp 1	164.7043	164.7043
	2026-27	PPRS-VI	Panchupandav R.F	Pp 2	210.00	210.00
	2027-28	PPRS-VII	Panchupandav R.F	Pp 2	207.0817	207.0817
	2028-29	PPRS-VIII	Ragadimada R.F	Rm 7	200.0	200.0
	2029-30	PPRS-IX	Ragadimada R.F	Rm 7	200.0	200.0
	2030-31	PPRS-X	Ragadimada R.F	Rm 7	144.5512	206.6275
			Bhagabati (DPF)		62.0763	
	Total RS					2081.2442

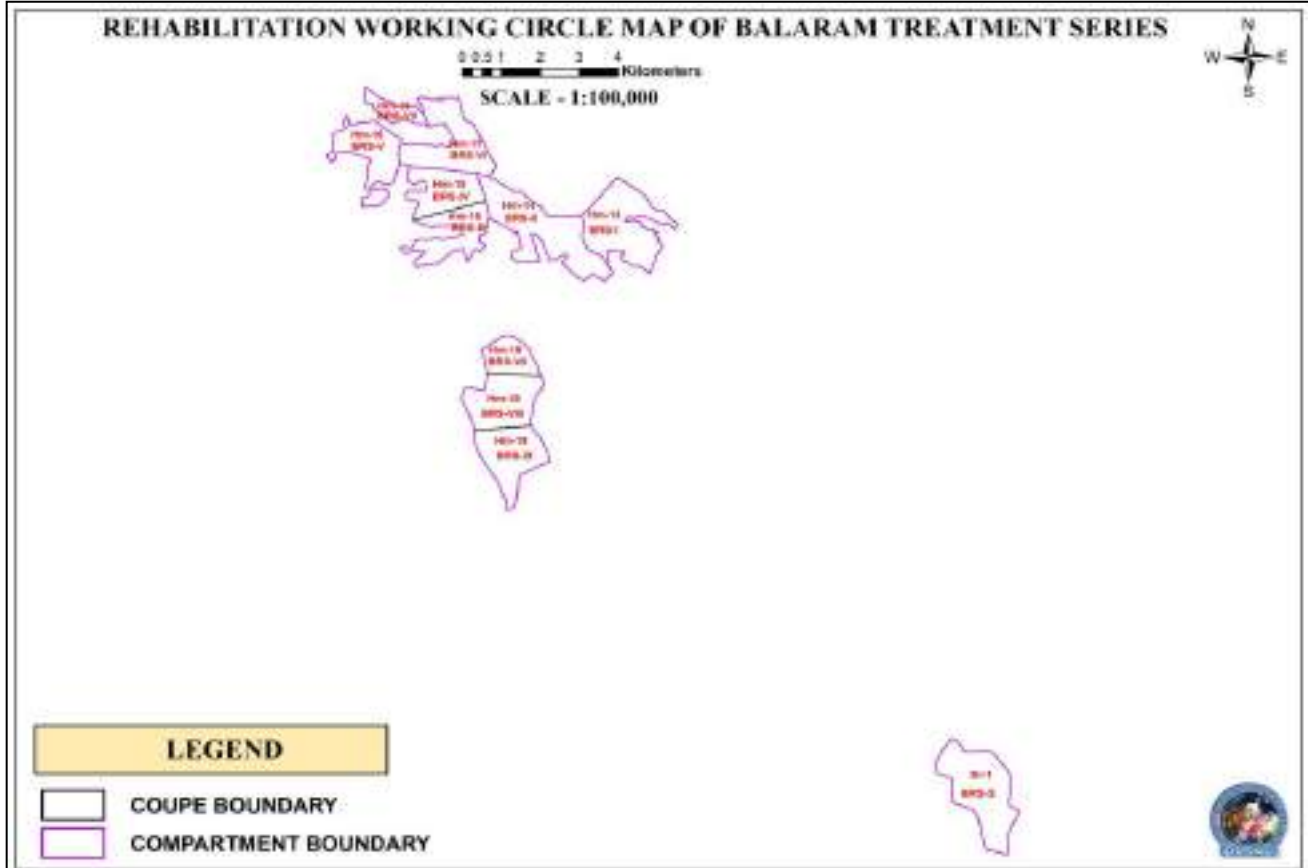




15.6.7.13 Balaram RS

Table No 15.5(XIII) Sections of Balaram Rehabilitation Series (BRS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Balaram Rehabilitation Series (BRS)	2021-22	BRS-I	Hatimunda R.F	Hm 13	312.9783	312.9783
	2022-23	BRS-II	Hatimunda R.F	Hm 14	338.5783	338.5783
	2023-24	BRS-III	Hatimunda R.F	Hm 15	180.0	180.0
	2024-25	BRS-IV	Hatimunda R.F	Hm 15	180.3932	180.3932
	2025-26	BRS- V	Hatimunda R.F	Hm 16	200.2457	200.2457
	2026-27	BRS-VI	Hatimunda R.F	Hm 17	255.3059	255.3059
	2027-28	BRS-VII	Hatimunda R.F	Hm 18	75.5424	175.5424
			Hatimunda R.F	Hm 19	100.0	
	2028-29	BRS-VIII	Hatimunda R.F	Hm 19	200.0	200.0
	2029-30	BRS-IX	Hatimunda R.F	Hm 19	246.4431	246.4431
	2030-31	BRS-X	Balaram RF		289.5281	289.5281
	Total RS				2379.015	2379.015

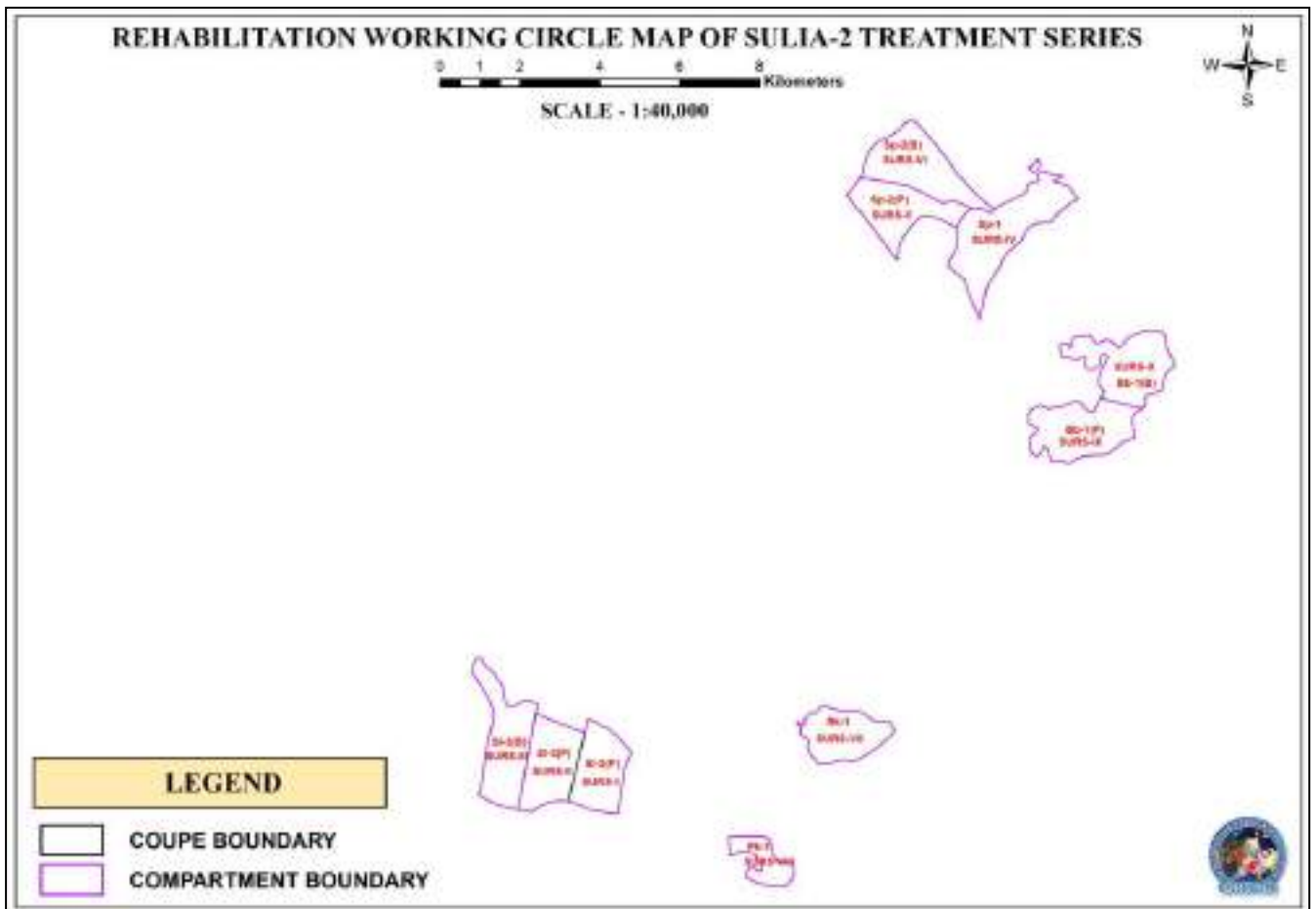




15.6.7.14 Sulia -2RS

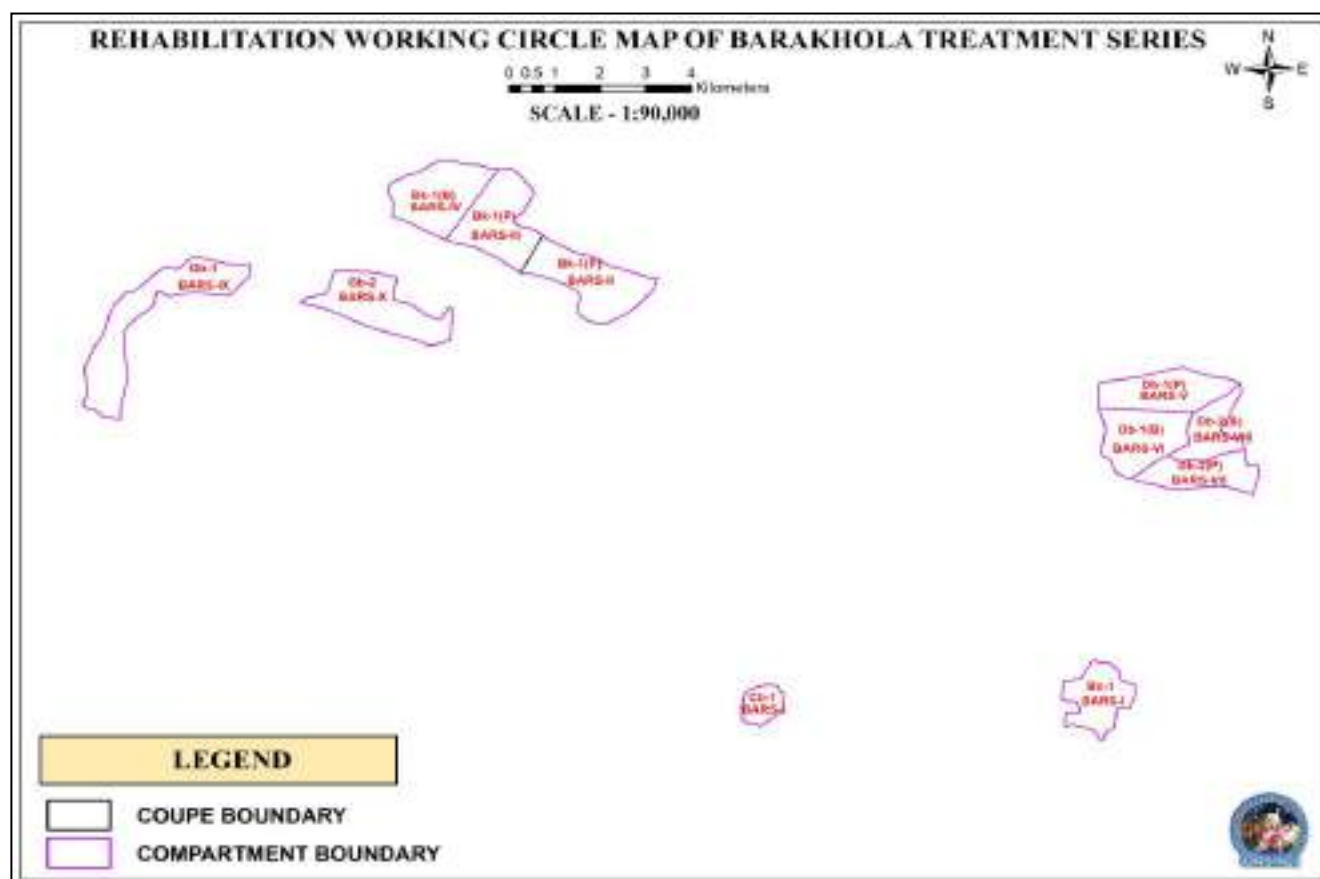
Table No 15.5(XIV) Sections of Sulia -2 Rehabilitation Series (SURS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp . No	Area in ha	Coupe Area
Sulia -2 Rehabilitation Series (BRS)	2021-22	SURS-I	Sulia R.F	Sl 3	215.0	215.0
	2022-23	SURS-II	Sulia R.F	Sl 3	215.0	215.0
	2023-24	SURS-III	Sulia R.F	Sl 3	218.3452	218.3452
	2024-25	SURS-IV	Sapua R.F	Sp 1	337.4165	337.4165
	2025-26	SURS- V	Sapua R.F	Sp 2	270.0	270.0
	2026-27	SURS-VI	Sapua R.F	Sp 2	285.9866	285.9866
	2027-28	SURS-VII	Rukhi R.F		220.8998	220.8998
	2028-29	SURS-VIII	Patharakata R.F	Pk 1	120.0238	120.0238
	2029-30	SURS-IX	Barabanka (PRF)		275.0	275.0
	2030-31	SURS-X	Barabanka (PRF)		274.9189	274.9189
	Total RS				2432.5908	2432.5908



**15.6.7.15 Barakhola RS****Table No 15.5(XV) Sections of Barakhola Rehabilitation Series (BARS)**

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Barakhola Rehabilitation Series (BARS)	2021-22	BARS-I	Bandara R.F		166.6869	238.8714
			Chadeibasa R.F		72.1845	
	2022-23	BARS-II	Barakhola R.F	1 st P	265.0	265.0
	2023-24	BARS-III	Barakhola R.F	2 nd P	265.0	265.0
	2024-25	BARS-IV	Barakhola R.F	Bal.	257.6532	257.6532
	2025-26	BARS- V	Dengabahada R.F	Db 1	220.0	220.0
	2026-27	BARS-VI	Dengabahada R.F	Db 1	216.8845	216.8845
	2027-28	BARS-VII	Dengabahada R.F	Db 2	155.0	155.0
	2028-29	BARS-VIII	Dengabahada R.F	Db 2	155.3681	155.3681
	2029-30	BARS-IX	Guriabari R.F	Gb 1	308.5313	308.5313
	2030-31	BARS-X	Guriabari R.F	Gb 2	182.4876	182.4876
Total RS					2264.7961	2264.7961

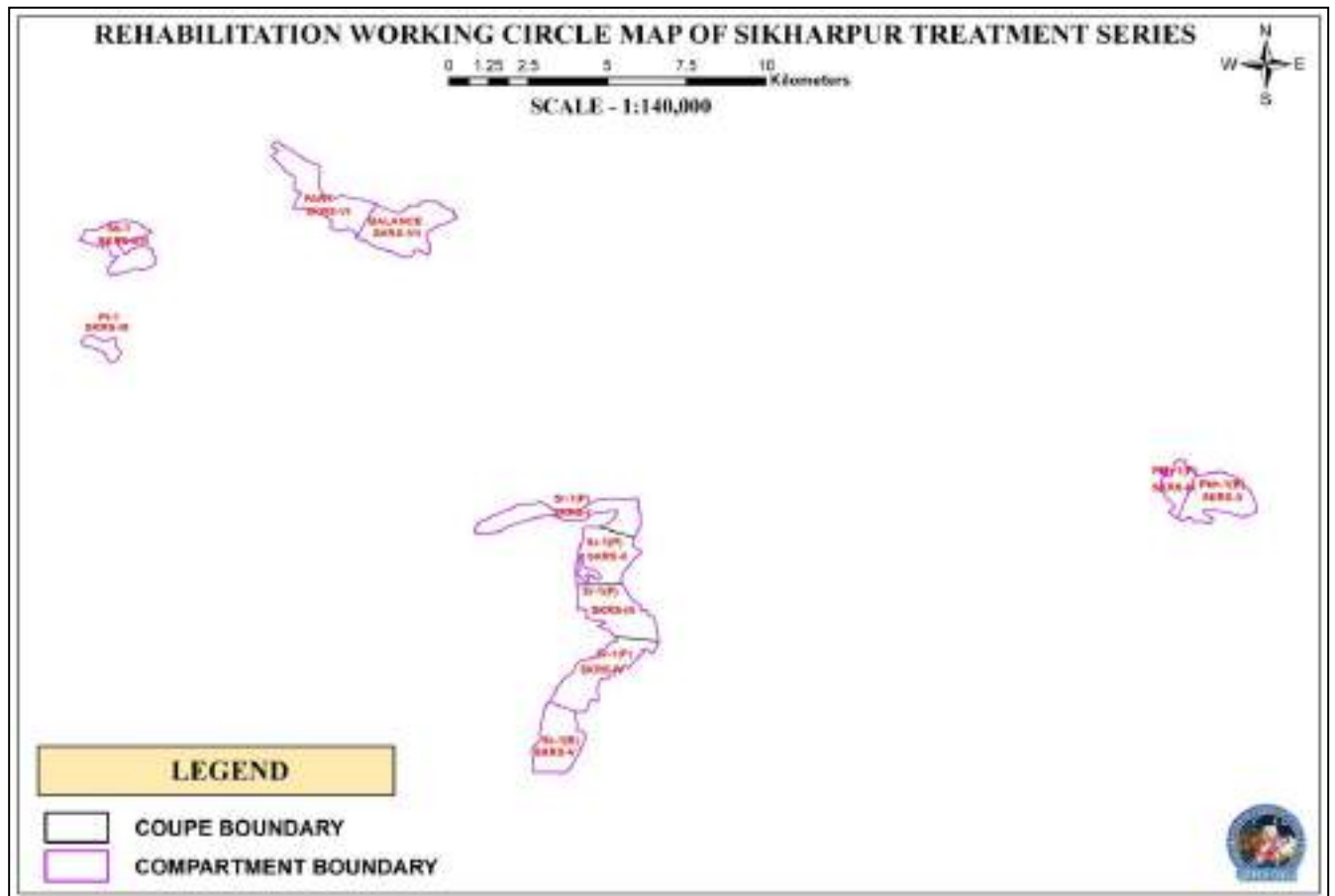


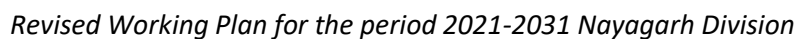


6.7.16 Sikarpur RS

Table No 15.5(XVI) Sections of Sikarpur Rehabilitation Series (SKRS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Sikarpur Rehabilitation Series (SKRS)	2021-22	SKRS-I	Sikharpur R.F	1 st P	280.0	280.0
	2022-23	SKRS-II	Sikharpur R.F	2 nd P	280.0	280.0
	2023-24	SKRS-III	Sikharpur R.F	3 rd P	280.0	280.0
	2024-25	SKRS-IV	Sikharpur R.F	4 th P	280.0	280.0
	2025-26	SKRS- V	Sikharpur R.F	Bal.	229.113	229.113
	2026-27	SKRS-VI	MainsibindhaR.F	Part	320.0	320.0
	2027-28	SKRS-VII	MainsibindhaR.F	Bal	317.3768	317.3768
	2028-29	SKRS-VIII	Similibanka R.F		216.9048	216.9048
	2029-30	SKRS-IX	Pathara R.F		49.0167	149.0167
			Pithakhai R.F		100.0	
	2030-31	SKRS-X	Pithakhai R.F		253.1600	253.1600
Total RS					2605.5713	2605.5713

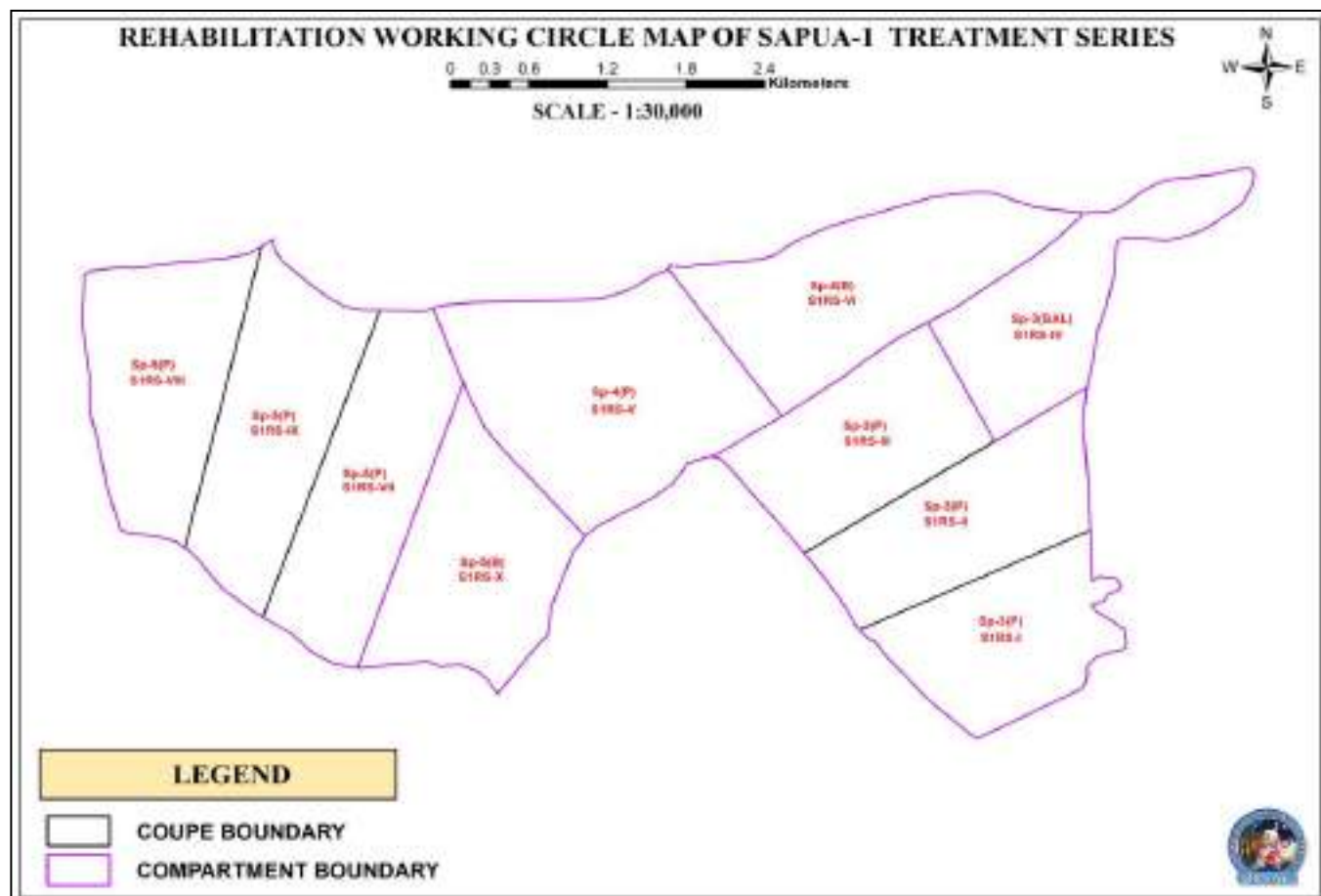




15.6.7.17 Sapua -1 RS

Table No 15.5(XVII) Sections of Sapua -1 Rehabilitation Series (S1 RS)

Table No 15.5(XVII) Sections of Sapua -1 Rehabilitation Series (S1 RS)						
Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Sapua -1 Rehabilitation Series (S1RS)	2021-22	S1 RS-I	Sapua R.F	Sp 3(1 st P)	175.0	175.0
	2022-23	S1 RS-II	Sapua R.F	Sp 3 (2 nd P)	175.0	175.0
	2023-24	S1 RS-III	Sapua R.F	Sp 3 (3 rd P)	175.0	175.0
	2024-25	S1 RS-IV	Sapua R.F	Sp 3 Bal.	176.7006	176.7006
	2025-26	S1 RS- V	Sapua R.F	Sp 4(P)	275.0	275.0
	2026-27	S1 RS-VI	Sapua R.F	Sp 4 (B)	280.974	280.974
	2027-28	S1 RS-VII	Sapua R.F	Sp 5 (1 st P)	200.0	200.0
	2028-29	S1 RS-VIII	Sapua R.F	Sp 5 (2 nd P)	200.0	200.0
	2029-30	S1 RS-IX	Sapua R.F	Sp 5 (3 rd P)	200.00	200.00
	2030-31	S1 RS-X	Sapua R.F	Sp 5 (B)	205.3868	205.3868
	Total RS				2063.0614	2063.0614





15.6.7.18 Sapua -2 RS

Table No 15.5(XVIII) Sections of Sapua -2 Rehabilitation Series (S2 RS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Sapua -2 Rehabilitation Series (S2RS)	2021-22	S2 RS-I	Sapua R.F	Sp 6 (1 st P)	240.0	240.0
	2022-23	S2 RS-II	Sapua R.F	Sp 6 (2 nd P)	240.0	240.0
	2023-24	S2 RS-III	Sapua R.F	Sp 6 (Bal)	245.3056	245.3056
	2024-25	S2 RS-IV	Sapua R.F	Sp 7 (1 st P)	175.0	175.0
	2025-26	S2 RS-V	Sapua R.F	Sp 7 (2 nd P)	175.0	175.0
	2026-27	S2 RS-VI	Sapua R.F	Sp 7 (3 rd P)	175.0	175.0
	2027-28	S2 RS-VII	Sapua R.F	Sp 7 (4 th P)	175.0	175.0
	2028-29	S2 RS-VIII	Sapua R.F	Sp 7 (B)	183.4660	183.4660
	2029-30	S2 RS-IX	Sapua R.F	Sp 8 (P)	200.0	200.0
	2030-31	S2 RS-X	Sapua R.F	Sp 8 (B)	186.2498	186.2498
	Total RS				1995.0214	1995.0214

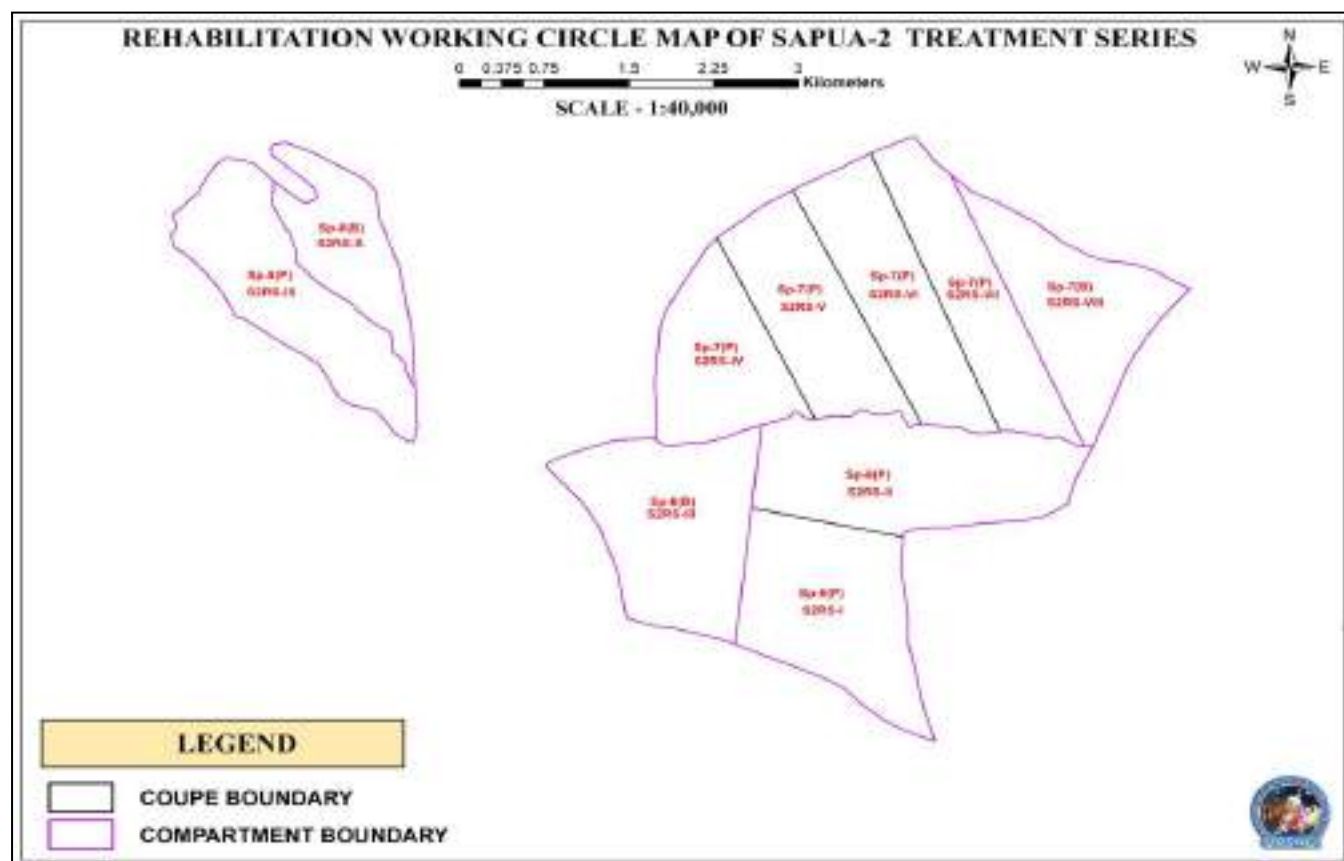
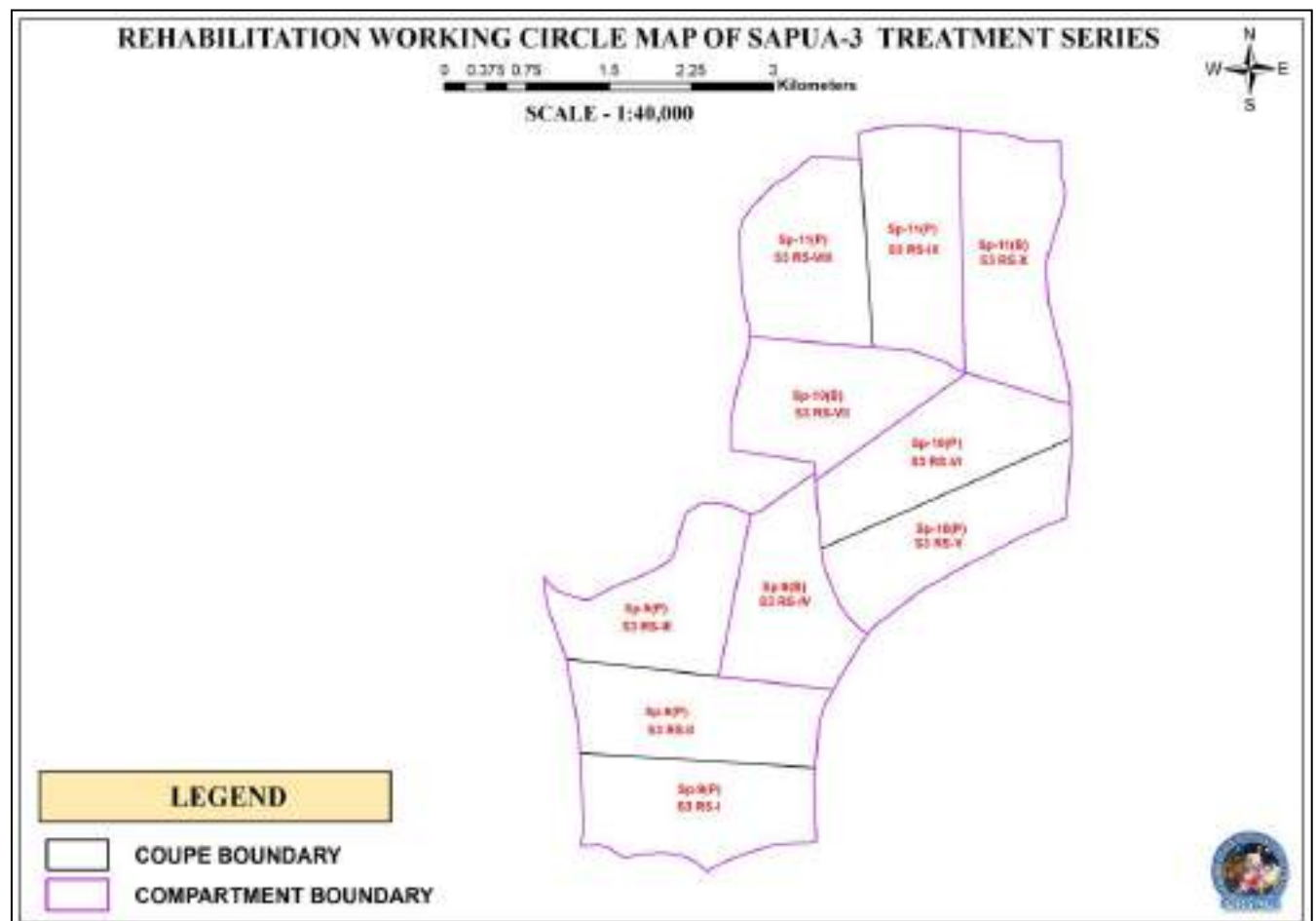




Table No 15.5(XIX) Sections of Sapua -3 Rehabilitation Series (S3 RS)

Table No 15.5(XIX) Sections of Sapua -3 Rehabilitation Series (S3 RS)						
Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Sapua -3 Rehabilitation Series (S3RS)	2021-22	S3 RS-I	Sapua R.F	Sp 9 (1 st P)	160.0	160.0
	2022-23	S3 RS-II	Sapua R.F	Sp 9 (2 nd P)	160.0	160.0
	2023-24	S3 RS-III	Sapua R.F	Sp 9 (3 rd P)	160.0	160.0
	2024-25	S3 RS-IV	Sapua R.F	Sp 9 (Bal.)	170.3146	170.3146
	2025-26	S3 RS- V	Sapua R.F	Sp 10 (1 st P)	160.0	160.0
	2026-27	S3 RS-VI	Sapua R.F	Sp 10 (2 nd P)	160.0	160.0
	2027-28	S3 RS-VII	Sapua R.F	Sp 10 (Bal)	161.2428	161.2428
	2028-29	S3 RS-VIII	Sapua R.F	Sp 11	170.0	170.0
	2029-30	S3 RS-IX	Sapua R.F	Sp 11	170.0	170.0
	2030-31	S3 RS-X	Sapua R.F	Sp 11	171.5492	171.5492
	Total RS				1643.1066	1643.1066

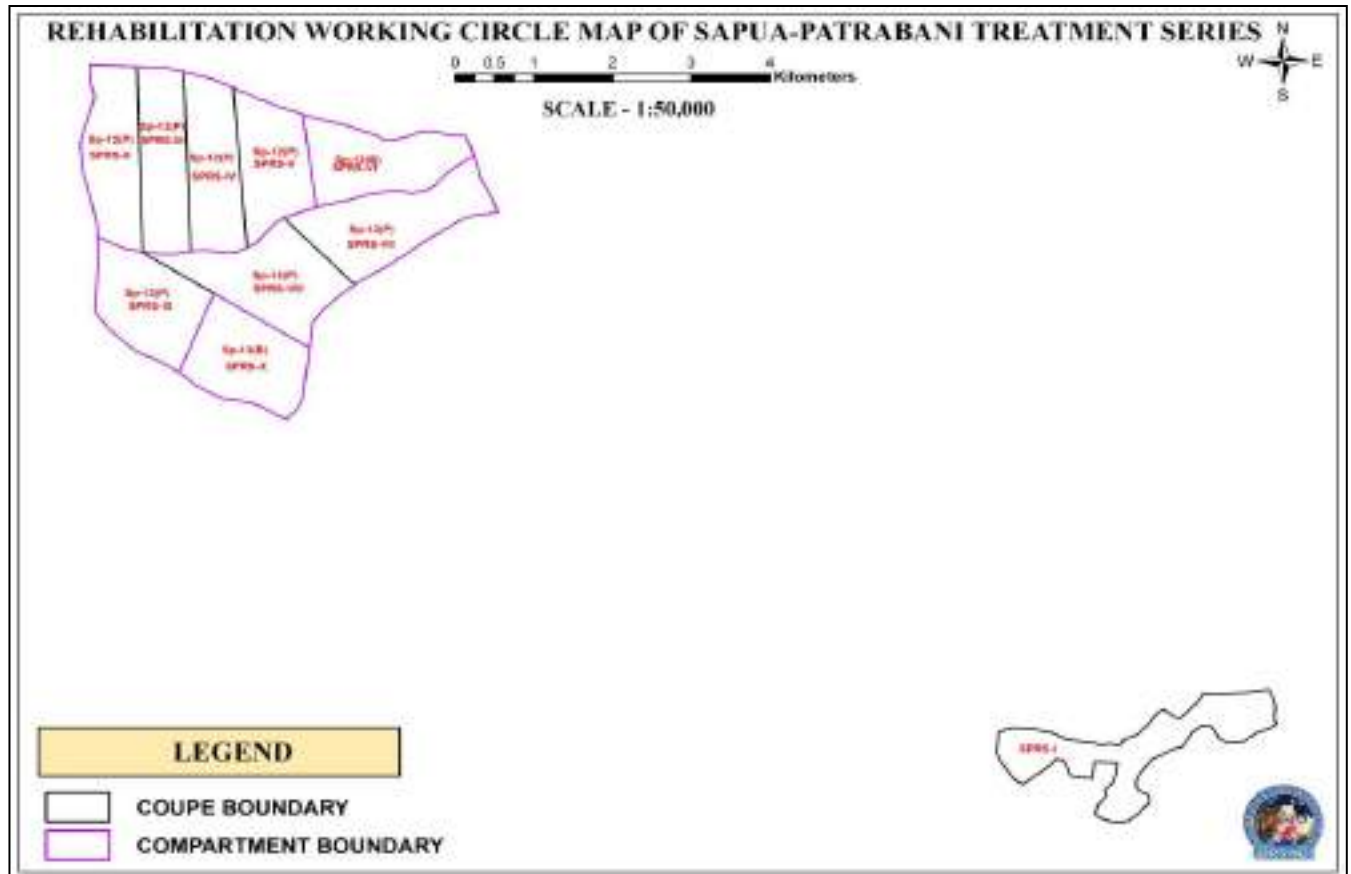




15.6.7.20 Sapua- Patrabani RS

Table No 15.5(XX) Sections of Sapua- Patrabani Rehabilitation Series (SPRS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Sapua- Patrabani Rehabilitation Series (S2RS)	2021-22	SPRS-I	Patrabani Jamubani R.F		209.6394	209.6394
	2022-23	SPRS-II	Sapua R.F	Sp 12	145.0	145.0
	2023-24	SPRS-III	Sapua R.F	Sp 12	145.0	145.0
	2024-25	SPRS-IV	Sapua R.F	Sp 12	145.0	145.0
	2025-26	SPRS- V	Sapua R.F	Sp 12	145.0	145.0
	2026-27	SPRS-VI	Sapua R.F	Sp 12	141.5915	141.5915
	2027-28	SPRS-VII	Sapua R.F	Sp 13	180.0	180.0
	2028-29	SPRS-VIII	Sapua R.F	Sp 13	180.0	180.0
	2029-30	SPRS-IX	Sapua R.F	Sp 13	180.0	180.0
	2030-31	SPRS-X	Sapua R.F	Sp 13	171.9831	171.9831
	Total RS				1643.2140	1643.2140

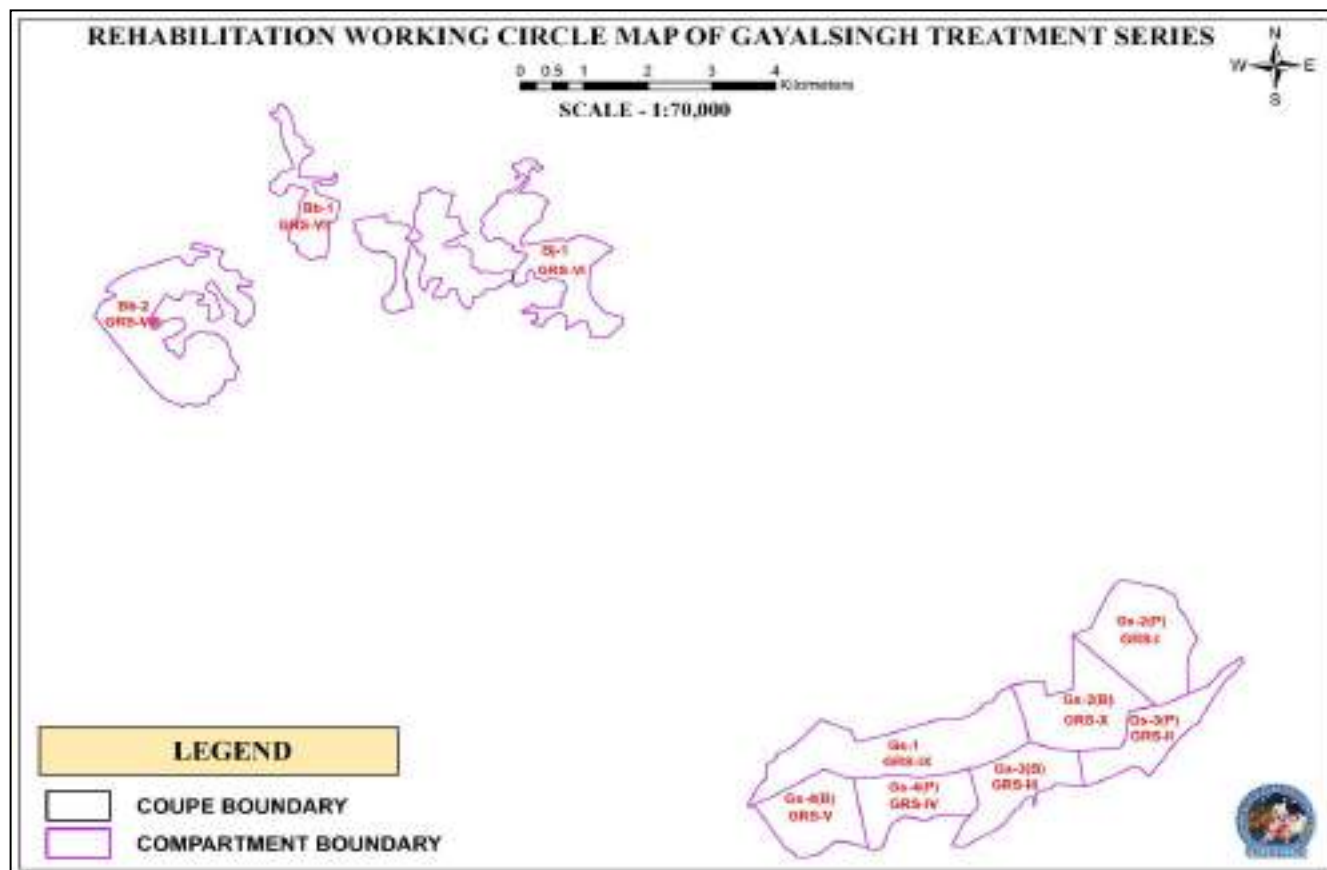




15.6.7.21 Gayalsingh RS

Table No 15.5(I) Sections of Gayalsingh Rehabilitation Series (GRS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Gayalsingh Rehabilitation Series (GRS)	2021-22	GRS-I	Gayalsingh R.F	Gs 2 (P)	180.0	180.0
	2022-23	GRS-II	Gayalsingh R.F	Gs 3 (P)	180.0	180.0
	2023-24	GRS-III	Gayalsingh R.F	Gs 3 (B)	176.3458	176.3458
	2024-25	GRS-IV	Gayalsingh R.F	Gs 4 (P)	150.0	150.0
	2025-26	GRS- V	Gayalsingh R.F	Gs 4(B)	150.5606	150.5606
	2026-27	GRS-VI	Bahadajhola R.F		190.4249	190.4249
	2027-28	GRS-VII	Balisinsa Badhulipur R.F	Bb 1	92.2116	92.2116
	2028-29	GRS-VIII	Balisinsa Badhulipur R.F	Bb 2	313.8678	313.8678
	2029-30	GRS-IX	Gayalsingh R.F	Gs 1	324.3672	324.3672
	2030-31	GRS-X	Gayalsingh R.F	Gs 2 (B)	183.3122	183.3122
	Total RS				1941.0901	1941.0901

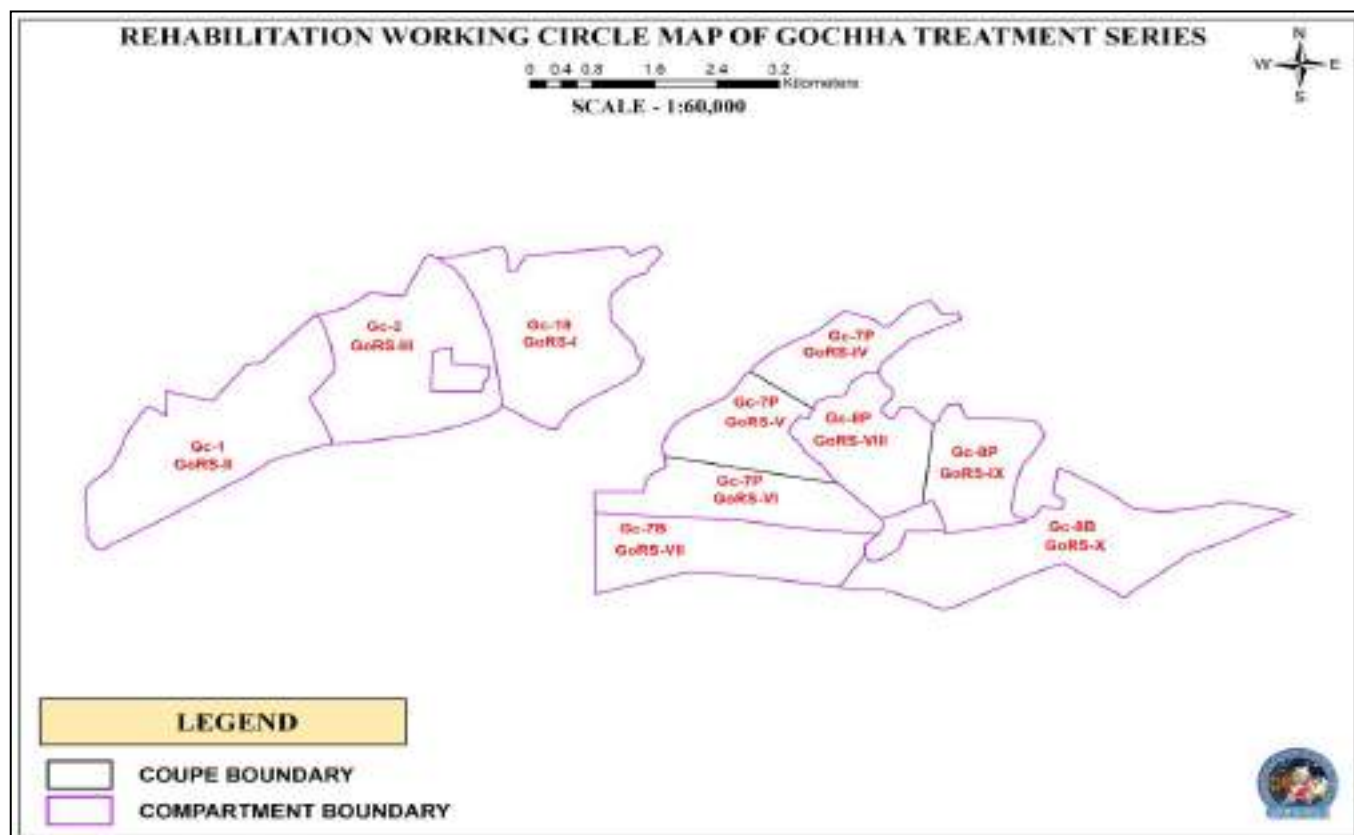




15.6.7.22 Gochha RS

Table No 15.5(XXII) Sections of Gochha Rehabilitation Series (GoRS)

Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Gochha Rehabilitation Series (GoRS)	2021-22	GoRS-I	Gochha R.F	Gc 18	296.7640	296.7640
	2022-23	GoRS-II	Gochha R.F	Gc 1	362.5743	362.5743
	2023-24	GoRS-III	Gochha R.F	Gc 2	330.9092	330.9092
	2024-25	GoRS-IV	Gochha R.F	Gc 7	180.0	180.0
	2025-26	GoRS-V	Gochha R.F	Gc 7	180.0	180.0
	2026-27	GoRS-VI	Gochha R.F	Gc 7	180.0	180.0
	2027-28	GoRS-VII	Gochha R.F	Gc 7	183.278	183.278
	2028-29	GoRS-VIII	Gochha R.F	Gc 8 (a)(P1)	220.0	220.0
	2029-30	GoRS-IX	Gochha R.F	Gc 8 (a)(P2)	220.0	220.0
	2030-31	GoRS-X	Gochha R.F	Gc 8 (a)(B)	231.8217	231.8217
	Total RS				2385.3472	2385.3472

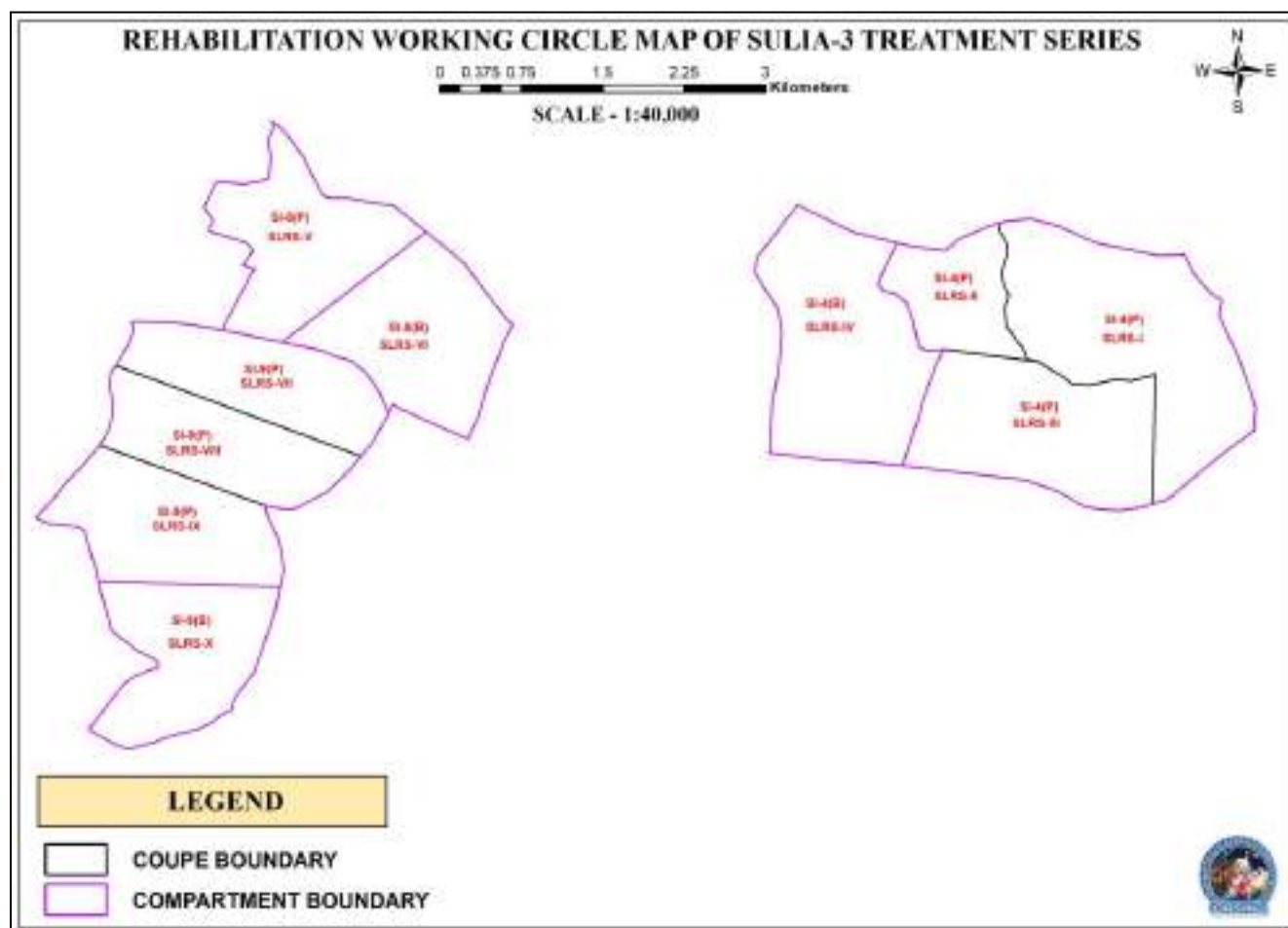




15.6.7.23 Sulia-3 RS

Table No 15.5(XXIII) Sections of Sulia-3 Rehabilitation Series (SLRS)

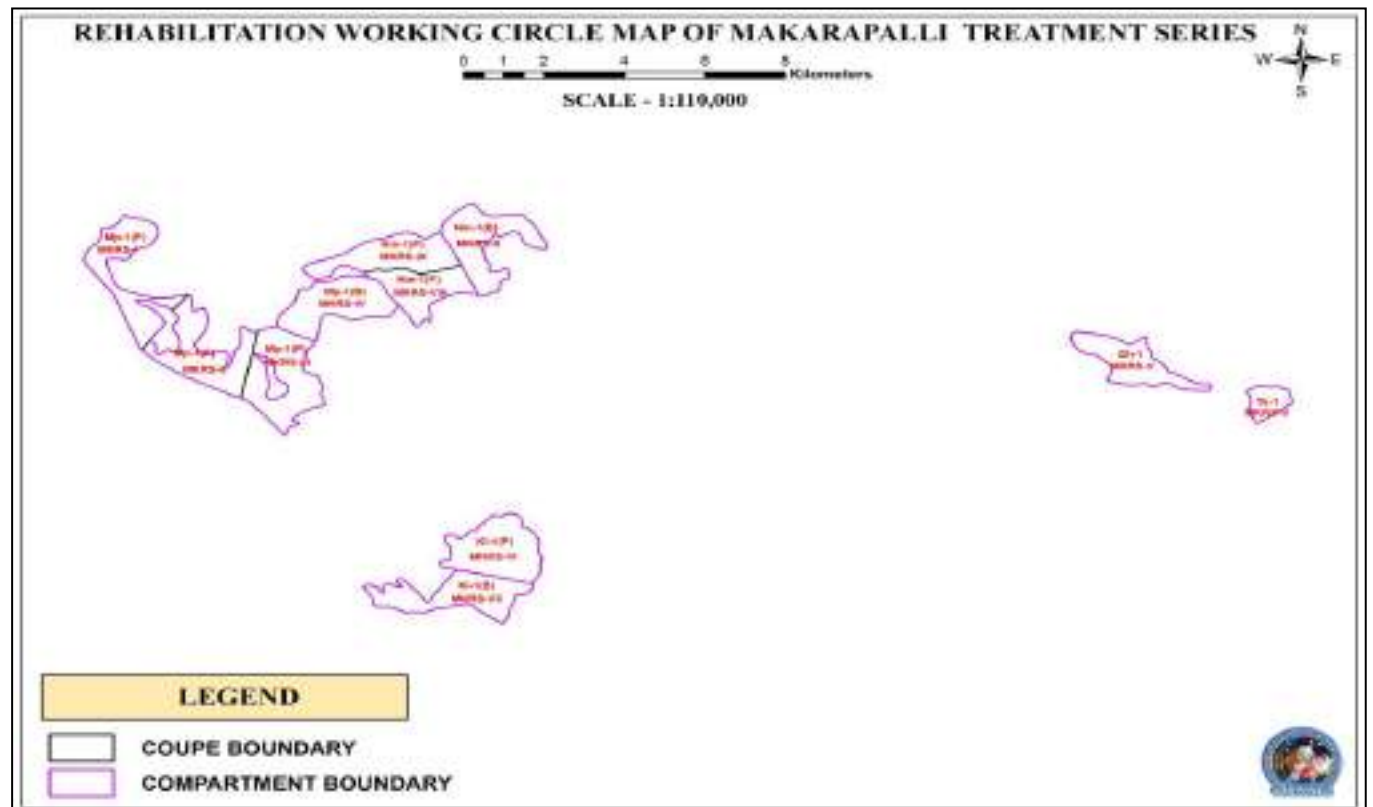
Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Sulia-3 Rehabilitation Series (SLRS)	2021-22	SLRS-I	Sulia R.F	SI 4(1 st P)	220.0	220.0
	2022-23	SLRS-II	Sulia R.F	SI 4(2 nd P)	220.0	220.0
	2023-24	SLRS-III	Sulia R.F	SI 4 (3 rd P)	220.0	220.0
	2024-25	SLRS-IV	Sulia R.F	SI 4 (B)	245.8674	245.8674
	2025-26	SLRS- V	Sulia R.F	SI 8 (P)	185.0	185.0
	2026-27	SLRS-VI	Sulia R.F	SI 8(B)	187.5446	187.5446
	2027-28	SLRS-VII	Sulia R.F	SI 9	170.0	170.0
	2028-29	SLRS-VIII	Sulia R.F	SI 9	170.0	170.0
	2029-30	SLRS-IX	Sulia R.F	SI 9	170.0	170.0
	2030-31	SLRS-X	Sulia R.F	SI 9	138.6969	138.6969
	Total RS				1927.1089	1927.1089





15.6.7.24 Makarapalli RS

Table No 15.5(XXIV) Sections of Makarapalli Rehabilitation Series (MKRS)						
Name of Reh.S	Year of Working	Coupe No	Forest Block	Com p. No	Area in ha	Coupe Area
Makarapalli Rehabilitation Series (MKRS)	2021-22	MKRS-I	Makarapalli (PRF)	1 st P	280.0	280.0
	2022-23	MKRS-II	Makarapalli (PRF)	2 nd P	280.0	280.0
	2023-24	MKRS-III	Makarapalli (PRF)	3 rd P	280.0	280.0
	2024-25	MKRS-IV	Makarapalli (PRF)	Bal.	264.39	264.39
	2025-26	MKRS- V	Dhadi (DPF)		232.8733	311.6785
			Takarakhai (DPF)		78.8052	
	2026-27	MKRS-VI	Kurala (DPF)	1 st P	320.0	320.0
	2027-28	MKRS-VII	Kurala (DPF)	2 nd P	317.352	317.352
	2028-29	MKRS-VIII	Nariamba	1 st P	250.0	250.0
	2029-30	MKRS-IX	Nariamba	2 nd P	250.0	250.0
	2030-31	MKRS-X	Nariamba	Bal	244.059	244.059
	Total RS				2797.4795	2797.4795

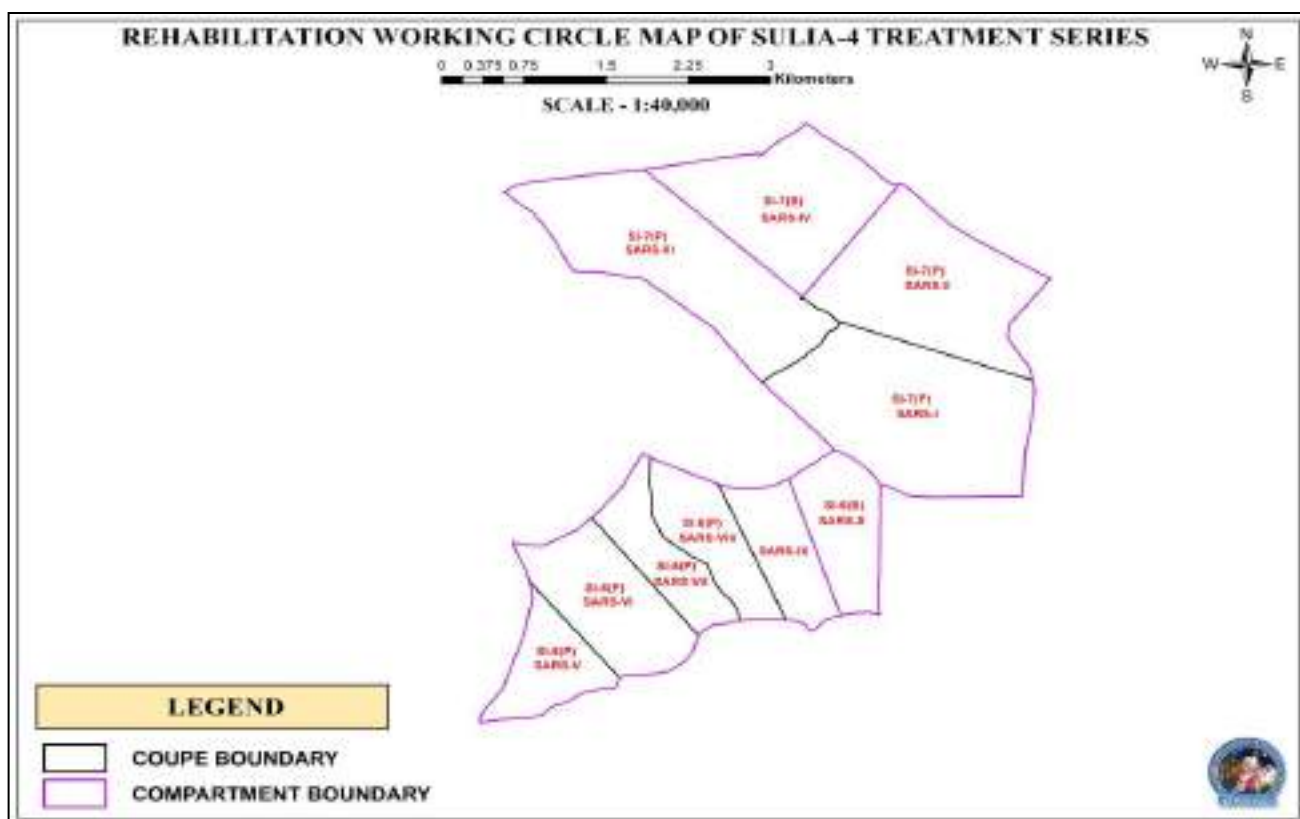




15.6.7.25 Sulia-4 RS

Table No 15.5(XXV) Sections of Sulia-4 Rehabilitation Series (SARS)

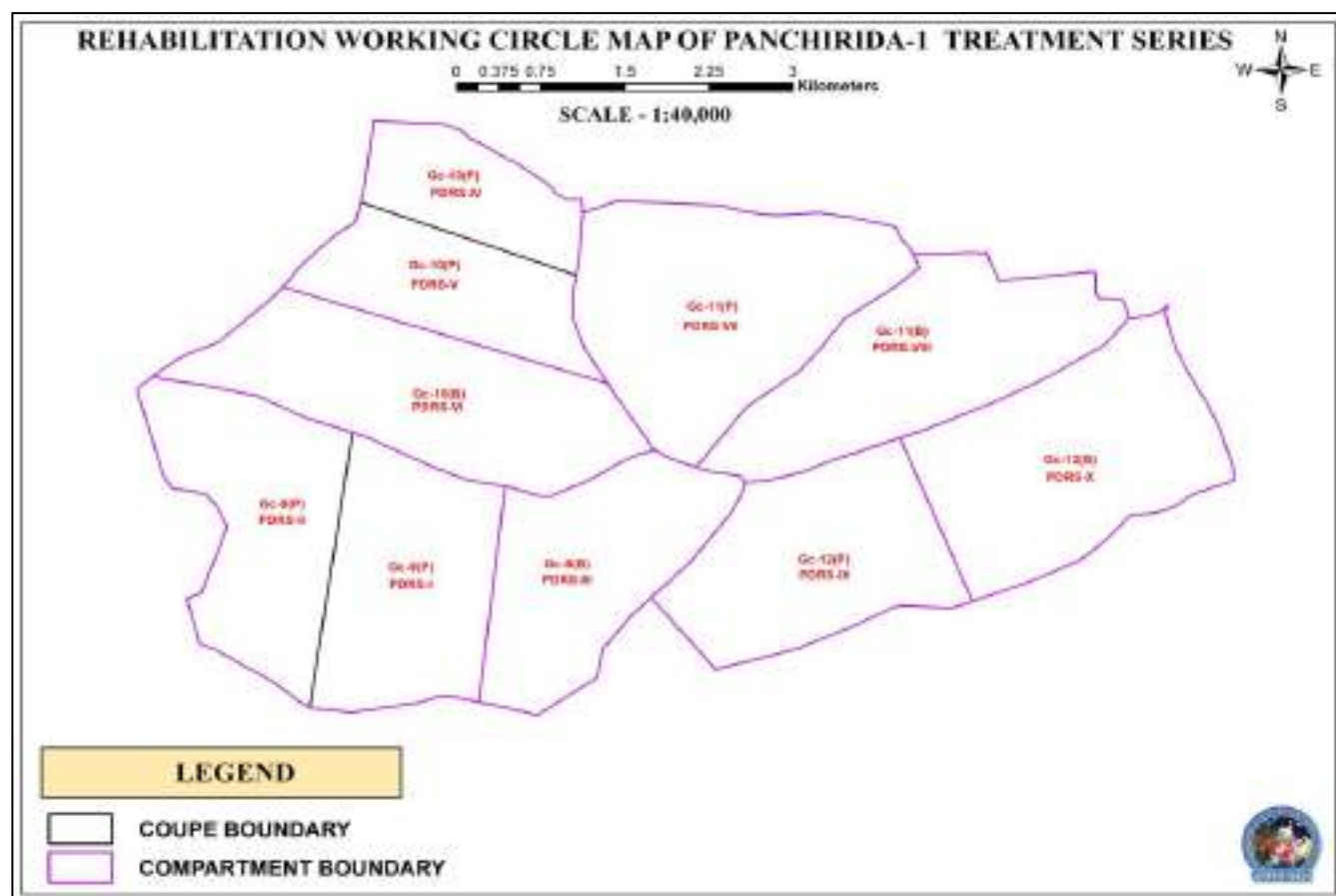
Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Sulia-4 Rehabilitation Series (SARS)	2021-22	SARS-I	Sulia RF	SI 7 (1 st P)	180.0	180.0
	2022-23	SARS-II	Sulia RF	SI 7(2 nd P)	180.0	180.0
	2023-24	SARS-III	Sulia RF	SI 7 (3 rd P)	180.0	180.0
	2024-25	SARS-IV	Sulia RF	SI 7 (B)	195.2014	195.2014
	2025-26	SARS- V	Sulia RF	SI 6	220.0	220.0
	2026-27	SARS-VI	Sulia RF	SI 6	220.0	220.0
	2027-28	SARS-VII	Sulia RF	SI 6	220.0	220.0
	2028-29	SARS-VIII	Sulia RF	SI 6	220.0	220.0
	2029-30	SARS-IX	Sulia RF	SI 6	220.0	220.0
	2030-31	SARS-X	Sulia RF	SI 6	228.826	228.826
	Total RS				2064.0274	2064.0274





15.6.7.26 Panchirida-1 RS

Table No 15.5(XXVI) Sections of Panchirida-1 Rehabilitation Series (PDRS)						
Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Panchirida-1 Rehabilitation Series (PDRS)	2021-22	PDRS-I	Gochha R.F	Gc 9 (1 st P)	290.0	290.0
	2022-23	PDRS-II	Gochha R.F	Gc 9(2 nd P)	290.0	290.0
	2023-24	PDRS-III	Gochha R.F	Gc 9(B)	276.5656	276.5656
	2024-25	PDRS-IV	Gochha R.F	Gc 10(1 st P)	250.0	250.0
	2025-26	PDRS- V	Gochha R.F	Gc 10(2 nd P)	250.0	250.0
	2026-27	PDRS-VI	Gochha R.F	Gc 10(B)	254.4302	254.4302
	2027-28	PDRS-VII	Gochha R.F	Gc 11(P)	330.0	330.0
	2028-29	PDRS-VIII	Gochha R.F	Gc 11(B)	330.4688	330.4688
	2029-30	PDRS-IX	Gochha R.F	Gc 12(P)	360.0	360.0
	2030-31	PDRS-X	Gochha R.F	Gc 12(B)	364.6294	364.6294
	Total RS				2996.0940	2996.094

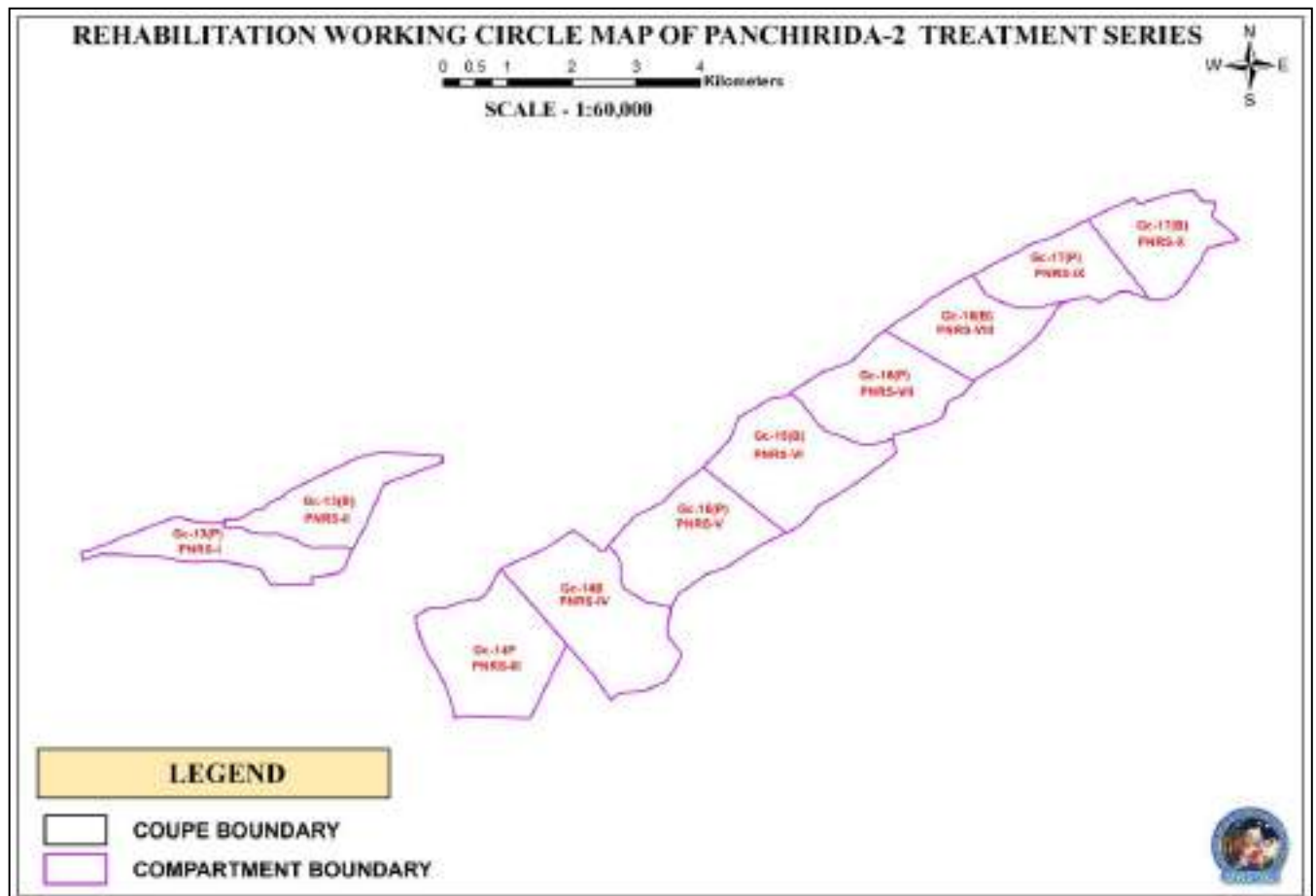




15.6.7.27 Panchirida -2 RS

Table No 15.5(XXVII) Sections of Panchirida-2 Rehabilitation Series (PNRS)

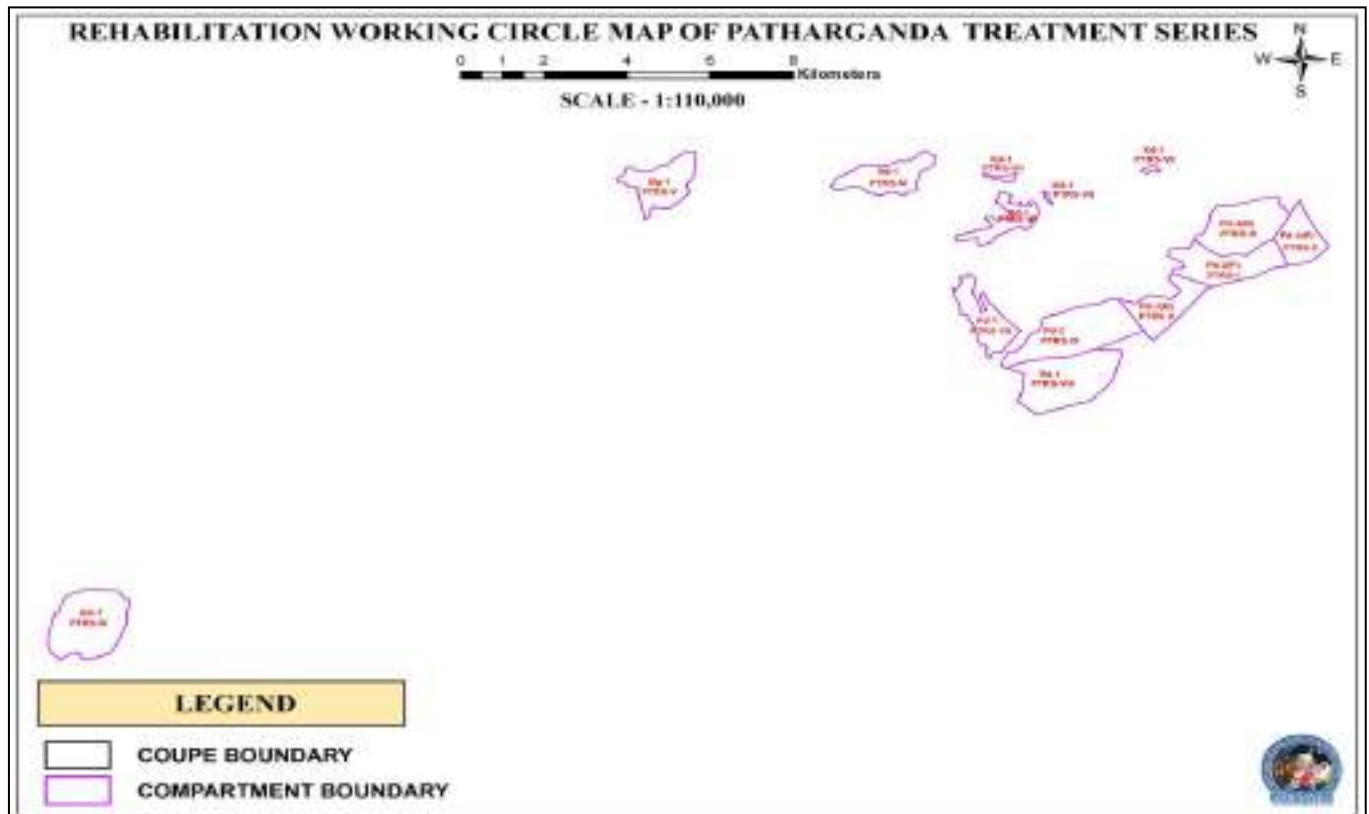
Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Panchirida-2 Rehabilitation Series (PNRS)	2021-22	PNRS -I	Gochha R.F	Gc 13 (P)	225.0	225.0
	2022-23	PNRS -II	Gochha R.F	Gc 13(B)	222.7130	222.7130
	2023-24	PNRS -III	Gochha R.F	Gc 14 (P)	320.0	320.0
	2024-25	PNRS -IV	Gochha R.F	Gc 14(B)	305.5681	305.5681
	2025-26	PNRS - V	Gochha R.F	Gc 15 (P)	260.0	260.0
	2026-27	PNRS -VI	Gochha R.F	Gc 15(B)	264.5882	264.5882
	2027-28	PNRS -VII	Gochha R.F	Gc 16 (P)	240.0	240.0
	2028-29	PNRS -VIII	Gochha R.F	Gc 16(B)	225.5781	225.5781
	2029-30	PNRS -IX	Gochha R.F	Gc 17 (P)	225.0	225.0
	2030-31	PNRS -X	Gochha R.F	Gc 17(B)	221.5627	221.5627
Total RS					2510.0101	2510.0101





15.6.7.28 Patharaganda RS

Table No 15.5(XXVIII) Sections of Patharaganda Rehabilitation Series (PTRS)						
Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe Area
Patharaganda Rehabilitation Series (PTRS)	2021-22	PTRS-I	Patharaganda R.F	Pd 3 (P)	150.0	150.0
	2022-23	PTRS-II	Patharaganda R.F	Pd 4 (P)	200.0	200.0
	2023-24	PTRS-III	Patharaganda R.F	Pd 4(B)	184.0514	184.0514
	2024-25	PTRS-IV	Ambamundia (PRF)		297.7761	297.7761
	2025-26	PTRS- V	Binjhagiri (DPF)		150.227	150.227
	2026-27	PTRS-VI	Netabandha (DPF)		141.5044	141.5044
	2027-28	PTRS-VII	Khatia Damasahi R.F		223.235	223.235
	2028-29	PTRS-VIII	Patharaganda R.F	Pd 1	316.8457	316.8457
	2029-30	PTRS-IX	Patharaganda R.F	Pd 2	219.4276	219.4276
	2030-31	PTRS-X	Patharaganda R.F	Pd 3(B)	148.5558	148.5558
Total RS					2031.6230	2031.6230

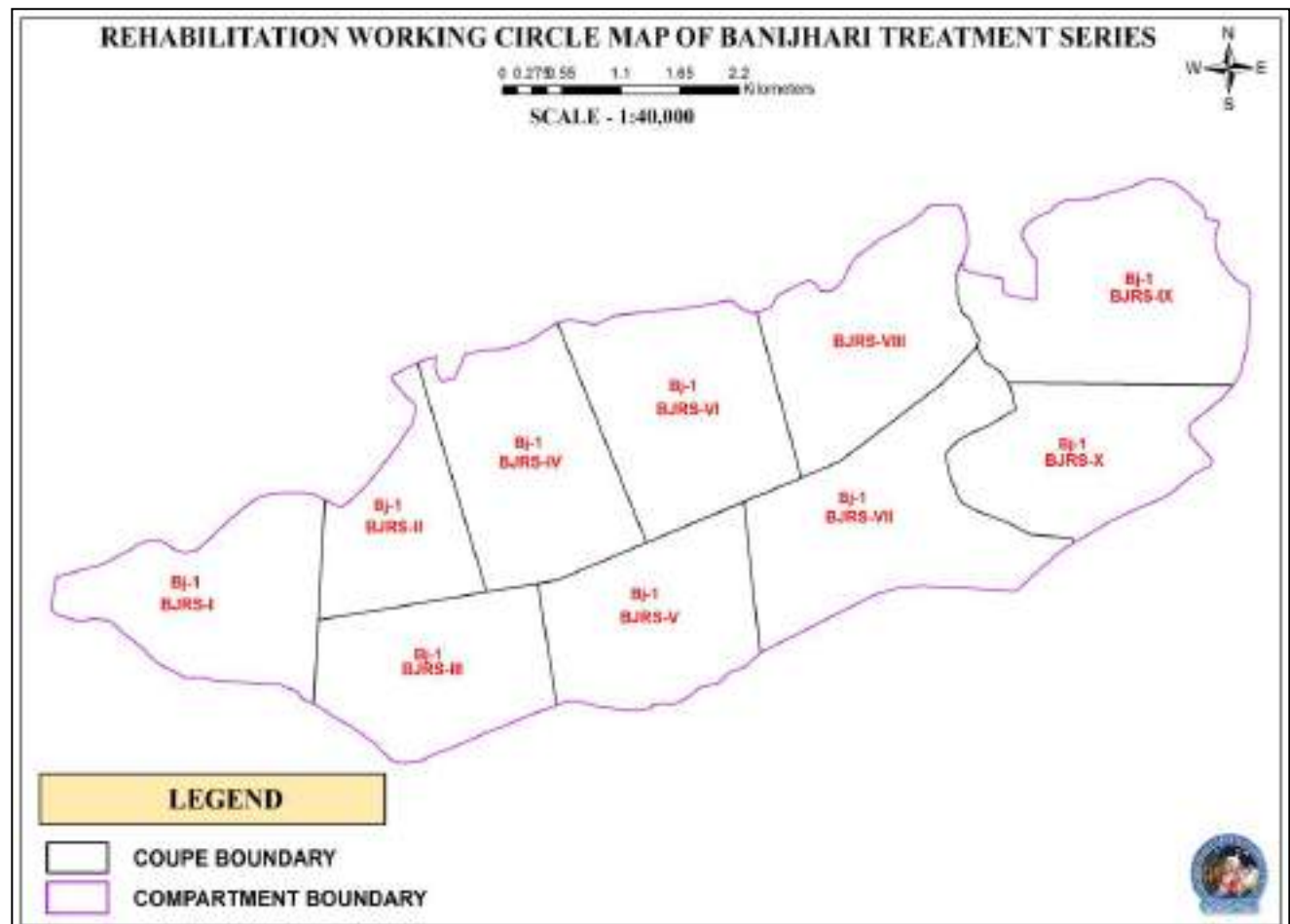




15.6.7.29 Banijhari RS

Table No 15.5(XXIX) Sections of Banijhari Rehabilitation Series (BJRS)

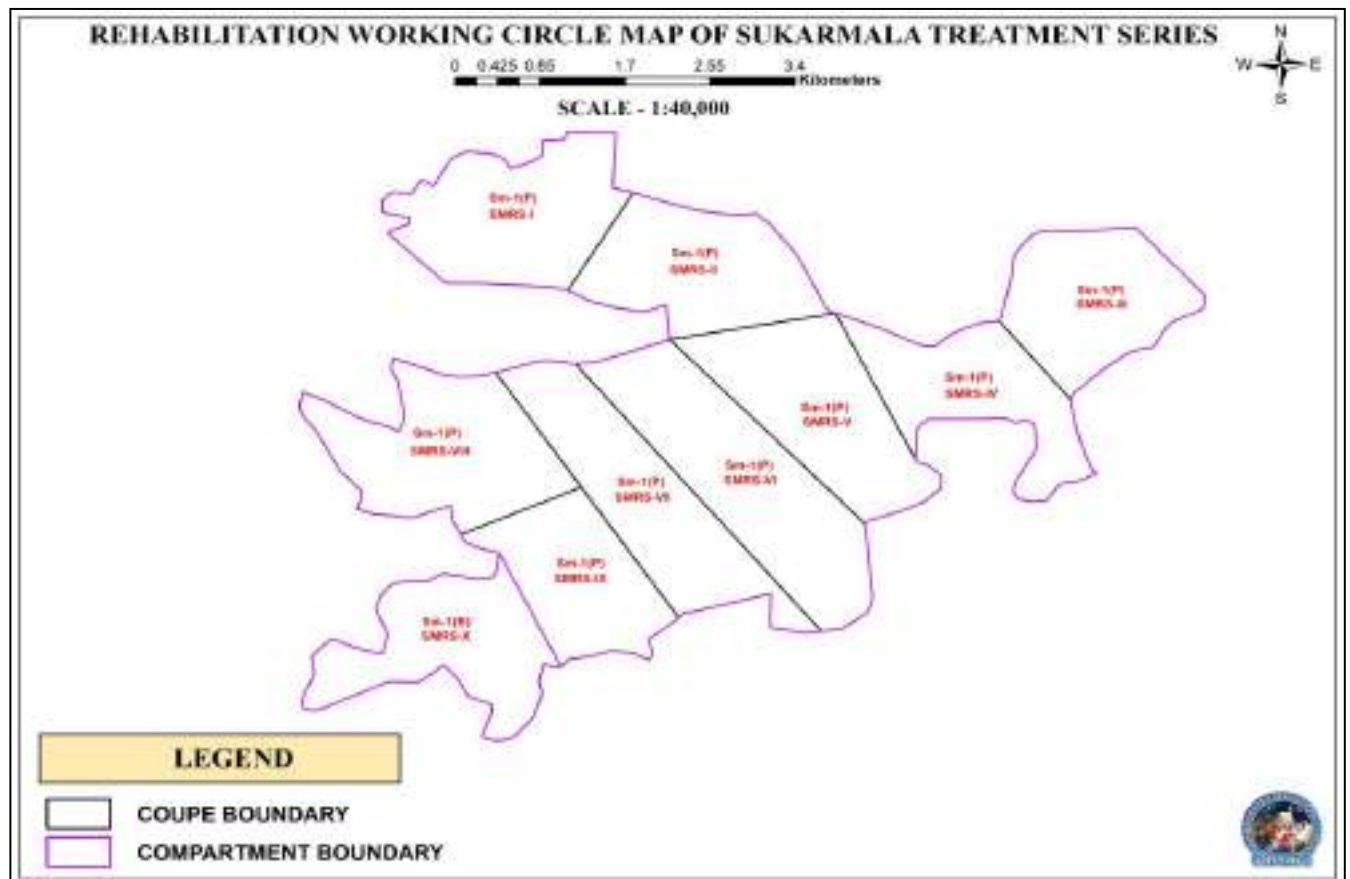
Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp . No	Area in ha	Coupe Area
Banijhari Rehabilitation Series (BJRS)	2021-22	BJRS -I	Banijhari (PRF)		275.0	275.0
	2022-23	BJRS -II	Banijhari (PRF)		275.0	275.0
	2023-24	BJRS -III	Banijhari (PRF)		275.0	275.0
	2024-25	BJRS -IV	Banijhari (PRF)		275.0	275.0
	2025-26	BJRS - V	Banijhari (PRF)		275.0	275.0
	2026-27	BJRS -VI	Banijhari (PRF)		275.0	275.0
	2027-28	BJRS -VII	Banijhari (PRF)		275.0	275.0
	2028-29	BJRS -VIII	Banijhari (PRF)		275.0	275.0
	2029-30	BJRS -IX	Banijhari (PRF)		275.0	275.0
	2030-31	BJRS -X	Banijhari (PRF)		281.6170	281.6170
Total RS					2756.6170	2756.6170





15.6.7.30 Sukarmala RS

Table No 15.5(XXX) Sections of Sukarmala Rehabilitation Series (SMRS)						
Name of Reh.S	Year of Working	Coupe No	Forest Block	Comp . No	Area in ha	Coupe Area
Sukarmala Rehabilitation Series (SMRS)	2021-22	SMRS -I	Sukarmala (PRF)		250.0	250.0
	2022-23	SMRS -II	Sukarmala (PRF)		250.0	250.0
	2023-24	SMRS -III	Sukarmala (PRF)		250.0	250.0
	2024-25	SMRS -IV	Sukarmala (PRF)		250.0	250.0
	2025-26	SMRS - V	Sukarmala (PRF)		250.0	250.0
	2026-27	SMRS -VI	Sukarmala (PRF)		250.0	250.0
	2027-28	SMRS -VII	Sukarmala (PRF)		250.0	250.0
	2028-29	SMRS -VIII	Sukarmala (PRF)		250.0	250.0
	2029-30	SMRS -IX	Sukarmala (PRF)		250.0	250.0
	2030-31	SMRS -X	Sukarmala (PRF)		245.8950	245.8950
	Total RS				2495.895	2495.895





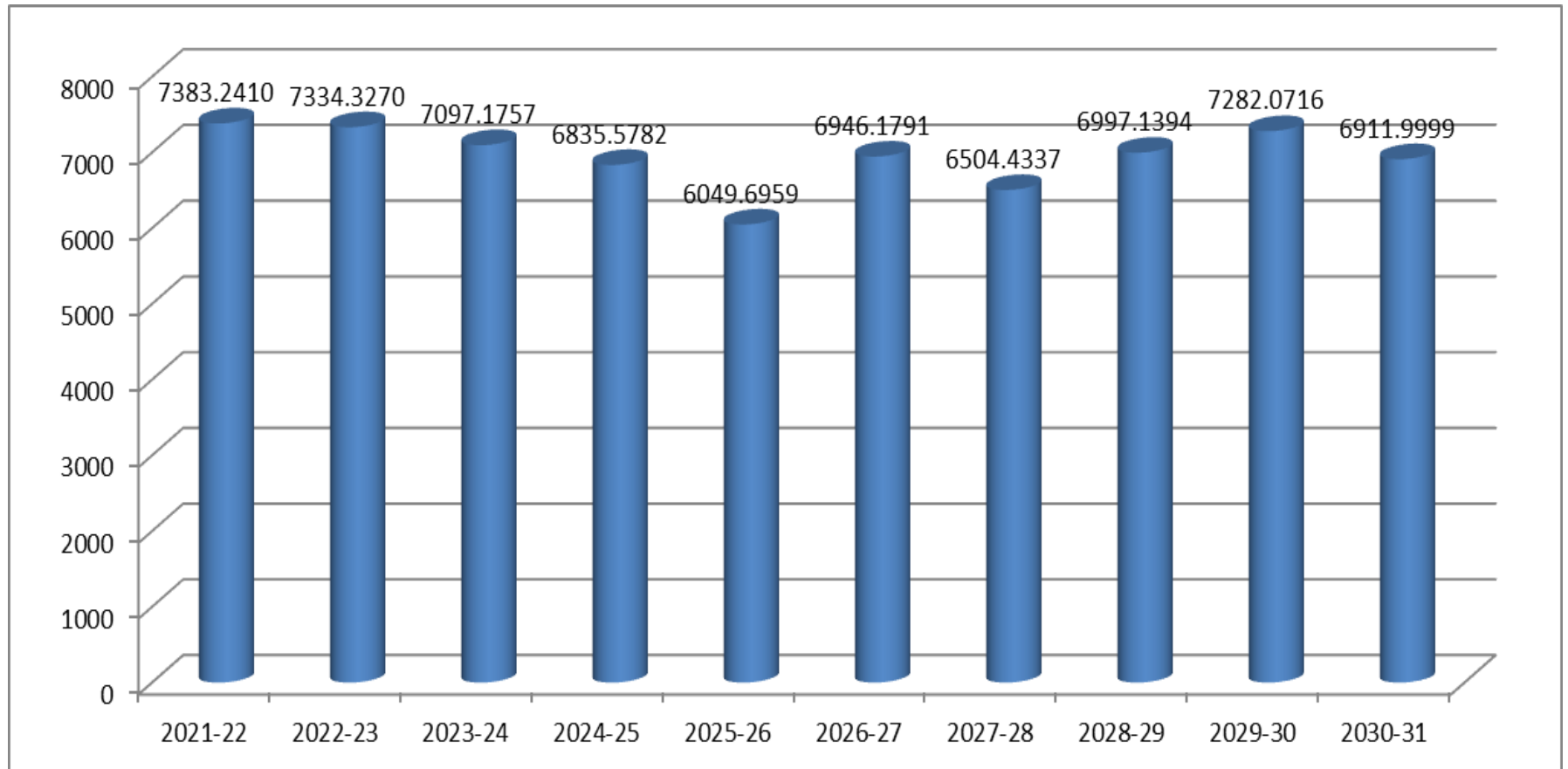
15.6.7.31 ABSTRACT OF Rehabilitation Series (Year wise Area allotted)

Table No 14.10 Area assigned for working (Year wise & Rehabilitation Series Wise) Nayagarh Division

No	Name of RS	Year of Working										Total
		2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	
1	Chhadesha	335.0000	335.0000	335.0000	335.0000	336.4470	290.0000	290.0000	290.0000	290.0000	299.8440	3136.2910
2	Pokharigochha	356.8244	196.1703	270.9614	141.3996	190.0000	190.0000	190.0000	186.7991	491.7106	131.2128	2345.0782
3	Kuradhinisa	260.0000	260.0000	260.0000	260.0000	260.0000	260.0000	260.0000	260.0000	260.0000	275.4160	2615.4160
4	Sirisabadi	170.0000	170.0000	165.1108	231.2303	235.0000	235.0000	235.0000	229.9828	150.0000	155.9649	1977.2888
5	Manibhadra	320.0000	313.6100	275.0000	271.1503	275.0000	271.6233	218.3231	200.6369	260.0000	257.9488	2663.2924
6	Makarprasad	442.6840	370.8514	288.7945	300.0000	297.4703	162.8016	290.0000	290.0000	290.0000	287.6710	3020.2728
7	Baisipali	134.0000	136.7672	100.0000	105.6272	112.0323	58.8719	58.3364	120.0000	120.0000	115.1446	1060.7796
8	Mahipur	250.0000	225.0121	140.0000	133.4262	218.0725	190.0000	196.9039	319.8856	300.0000	303.1684	2276.4687
9	Hatimunda	230.0000	213.4259	300.0000	289.0450	350.0000	342.7462	222.6502	451.1620	250.0000	248.5381	2897.5674
10	Sulia-1	284.6043	349.6245	313.6271	267.4185	403.9870	294.3466	210.0000	210.0000	227.5751	402.3064	2963.4895
11	Ragadamada	220.0000	220.0000	221.2036	205.0000	200.1577	321.5547	240.0000	241.1499	200.0000	203.9182	2272.9841
12	Panchupandav	201.8752	265.0000	265.9555	160.0000	164.7043	210.0000	207.0817	200.0000	200.0000	206.6275	2081.2442
13	Balaram	312.9783	338.5783	180.0000	180.3932	200.2457	255.3059	175.5424	200.0000	246.4431	289.5281	2379.0150
14	Sulia -2	215.0000	215.0000	218.3452	337.4165	270.0000	285.9866	220.8998	120.0238	275.0000	274.9189	2432.5908
15	Barakhhol	238.8714	265.0000	265.0000	257.6532	220.0000	216.8845	155.0000	155.3681	308.5313	182.4876	2264.7961
16	Sikarpur	280.0000	280.0000	280.0000	280.0000	229.1130	320.0000	317.3768	216.9048	149.0167	253.1600	2605.5713
17	Sapua -1	175.0000	175.0000	175.0000	176.7006	275.0000	280.9740	200.0000	200.0000	200.0000	205.3868	2063.0614
18	Sapua -2	240.0000	240.0000	245.3056	175.0000	175.0000	175.0000	175.0000	183.4660	200.0000	186.2498	1995.0214
19	Sapua -3	160.0000	160.0000	160.0000	170.3146	160.0000	160.0000	161.2428	170.0000	170.0000	171.5492	1643.1066
20	Sapua-Patrabani	209.6394	145.0000	145.0000	145.0000	145.0000	141.5915	180.0000	180.0000	180.0000	171.9831	1643.2140
21	Gayalsingh	180.0	180.0000	176.3458	150.0000	150.5606	190.4249	92.2116	313.8678	324.3672	183.3122	1941.0901
22	Gochha	296.7640	362.5743	330.9092	180.0000	180.0000	180.0000	183.2780	220.0000	220.0000	231.8217	2385.3472
23	Sulia-3	220.0000	220.0000	220.0000	245.8674	185.0000	187.5446	170.0000	170.0000	170.0000	138.6969	1927.1089
24	Makarapalli	280.0000	280.0000	280.0000	264.3900	311.6785	320.0000	317.3520	250.0000	250.0000	244.0590	2797.4795
25	Sulia-4	180.0000	180.0000	180.0000	195.2014	220.0000	220.0000	220.0000	220.0000	220.0000	228.8260	2064.0274
26	Panchirida-1	290.0000	290.0000	276.5656	250.0000	250.0000	254.4302	330.0000	330.4688	360.0000	364.6294	2996.0940
27	Panchirida-2	225.0000	222.7130	320.0000	305.5681	260.0000	264.5882	240.0000	225.5781	225.0000	221.5627	2510.0101
28	Patharaganda	150.0000	200.0000	184.0514	297.7761	150.2270	141.5044	223.2350	316.8457	219.4276	148.5558	2031.6230
29	Banijhari	275.0000	275.0000	275.0000	275.0000	275.0000	275.0000	275.0000	275.0000	275.0000	281.6170	2756.6170
30	Sukarmala	250.0000	250.0000	250.0000	250.0000	250.0000	250.0000	250.0000	250.0000	250.0000	245.8950	2495.8950
	Total	7383.2410	7334.3270	7097.1757	6835.5782	6949.6959	6946.1791	6504.4337	6997.1394	7282.0716	6911.9999	70241.8414



Revised Working Plan for the period 2021-2031 Nayagarh Division





15.6.8 Calculation of the yield:

As there is no prescription to harvest forest produce, no yield has been calculated. However during silvicultural cleaning and thinning, brush wood, Fire wood and poles may be obtained. In order to maintain hygiene of the forest, dead trees may be removed leaving some dead trees / fallen trees at least 4-5 trees per hectare for wildlife management point of view.

In case of VSS assigned area, the removed forest produce may be given to the Villagers as per JFM Resolution after maintaining necessary records of removal and sharing mechanism as per VSS Resolution.

15.6.9 Table of Treatment:

The forest Blocks assigned to this working circle has been divided to five (5) Rehabilitation series. For convenience of working each Rehabilitation Series has been sub divided in to 10 sections. Each year the assigned area is required to be treated strictly. The Rehabilitation Series and corresponding Sections and year of operation have been described under Para 15.6.7 above.

15.6.10 Method of executing the Treatment:

15.6.10.1 Demarcation of Annual Rehabilitation Area:

The Annual Rehabilitation Area (Treatment Area) has been depicted on Topo map (1: 50000 Scale) with marking like TS-I, TS-II. The area assigned for the year is to be surveyed, Pillars Posted well marked on the Ground. This will be done in following manner.

- i. For identifying and locating the annual rehabilitation areas for respective rehabilitation series a preliminary reconnaissance survey will be carried out in the month of October.
- ii. As the area is very susceptible to land encroachment / heavy Biotic Pressure, the Boundary of the Forest Block is to be clearly demarcated/ concrete pillars posted as per the guidelines of PCCF, Odisha.
- iii. In the situation when the Treatment Section line is not coinciding with the block or Compartment lines, it is to be demarcated by cleaning a strip of 1.50 meter width and stone cairns of size 90 cmX60 cm are to be erected at the corners at visible intervals along the line. While clearing 1.50 meter strip, all trees below 20 cm GBH



- are to be felled .Trees of larger girth occurring along coupe line at visible distances are to be given with two Black Paint rings at breast height.
- iv. When Treatment Section Line is co-terminus with block or compartment line then the latter will be maintained as per prevailing practice.
 - v. When the Treatment Section line is coterminous with compartment line and the same has not been demarcated earlier, then two white paint rings at breast height are to be given in the trees standing along the Compartment line.
 - vi. The sign boards exhibiting the serial number of the Treatment Section and extent of rehabilitation area, name of rehabilitation series and year of working etc. shall be posted at prominent places preferably at the points where Treatment Section line meets the road.

15.6.10.2 Preparation of Treatment Map & Treatment Plan.

(a) Treatment Map:

Once the annual rehabilitation areas has been identified, delineated and demarcated in the field then an officer not below the rank of Range Officer, shall inspect and examine such area and prepare a treatment map. The treatment map so prepared should exhibit measures to be taken for different patches within the annual rehabilitation area. The areas included under this Working Circle are in different stage of degradation and require different type of site-specific treatment. While preparing treatment map following five types of areas will be distinguished.

Type “A”

Area to be taken for Silvicultural Cleaning which includes singling out of coppice shoot, pruning, climber cutting removal of high stumps and other tending operations. Area for eradication of weeds is to be marked on the map. Area with congested advance growth, if required thinning is also to be marked.

Type “B”

Seedlings / Recruits of seed origin available in the area are to be specifically noted & its approximate number / species to be mentioned. An available Blank Area which needs to be planted up is to be marked. The suitable species are also to be mentioned in the Treatment Plan.



Type “C”

Plantations raised under different Schemes (AR Only) are also to be specifically marked on the Map. The growth pattern and required treatment to plantations like thinning etc to be specifically indicated.

Type “D”.

The area assigned to VSS is also to be marked on treatment map. It may be cross checked with the VSS assigned map / MoU with the VSS to check the veracity.

Type “E”.

There are stony out crop of varied extent of sizable area. This type of area is also to be marked / noted on the Treatment Plan.

(b) Treatment Plan:

The treatment Plan shall include

- I. Site identification i.e. Forest Block/ Compartment No. / Treatment series No
- II. Area and Treatment map.
- III. Site characteristics (terrain, slope, drainage, soil type and depth).
- IV. Vegetation and extent of regeneration.
- V. Extent of degradation.
- VI. Year of operations (including maintenance if any).
- VII. Major operation to be undertaken.
- VIII. Cost norms and calendar of operations.
- IX. Involvement of VSS and works that can be executed through VSS.
- X. In case of Plantation / Gap filling required, the species required to be planted are need to be mentioned.
- XI. In case of availability of Dead / fallen trees required to be removed during the operation, it will be marked and a marking list is to be prepared as per standard format.

The treatment Plan is to be prepared by the Range Officer, checked by the Asst. Conservator of Forests and to be approved by the DFO, Nayagarh Division for execution. The Treatment Plan may be drawn up within October – December of the previous year of assigned year. This will help in planning and arrangement of funds through budgetary provisions.



After receipt of the Treatment Plan, it is to be examined and execution plan to be decided by the Divisional Forest Officer well in advance.

(c) Execution of Rehabilitation Method.

After approval of the Treatment Map & Plan, the same is to be executed in the assigned year. The sequences of Operations are

- i) Fencing of the Area:
- ii) Removal of marked trees, if any.
- iii) Silvicultural Cleaning.
- iv) Silvicultural thinning,
- v) Eradication of weeds,
- vi) Treatment of bamboo clumps including Harvest / De-congestion)
- vii) Soil & Moisture Conservation.
- viii) Treatment of Natural seedlings available,
- ix) Restocking of Area by Planting (Artificial Regeneration) & Post-care operation.
- x) Subsidiary Silvicultural Operation for bamboo.
- xi) Control of Grazing,
- xii) Fire Protection Measures.

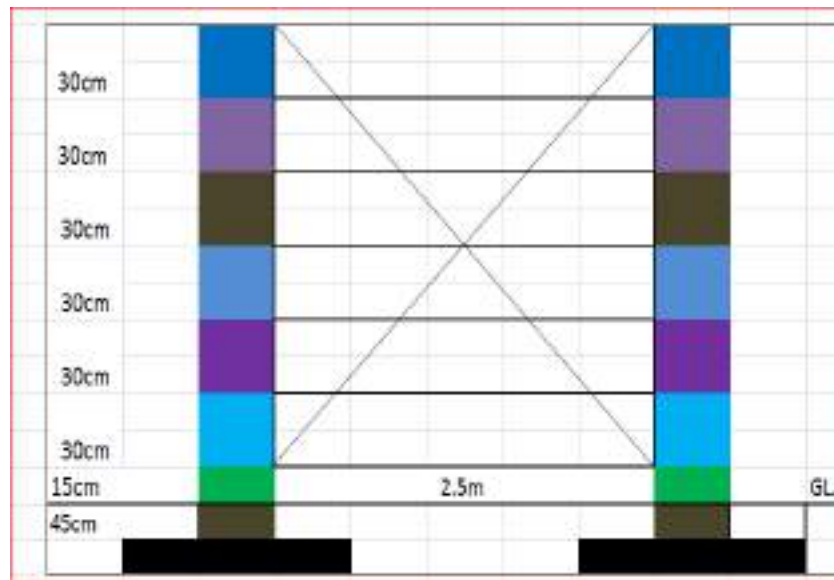
15.6.11 Description of Operations:

i) Fencing of the Area:

The area which are susceptible to encroachment and other biotic interferences are required to be fenced either with Vegetative fencing as per cost norm provided in Block Plantation or Barbed wire fencing if budgetary provisions support. In wildlife abundance areas, vegetative fencing is strongly recommended. To have a successful regeneration it is strongly required to fence the area with barbed wire.



Description of Barbed Wire Fencing:



It is suggested to put T shaped pillars at an interval of 2.5m. The length of such pillar is 2.40 m. (1.95 m above the ground & 0.45m below the ground.) Size: 15cmx15cm at bottom and 10cm x10cm at top. The Lower bar of inverted “T” is of 30cm including the width of the pillar. There will be 7 strands of two ply barbed wires and to be placed at a height of 15cm, 45cm, 75cm, 105cm, 135cm, 165cm and 195cm from the ground level. Two strands will be put diagonally (connecting 15cm point to 195 cm point & 195cm point to 15cm point of adjacent pillar).

ii) Silvicultural Cleaning.

The silvicultural cleaning is intended to achieve healthy growth of existing seedlings / saplings / coppice shoots of favoured species. The operation includes

- Cutting back of high stumps with preference to living stumps and having a good coppicing power.
- Cutting of climbers those are of annual nature and uprooting them wherever possible. The woody climbers those are interlocking the existing trees should not be cutback as it gives enforcement to trees during Cyclone / heavy wind.
- Singling out of multiple coppice shoots and retaining most promising ones.

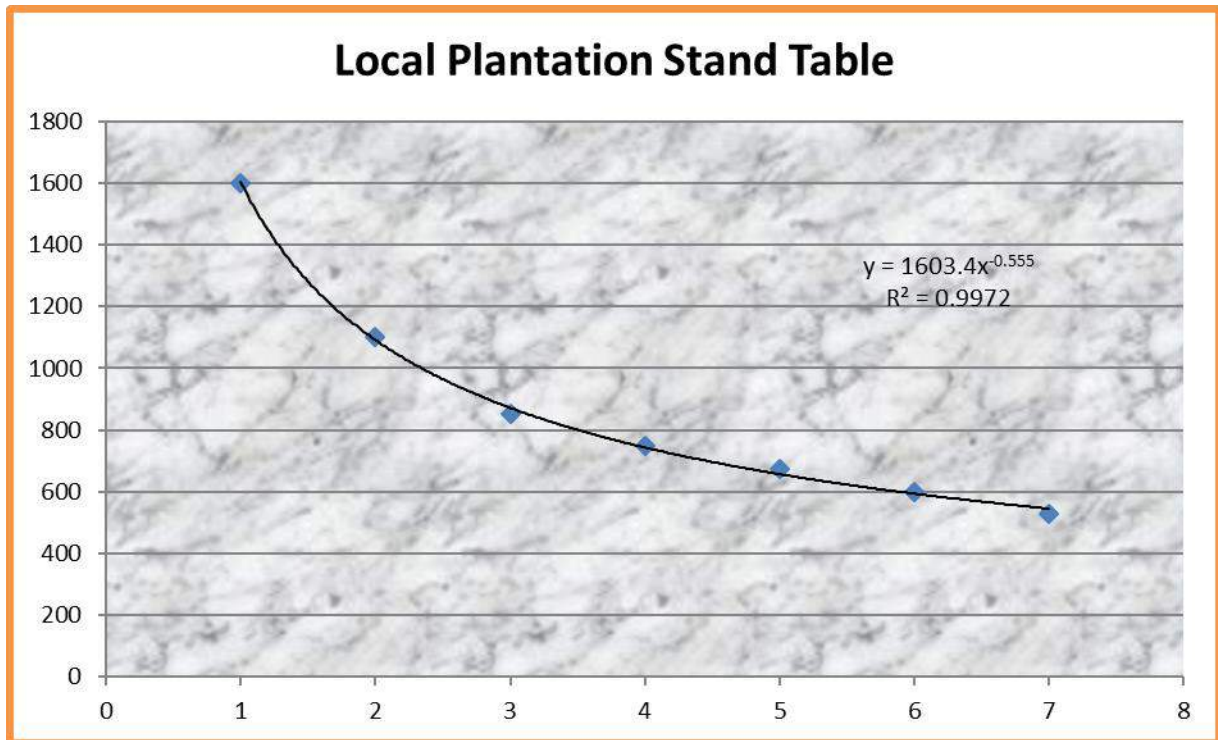


iii) Silvicultural thinning.

In cases of having congested advance growth at a pole stage, it is required to take up light thinning of **“C grade intensity”**. It is required to undertake removal of dead, moribund, diseased, suppressed, dominated and defective trees without creating a permanent gap in canopy. Some defective trees around five trees per hectare having cankers / holes should be retained for wildlife habitation. As the crop is mostly of coppice origin, heavy thinning is not preferred. The details of thinning procedure have been described under Para-14.6.10.4 which may be referred.

In case of Planted areas (AR Plantations / Teak Plantations) for which specific prescription not provided in this plan are to be thinned. The local stand table for miscellaneous plantations / Teak Plantations is required to be followed. From field observation, it is expected to have at least the number of stems per hectare as furnished below at Table No 15.9 in a miscellaneous plantation ideally. The equation / graph are given below. From the equation, the number of stems for any interim year can also be derived

Table No 15.9 Number of stems expected in different years from plantations.	
Year	Number of stems per ha (Approximately)
1st year	1600
5th Year	1100
10th year	850
15th year	750
20th year	675
25th year	600
30th year	530



iv) Eradication of weeds:

The present Blank area included in this Working Circle is heavily infested with Eupatorium, Lantana, Bana Tulasi and other thorny weeds. These weeds are hindering with the growth of natural seed origin seedlings and planted seedlings. Before taking up plantation in these areas its eradication is essential. The details of eradication process have been described in Part-I of this plan. Methods like repeated cutting at tender stage, uprooting of weeds by tractors and immediate covering the area with plantations / grass land creation may be followed. About 7% to 10% of the area assigned to this Working Circle is observed to be infested with weed. This indicates the quantum of task ahead.

v) Soil & Moisture Conservation.

The area included in this working circle is mostly hilly terrain to moderate slope. Percolation pits of 2mx 1mx1m with gentle side slopes, Contour bonding within 200meters from water body/ River bank, Treatment of nalla / Rills / gullies are prescribed. Maintaining thick leaf litters in humus form coupled with fire protection measures will also help in moisture conservation.

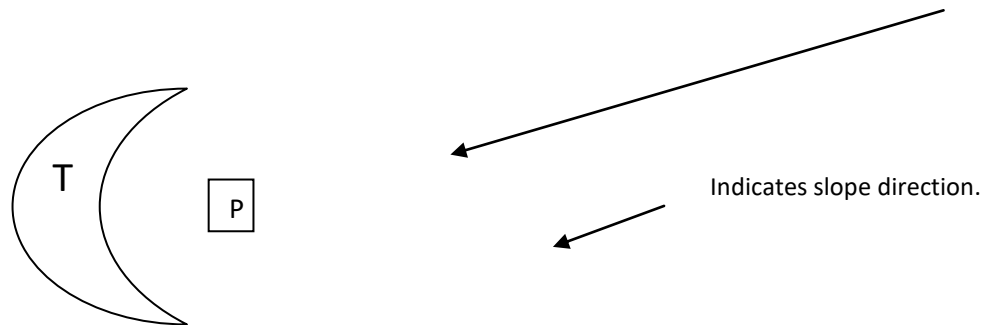


vi) Treatment of Natural seedlings available,

The natural seedlings available in the treatment area are to be given appropriate attention to ensure its establishment.

The following measures are prescribed.

- Deep Soil Working around the seedlings at a width of 0.50 m with application of fertilizer.
- Weeds to be removed / uprooted at a radius of 1 meter.
- In case of sloppy location Half Moon trench to be provided.



- T : Half Moon Trench
- P: Plant position.

vii) Restocking of Area by Planting (Artificial Regeneration) & Post-care operation.

Plantation of indigenous species matching with the local species is required to be planted following the cost norm of Plantations approved by Forest department. The species suggested are Pahadi sisoo (*Dalbergia latifolia*), Khaira (*Senegalia catechu* / *Acacia catechu*), Bela (*Aegle marmelos*), Phasi (*Anogeissus acuminata*), Dhaura (*Anogeissus latifolia*), Asan (*Terminalia tomentosa*), Arjun (*T. arjuna*), Bahada (*T. belerica*), Bandhan (*Ougeinia oojeinensis*), Kuruma (*Adina cardifolia*), Jamu (*Syzygium cumini*) etc. Government has issued instruction for not planting Teak in Sal and Natural Forests. Teak should not be planted in erosion prone areas, in Rehabilitation Area less than 10 ha or intermixed with other species.



viii) Control of Grazing.

The assigned area for a particular year is required to be closed to grazing at least for three years. During that period, VSS members, villagers may be allowed to collect grasses by cutting only. After three years controlled grazing may be allowed considering the quantum of grass growth in the protected area.

ix) Fire Protection Measures.

The area is to be protected against fire. Fire line is required to be maintained along the periphery and internal lines. Controlled burning of weeds / fallen leafs may be taken up under strict supervision of section forester.

x) Disposal of Forest Produce:

During Cleaning / thinning operation if any utilizable forest produce is obtained, it will be disposed up as per the guidelines of Forest Department. Delivery to OFDC Ltd is the favored practice. In case of VSS assigned area, it may be distributed to the VSS as per JFM resolution treating the produce as an interim harvest.

15.6.12 Subsidiary silvicultural operations (Cleaning & Thinning):

The process of thinning and Silvicultural cleaning has been described above.

15.6.13 Regeneration:

The area assigned to Rehabilitation Working Circle is found to be having moderate to poor regeneration. The basic objectives are to restock the area by

- Checking Degradation, Encourage High Forest System,
- Allow establishment of Saplings / regenerated seedlings within the time limit.
- Supplement the regeneration through planting.

15.6.13.1 Checking of Degradation:

The Forests assigned to this working Circle are subjected to illegal removal of selected species of higher girth class. Degradation may also be due to constant biotic interference, Heavy Grazing, Loss of Soil fertility, Soil erosion, reduced moisture regime and most important is Fire invasion and illegal removal of forest produce i.e. timber, poles and brush woods. Dedicated efforts are required to check the drivers of forest degradation.



15.6.13.2 Encourage High Forest System:

Most of the forest crops are observed to be of coppice origin than of seed origin. It should be our endeavour to create favourable ground situation to have seedlings / recruits more in number. The following suggestions are made to follow to have a better High Forest system to develop than artificially supplementing the regeneration.

- a) Identification of Mother trees in all forest blocks @5 trees per hectare irrespective of species. List of such trees may be prepared either prior to assigned year or in the assigned year. List of such mother trees may also be available in compartment history for the block.
- b) Most of the matured seeds fall to forest floor during winter and some species of low viability period before rains. Seeds those matured during winter / spring should be collected from mother trees only.
- c) The ground / soil may be manipulated by loosening and kept ready to receive seeds for germination.
- d) In pre-monsoon shower seeds to be dibbled / broadcasted as convenient and the area may be protected against trampling / grazing.
- e) After germination, if required organic fertilizer, FYM or Chemical fertilizer may be applied to have a better growth.
- f) This patch to be under constant supervision of Range Officers for three years. The location of such patch (Latitude / Longitude) may be recorded in the compartment history / Register or Journal for reference by succeeding officials.
- g) Naturally available seedlings to be treated as described under Para 14.6.11. (vi) above.

15.6.13.3 Establishment of Saplings / regenerated seedlings within the time limit:

It is mostly observed that villagers are removing the small saplings / poles for fencing and house hold use. Whatever regenerated / established saplings achieved are going in vain due to removal of poles etc in disguise of brush wood. Hence public awareness is required to be created for not removing any materials from forest in name of brush wood to have desired effect in a time limit.

15.6.13.4: Supplement the regeneration through planting.

Supplementing the regeneration by artificial method i.e. planting of seedlings is a favoured practice since long. The choice of seedlings in most cases mismatch with the local flora



available and seedlings selected for planting is not compatible with the soil status / succession stage of plant community. In practice choice of species is guided by “Ease to raise nursery attitude and seeds availability” than site requirement. These aspects may be addressed in the Treatment Plan prepared in advance. It will lead to a better forest at par with neutrality and keep bio diversity of the area unaffected.

15.6.14 Associated regulations and measures:

Besides the above prescriptions, the following associated regulations are prescribed to be followed. These are

- Grazing in forests required to be regulated as more damaged is caused to regeneration through trampling.
- Fire protection in the forest blocks especially on treated area should be strictly enforced.
- No lopping is allowed within 5 years of treatment.
- Boundary maintenance in a cycle of 3 years is to be ensured.
- VSS is to be strengthened and regular interaction with villagers / VSS members to be maintained.

15.6.14.1 Degraded Forest Area Suitable for Compensatory Afforestation:

Compensatory Afforestation is an important component for Diversion of Forest land for various projects. The Central Govt. Protects, PSU of Central Govt. Transmission Line projects used to provide Degraded Forest Land for Compensatory Afforestation Purpose. The forest area under administrative control of suitable for taking under Compensatory Afforestation purpose may be considered as nil.

15.6.14.2 Coupe Control Form.

The activities are to be closely monitored to have the desired result. A set of Coupe control form is prescribed below to be filled up and submitted to DFO by the Range officer at the end of the year.



Table No 15.10 Coupe Control Form (Form No-2)

Name of Treatment Series	Coupe No	Year of Assigned	Area in ha	Areas treated Under (in Ha)					Deviation
				Cleaning	Thinning	Planting	Seed sowing	SMC	



CHAPTER-16

PLANTATION WORKING CIRCLE (PLWC)

16.1 Name of working circle:

Nayagarh Forest Division is basically a Sal Dominated Forest Tract having a good crop Density. Earlier Most of the Forests are under “High Forest System” of management. There is limited scope of Artificial Regeneration through Planting. In previous working plans there was Teak Plantation Working Circle under which Teak Plantations have been raised. On different circumstances, plantations have been raised during last Plan Period also. These plantations are mostly Miscellaneous / Economic Plantations. These plantations are required to be managed under this plan.

During Social Forestry Project (SFP) Plantations have been raised and declared as Village Forest under Section 30 of the Odisha Forest Act, 1972. The Village Forest Committee looking after these plantations are in a dormant stage after abolished & amalgamation of Social Forestry Project Divisions. The boundaries of such forests have not been properly dealt with and it is important to bring all such plantations raised and declared as “**Village Forest**” to management fold. In Nayagarh Division **579.45** ha plantation have been **raised** in 63 patches.

There is Protected Forests declared u/s 33 of the Odisha Forest Act, 1972. These lands are mostly area selected for “Compensatory Afforestation” purpose against diversion of Forest Land under provisions of Forest (Conservation) Act, 1972. In Nayagarh Division 10 Protected Forest is available covering an area of **1535.24ha** and to be brought under management. There are encroachments in various Forest blocks of the division. It is expected to evict encroachment and covered the area under Plantation. These areas under encroachment are also included in this Working Circle in anticipation of eviction. In order to have a precise management practices for all plantations this “Plantation Working Circle” has been constituted. An area of **3683.4750** ha has been assigned to this Working Circle which constitutes about 3.42% of the forest area under management.



16.2 General constitution of working circle:

The area assigned to Plantation Working Circle is furnished at Table No 16.1 below.

Table No 16.1 Area assigned to Plantation Working Circle (Economic Plantation & Others) Nayagarh Division.

Sl No	Block	Compt.	Area for management	PLWC	JFM
	Reserved Forest				
	Daspalla Range				
1	Central R.F	Cl 2	586.8663	10.0	
	Central R.F	Cl 3	483.0487	20.0	
2	Pokharigochha R.F	Pg 2	593.7644	12.0	
	Daspalla Range Total		1663.6794	42.0000	
	Gania range				
3	Bankamunda R.F	Bm 1	602.6840	160.0	
4	Gania R.F		342.8016	180.0	
5	Matia R.F		643.6100	10.0	
6	Manibhadra R.F		527.9488	10.0	
	Gania Range Total		2117.0444	360.0000	
	Khandapara Range				
7	Bandara R.F		216.6869	50.0000	
8	Chadeibasa R.F		92.1845	20.0000	
9	Dengabahada R.F	Db 1	451.8845	15.0000	
	Dengabahada R.F	Db 2	320.3681	10.0000	
10	Guriabari R.F	Gb 1	353.1513	44.6200	
11	Sapua R.F	Sp 11	521.5492	10.0000	
12	Sikharpur R.F		1374.113	25.0000	
13	Patrabani Jamubani R.F		210.3444	0.7050	
	Khandapara Range (Total)		3540.2819	175.3250	
	Mahipur Range				
14	Hatimunda R.F	Hm 7	478.4259	35.0	
	Hatimunda R.F	Hm 11	461.162	10.0	
15	Ratadei R.F	Rd 1	314.8743	30.27	
16	Ragadimada R.F	Rm 4	427.5547	20.0	
	Ragadimada R.F	Rm 5	727.8733	20.0	
	Mahipur Range (Total)		2409.8902	115.27000	
	Nayagarh Range				
17	Hatimunda R.F	Hm 18	155.5424	80.0	
18	Sulia R.F	Sl 3	738.3452	90.0	
19	Patharakata R.F	Pk 1	135.0238	15.0	



	Nayagarh Range(Total)		1028.9114	185.0	
	Odogaon Range				
20	Bahadajhola R.F		404.5449	10	
21	Gayalsingh R.F	Gs 2	393.3122	30	
	Gayalsingh R.F	Gs 4	320.5606	20	
22	Gochha R.F	Gc 8 (a)	823.0117	1.19	
	Gochha R.F	Gc 18	396.764	20	
	Sulia R.F	Sl 4	915.8674	10	
	Sulia R.F	Sl 8	477.5446	100	
	Sulia R.F	Sl 9	668.6969	20	
	Odogaon Range (Total)		4400.3023	211.19	
	Panchirida Range				
	Gochha R.F	Gc 12	774.6294	50.0	
	Gochha R.F	Gc 14	779.5681	70.0	
23	Khatia Damasahi R.F		268.2350	45	
24	Patharaganda R.F	Pd 4	394.0514	10	
	Panchirida Range (Total)		2216.4839	175.0000	
	Division Total		17376.5935	1263.7850	
	of PRF				
	Gania Range				
25	Matia (PRF)		54.8403	20	
	Gania Range Total		54.8403	20	
	Odogaon Range				
26	Makarapalli (PRF)		1124.39	20	
27	Odogaon Range (Total)		1124.39	20	
28	Panchirida Range				
29	Sukarmala (PRF)		2525.8950	30.0	
	Panchirida Range Total		2525.8950	30.0000	
	Nayagarh Range				
30	Barabanka (PRF)		579.9189	30.0000	
	Nayagarh Range Total		579.9189	30.0000	
	Div. Total		4285.0442	100.0000	
	of DPF				
	Gania Range				
31	Arakhataila		253.3231	35	
	Gania Range Total		253.3231	35	
	Odogaon Range				
32	Kurala (DPF)		677.3515	40	
33	Nariamba		774.0594	30	



	Odogaon Range (Total)		1451.4109	70	
	Panchirida Range				
34	Binjhagiri (DPF)		250.2270	100.0	
	Panchirida Range (Total)		250.2270	100.0	
	Division Total		1954.9610	205.0000	
	Of PF				
	Gania Range				
35	Arakhataila PF		95.7500	95.75	95.75
36	Bindhyagiri PF		347.8700	347.87	347.87
	Gania Range (Total)		443.6200	443.62	443.62
	Khandapada Range				
37	Kasia		321.9800	321.98	321.98
	Khandapara Range (Total)		321.9800	321.98	321.98
	Mahipur Range				
38	Badadurupa		64.5800	64.58	64.58
39	Banuasahi		40.2100	40.21	40.21
40	Bamuri		57.4800	57.48	57.48
41	Turuturi		116.5800	116.58	116.58
	Mahipur Range (Total)		278.8500	278.85	278.85
	Odagaon Range				
42	KumbhiaPalli		62.2400	62.24	62.24
	Odagaon Range (Total)		62.2400	62.24	62.24
	Panchririda Range				
43	Bhandar		125.0400	125.04	125.04
44	Chhanchunia		303.5100	303.51	303.51
	Panchrida Range (Total)		428.5500	428.55	428.55
	Div Total		1535.2400	1535.2400	1535.2400
	Total(RF,PRF,DPF,PF)		25151.8387	3104.0250	1535.2400
45	VF (63 site)		579.4500	579.4500	579.450
	G.Total		25731.2887	3683.4750	2114.69



16.3 General characteristics of vegetation:

16.3.1 Economic Plantations:

The area planted up during last plan period either under miscellaneous plantation or economic plantation is examined. The Miscellaneous plantations were part of crown improvement steps and now merged with the natural vegetation. The Economic plantations containing mostly Teak have developed and established in many cases. These plantations need further silvicultural operation to have a better diameter growth. These plantations are included in this working circle. Year / Area and location are furnished at Table No 16.2 below.

Table No 16.2 B. Economic Plantation Considered for Management					
Sl No	Year	Range	Name of the Site	Compt. No	Ara in Ha
1	1985-86	Gania	Bankamunda RF	1	30.0
2	1985-86	Gania	Gania RF		20.0
3	1986-87	Mahipur	Hatimunda RF	18	80.0
4	1986-87	Panchirida	Gochha RF	14	50.0
5	1988-89	Daspalla	Central RF	2	10.0
6	1988-89	Nayagarh	Sulia RF	3	40.0
7	1988-89	Gania	Bankamunda RF	1	80.0
8	1989-90	Mahipur	Ratadei RF	1	20.0
9	1989-90	Mahipur	Sulia RF	4	10.0
10	1989-90	Panchirida	Gochha RF	14	20.0
11	1989-90	Nayagarh	Sulia RF	3	50.0
12	1989-90	Gania	Gania RF		40.0
13	1989-90	Gania	Matia PRF		20.0
14	1990-91	Odagaon	Gayalsingh RF	4	20.0
15	1990-91	Panchirida	Khatia-Damasahi	2	30.0
16	1990-91	Nayagarh	Hatimunda RF	11	10.0
17	1990-91	Khandapada	Sikharpur PRF		25.0
18	1990-91	Gania	Gania RF		10.0
					565.0
19	1991-92	Odagaon	Gayalsingh RF	2	10.0
20	1991-92	Panchirida	Khatia-Damasahi	3	15.0
21	1991-92	Khandapada	Dengabahada RF	1	15.0



22	1991-92	Gania	Gania RF		10.0
23	1992-93	Odagaon	Sulia RF	8	50.0
24	1992-93	Panchirida	Gochha RF	12	50.0
25	1994-95	Odagaon	Sulia RF	5	20.0
26	1994-95	Odagaon	Gayalsingh RF	2	20.0
27	1994-95	Panchirida	Patharaganda RF	4	10.0
28	1996-97	Nayagarh	Patharakata RF		15.0
29	1998-99	Odagaon	Bahadajhola RF		10.0
					225.0
30	2003-04	Nayagarh	Hatimunda RF	7	20.0
31	2003-04	Gania	Gania RF		20.0
32	2006-07	Gania	Gania RF		50.0
33	2007-08	Gania	Gania RF		30.0
34	2008-09	Gania	Bankamunda RF	1	50.0
35	2008-09	Khandapada	Bandra RF		50.0
36	2008-09	Odagaon	Sulia RF	8	50.0
					270.0
37	2011-12	Nayagarh	Hatimunda RF	7	15.0
38	2011-12	Daspalla	Pokharigochha RF	2	10.0
39	2011-12	Panchirida	Sukaramal PRF		15.0
40	2012-13	Khandapada	Cadhebasa RF		20.0
41	2012-13	Gania	Arakhataila DPF		25.0
42	2012-13	Odagaon	Kurala DPF		15.0
43	2012-13	Panchirida	Binjhagiri DPF		15.0
44	2012-13	Panchirida	Sukaramal PRF		15.0
45	2013-14	Khandapada	Sapua RF	11	10.0
46	2013-14	Odagaon	Kurala DPF near Panchupandav		25.0
47	2013-14	Panchirida	Binjhagiri DPF		25.0
48	2014-15	Mahipur	Ragadimada R.F	4	20.0
49	2014-15	Khandapada	Dengabahada R.F	2	10.0
50	2014-15	Gania	Manivadra Patch -I		10.0
51	2014-15	Gania	Arakhataila DPF		10.0
52	2014-15	Odagaon	Gochha R.F	18	20.0
53	2015-16	Mahipur	Ragadimada RF	5	20.0



54	2015-16	Daspalla	Tumandi, Central RF	3	20.0
55	2015-16	Gania	Matia RF Patch -II		10.0
56	2015-16	Panchirida	Binjhagiri DPF		30.0
57	2015-16	Odagaon	Makarapalli PRF		20.0
58	2016-17	Odagaon	Nariamba DPF		30.0
59	2016-17	Panchirida	Binjhagiri DPF		30.0
60	2016-17	Nayagarh	Barabanka PRF near Saradhapur		30.0
61	2016-17	Khandapada	Guriabari RF		10.0
					460.0
Total =					1520.0

The decadal growth pattern is as follows. (Table No 16.3)

Table No 16.3 Growth Status of Plantation.				
Period	Area plantaed in ha	Growth Status		Remark
		Survival	GBH in Cm	
1981-90	565	>40%	60-90cm	Plantations having very low survival 20% or severely damaged are not included for further management
1991-2000	225	>50%	45-75cm	
2001-10	270	>60%	30-45cm	
2011-2020	460	>75%	15-30cm	
Total	1520	>50%		

*Plantation details along with current status (plantation condition and survival percentage) are furnished in **Annexure-1**.*

16.3.2 Land under Encroachment:

Land under enchroachment and involved in legal process for eviction are included under the working circle. It is expected that encroachment will be evicted and will be brought under plantations. (Table 16.4)



Table No 16.4 Area under encroachment in Ha – Nayagarh Division.				
SI No	Range	Forest Block / Comp. No	Area under Enchroachment in Ha	No of Persons involved.
2	Mahipur	Ratadei RF	10.27	19
3	Daspalla	Pokharigochha RF C/2	2.00	2
5	Khandapada	Guriabari RF	34.62	52
6	Khandapada	Patrabani-Jamubani RF	0.705	135
8	Odagaon	Gochha RF C/8	1.19	0
Total			48.785	208

16.3.3 Plantations raised under Social Forestry Project & Declared under OFA,1972 as Village Forest.

During Social Forestry Project area were planted up as “Village Wood Lot” (VWL). Subsequently these plantations are declared under Village Forests u/s 30 of the Odisha Forest Act, 1972. These plantations are in small areas about 5ha in a patch and in a scattered manner. After amalgamation of SFP divisions with Teritorial Divisions, these forests are brought under management fold of Teritorial divisions. In Nayagarh division in 63 villages covering 579.45 ha have been declared as village forests. These Village Forests will be managed under this working circle.

16.3.4: Protected Forests:

Under Provisions of Forest (Conservation) Act,1980, Compensatory Afforestations have been raised in Govt. Non Forest Lands / Revenue Forest lands and subsequently declared under Section 34 of Odisha Forest act,1972 as “Protected Forests” The areas have been planted up and assigned to VSS committee and now proposed to be managed under provisions of this Working Circle.

16.3.5 Abstract of area assigned to Plantation Working Circle:

The following category of forest area Proposed to be managed under this working Circle.
Table No 16.5



Table No 16.5 Abstract of area under Plantation Working Circle.

Sl No	Category of Plantation/ Area	Area in ha	Remark
1	Plantations Raised in RF/ PRF / DPF under Economic Plantations	1520.0	There is no perceptible Blank area above 4 ha in a patch to treat under Block Plantation Progr am.
2	Enchroachment	48.785	
3	Village Wood Lot of SFP (Village Forest u/s 30 of OFA,1972)	579.45	
4	Protected Forests (Declaed U/s 34 of OFA,1972)	1535.24	
	Total	3683.475	

16.4 Planting series, sections and JFM areas:

The areas assigned to this working corcle and assigned to VSS have been indicated in Table No 16.1. Besides the above facts all Village Forests are assigned to Village Forest Committee under provisions of Odisha Village Forest rules, 1985 and subsequent amendment thereof. All protected forests are also assigned to nearby VSS for better protection & management. These VSS are guided by Joint Forest management Resolution 2011 and amendment thereof. Out of total 3683.475 ha assigned to this Working Circle, 2114.69 ha (57.41%) has been assigned to VSS/ VFC for management.

16.4.1 Thinning Series:

The economic Plantations indicated above (Area 1520 ha) planted up in previous decades are of long rotation. These plantations will be silviculturally thinned to put diameter growth. All plantations i.e. 1520 ha is included in one thinning series i.e. Nayagarh Thinning Series. Detail of blocks / plantations raised included in this Series is as Table Nom 16.6

Table No 16.6 Nayagarh Thinning Series

Name of Series	Range	Forest Block	Comp No	Area in ha	Year of Planting	Total Area of Series.
Nayagarh Thinning Series (NTS)	Gania	Bankamunda RF	1	30.0	1985-86	
	Gania	Gania RF		20.0	1985-86	
	Mahipur	Hatimunda RF	18	80.0	1986-87	
	Panchirida	Gochha RF	14	50.0	1986-87	
	Daspalla	Central RF	2	10.0	1988-89	



	Nayagarh	Sulia RF	3	40.0	1988-89	
	Gania	Bankamunda RF	1	80.0	1988-89	
	Mahipur	Ratadei RF	1	20.0	1989-90	
	Mahipur	Sulia RF	4	10.0	1989-90	
	Panchirida	Gochha RF	14	20.0	1989-90	
Nayagarh Thinning Series (NTS)	Nayagarh	Sulia RF	3	50.0	1989-90	
	Gania	Gania RF		40.0	1989-90	
	Gania	Matia PRF		20.0	1989-90	
	Odagaon	Gayalsingh RF	4	20.0	1990-91	
	Panchirida	Khatia-Damasahi	2	30.0	1990-91	
	Nayagarh	Hatimunda RF	11	10.0	1990-91	
	Khandapada	Sikharpur PRF		25.0	1990-91	
	Gania	Gania RF		10.0	1990-91	
	Odagaon	Gayalsingh RF	2	10.0	1991-92	
	Panchirida	Khatia-Damasahi	3	15.0	1991-92	
	Khandapada	Dengabahada RF	1	15.0	1991-92	
	Gania	Gania RF		10.0	1991-92	
	Odagaon	Sulia RF	8	50.0	1992-93	
	Panchirida	Gochha RF	12	50.0	1992-93	
Nayagarh Thinning Series (NTS)	Odagaon	Sulia RF	5	20.0	1994-95	
	Odagaon	Gayalsingh RF	2	20.0	1994-95	
	Panchirida	Patharaganda RF	4	10.0	1994-95	
	Nayagarh	Patharakata RF		15.0	1996-97	
	Odagaon	Bahadajhola RF		10.0	1998-99	
	Nayagarh	Hatimunda RF	7	20.0	2003-04	
	Gania	Gania RF		20.0	2003-04	
	Gania	Gania RF		50.0	2006-07	
	Gania	Gania RF		30.0	2007-08	
	Gania	Bankamunda RF	1	50.0	2008-09	
	Khandapada	Bandra RF		50.0	2008-09	
Nayagarh Thinning Series (NTS)	Odagaon	Sulia RF	8	50.0	2008-09	
	Nayagarh	Hatimunda RF	7	15.0	2011-12	
	Daspalla	Pokharigochha RF	2	10.0	2011-12	
	Panchirida	Sukaramal PRF		15.0	2011-12	
Nayagarh Thinning Series (NTS)	Khandapada	Cadhebas RF		20.0	2012-13	
	Gania	Arakhataila DPF		25.0	2012-13	
	Odagaon	Kurala DPF		15.0	2012-13	
	Panchirida	Binjhagiri DPF		15.0	2012-13	



	Panchirida	Sukaramal PRF		15.0	2012-13	
	Khandapada	Sapua RF	11	10.0	2013-14	
	Odagaon	Kurala DPF near Panchupandav		25.0	2013-14	
	Panchirida	Binjhagiri DPF		25.0	2013-14	
	Mahipur	Ragadimada R.F	4	20.0	2014-15	
	Khandapada	Dengabahada R.F	2	10.0	2014-15	
	Gania	Manivadra Patch -I		10.0	2014-15	
	Gania	Arakhataila DPF		10.0	2014-15	
	Odagaon	Gochha R.F	18	20.0	2014-15	
	Mahipur	Ragadimada RF	5	20.0	2015-16	
	Daspalla	Tumandi, Central RF	3	20.0	2015-16	
	Gania	Matia RF Patch -II		10.0	2015-16	
	Panchirida	Binjhagiri DPF		30.0	2015-16	
	Odagaon	Makarapalli PRF		20.0	2015-16	
	Odagaon	Nariamba DPF		30.0	2016-17	
	Panchirida	Binjhagiri DPF		30.0	2016-17	
	Nayagarh	Barabanka PRF near Saradhapur		30.0	2016-17	
	Khandapada	Guriabari RF		10.0	2016-17	
	Series Total			1520.00		1520.00

16.4.2 Encroachment Eviction Series.

All area under encroachment is included in this series namely Encroachment Eviction Series – Nayagarh. Total area assigned is 48.785 ha (Table No 16.7)

Table No 16.7 Encroachment Eviction Series- Nayagarh

Name of Series	Range	Forest Block	Comp No	Area in ha	Total Area of Series.
Encroachment Eviction Series- Nayagarh (EE SN)	Mahipur	Ratadei RF		10.27	48.785
	Daspalla	Pokharigochha RF	Pk-2	2.00	
	Khandapada	Guriabari RF		34.62	
	Khandapada	Patrabani- Jamubani RF		0.705	
	Odagaon	Gochha RF	Com. 8	1.19	
	Total			48.785	



16.4.3 Village Woodlot Series:

The erst while Village woodlot declared as village forests are included in this series. Three Series have been constituted as follows. [Table No 16.8(i), 16.8(ii) and 16.8(iii)]

16.4.3 (i) Daspalla- Gania- Mahipur VWL Series:

Table No 16.8 (i) Daspalla- Gania- Mahipur VWL Series					
Name of Series	Range	Forest Block	Comp No	Area in ha	Total Area of Series.
Daspalla- Gania- Mahipur VWL Series (DGMS)	Daspalla	Dalipadar		5.00	183.82
		Dalipadar		3.00	
		Nuasahi		8.97	
		Pankua		25.00	
		Poibadi		25.00	
		Subalaya		4.00	
	Gania	Adakata		10.05	
		Andharakot		7.00	
		Dhipisahi		5.00	
		Gholahandi		16.00	
		Karadamada		15.00	
		Karadapada		8.00	
		Krishnapalli		30.00	
		Nachipur		7.50	
		Tamarijhola		3.00	
		Tentuliapalli		5.00	
	Mahipur	Badaberena		1.00	
		Goudachancharapalli		1.30	
		Jagannath Prasad		4.00	
Total Series				183.82	183.82



16.4.3.(ii) Nayagarh- Khandpara- Odogaon VWL Series

Table No 16.8 (ii) Nayagarh- Khandpara- Odogaon VWL Series					
Name of Series	Range	Forest Block	Comp No	Area in ha	Total Area of Series.
Nayagarh- Khandpara- Odogaon VWL Series	Nayagarh	Kirialanji		10.17	240.10
		Kirialanji		20.28	
		Machhipada		4.00	
		Malisahi		5.62	
		Nadiali Ostapada		10.97	
		Radhanathpur		7.00	
		Kanakata		4.52	
		Balipatna		9.00	
Nayagarh- Khandpara- Odogaon VWL Series	Khandapara	Antapada		3.90	
		Badabanapur		8.00	
		Badakhajuria		4.99	
		Baraganda		14.86	
		Barkhola		4.50	
		Chaitanpur		2.40	
		Dhanchangada		8.00	
		Kanasingh		7.00	
		Khuntubandha		4.03	
		Patharachakada		13.94	
		Madhabereni		4.94	
		Natabarpur sasan		23.77	
		Nihalprasad		0.85	
		Sadhuapalli		5.16	
Nayagarh- Khandpara- Odogaon VWL Series	Odogaon	Dholamaska		20.00	
		Jambupatna		10.00	
		Jambupatna		10.00	
		Kumbhiapalli		5.00	
		Madanpur		10.2	
		Phasipalli		2.00	
		Sabideipur		5.00	
Series Total				240.10	240.10



16.4.3(iii) Panchirida VWL Series:

Table No 16.8 (iii) Panchirida VWL Series: (PAN)					
Name of Series	Range	Forest Block	Comp No	Area in ha	Total Area of Series.
Panchirida VWL Series (PAN)	Panchirida	Padiabhanga		6.99	155.53
		Baghera		8.01	
		Baradihi		8.12	
		Baradihi		10.00	
		Binjhagiri		10.08	
		Damasahi		8.09	
		Darapada		29.21	
		Godimada		0.62	
		Kalyanpur		10.07	
		Kusapanderi		10.06	
		Lunisahi		17.00	
		Manapur		2.28	
		Notarapalli		10.00	
		Talaribandh		5.00	
		Talaribandha Damasahi Mouza		20.00	
Series Total				155.53	155.53

16.4.4 Protected Forest Planting Series:

All Protected Forests are included in this planting series. Total area is **1535.24 ha**. The details list is furnished below.



Table No 16.9 Constitution of PF Series – nayagarh Division.					
Name of the Series	Range	Forest Block	Comp.	Area in ha	Total area in the Series
Gania-Khadpada PF Series	Gania	Arakhataila PF		95.7500	765.60
		Bindhyagiri PF		347.8700	
	Khandpada	Kasia		321.9800	
Odogaon-Mahipur PF Series	Odogaon	KumbhiaPalli		62.2400	341.09
	Mahipur	Badadurupa		64.5800	
		Banuasahi		40.2100	
		Bamuri		57.4800	
		Turuturi		116.5800	
Panchirida PF Series	Panchirida	Bhandar		125.0400	428.55
		Chhanchunia		303.5100	
	Total			1535.24	1535.24

16.4.5 Abstract of Planting Series:

Table No 16.10 Abstract of Planting Series			
Sl No	Name of Planting Series	Area allotted in Ha	Remark
1	Nayagarh Thinning Series (NTS)	1520.00	Economic Plantation
2	Encroachment Eviction Series-Nayagarh	48.785	Encroachment
3	Daspalla- Gania- Mahipur VWL Series (DGMS)	183.82	Village Woodlots of SEP
4	Nayagarh- Khandpara- Odogaon VWL Series	240.10	
5	Panchirida VWL Series(⊕PAN)	155.53	
6	Gania- Khadpada PF Series	765.60	All PF
7	Odogaon- Mahipur PF Series	341.09	
8	Panchirida PF Series	428.55	
	Total 8 Series	3683.475	

16.5 Blocks, compartments and JFM area:

The area assigned to JFM has been indicated in Table No 16.1. No Economic / teak plantation has been assigned to any VSS. The Village Forests are assigned to Village Forest Committee as per Odisha Village Forest Rules,1985 and amendment there after. All the



Protected Forests are assigned to VSS. Out of total 3683.475 ha assigned to this Working Circle, 2114.69 ha (57.41%) has been assigned to VSS/ VFC for management.

16.6 Special objectives of Management:

The objectives of management of this working circle are in tandem with the general objectives of this Plan. The Special Objectives are as follows.

- i) To manage Economic plantations / Teak Plantations of out going plans in a scattered manner and improve growth status through Silvicultural practices.
- ii) To bring the plantations raised here and there to a single management fold and scientifically manage to optimize the yield.
- iii) To encourage participatory management of erstwhile Social Forestry Plantations and activate the VFC.
- iv) To manage the plantations raised under Compensatory Afforestation Scheme and declared as Protected Forest thereafter.
- v) To Increase availability of Firewood and timbers in the locality and reduce pressure on forests for fuel wood and furniture wood.
- vi) To increase the crop density of forests and improve the Carbon Sequestration.
- vii) To develop a healthy usufruct benefit sharing mechanism in the villages and encourage natural resource management with a community approach method.
- viii) To take suitable measures to prevent soil erosion and conserve soil and moisture in barren hilly tracts.
- ix) To cover-up the encroached areas under tree cover after its eviction.

16.6.1 Analysis of the crop:

The crops included in this working circle are of three type's i.e.

- i. **Teak Plantations/ Economic Plantations** : The survivals of Teak plantations are very good and in the Range of survival vary depending on age of planations. It varies from 40% to 75% depenging upon age calss. The growth data has bee furnished at Table No 16.3 and reproduced below as Table No 16.11.



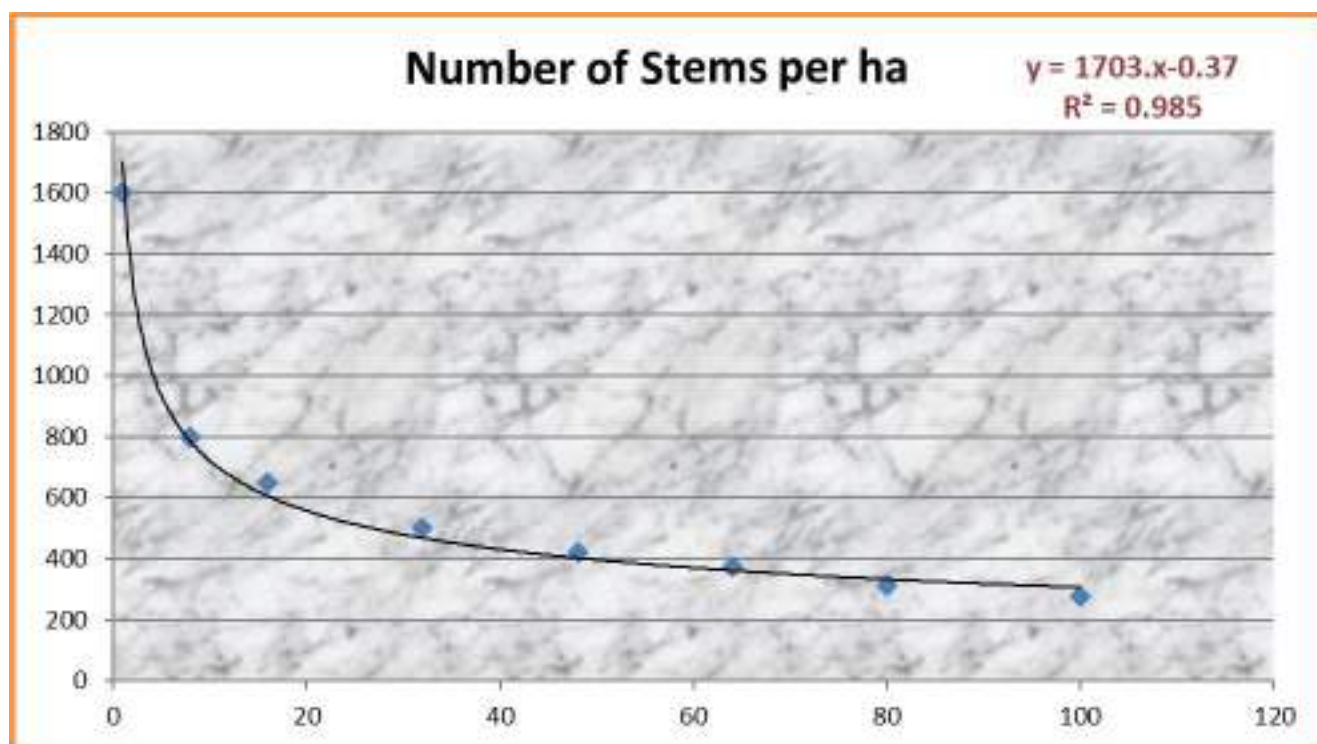
Table No 16.11 Growth Status of Plantation.

Period	Area plantaed in ha	Growth Status		Remark
		Survival	GBH in Cm	
1981-90	565	>40%	60-90cm	Plantations having very low survival 20% or severely damaged are not included for further management
1991-2000	225	>50%	45-75cm	
2001-10	270	>60%	30-45cm	
2011-2020	460	>75%	15-30cm	
Total	1520	>50%		

Some plantations are of 30- 40 age class and about 15-20% of the planted trees are of 60-90cm Girth Class and above. There are congested patches where thinning has not yet been taken up. The diameter growth is restricted due to more number of stems per hectare with comparison to age class. In teak Plantations the Stand table should follow this curve / equitation (derived from Field observation)

Table No 16.12 Stand Table for Teak – Nayagarh Division

Age	Number of Planted trees	Age	Number of Planted trees	Remark
01	1600	48	420	Rotation age = 100 year
08	800	64	375	
16	650	80	310	
32	500	100	275	



ii) Social Forestry Project Plantation:

Plantations Raised in Social Forestry project consists of Small Timber / Fuel Wood, Fodder/ Fruit Bearing and NTFP Species. Teak, Eucalyptus, Acacia, Sisoo, Bamboo, Mango, Karanja are the most preferred species planted. Trees are of varied growth pattern and planted to meet various objectives. At present Teak, Eucalyptus Acacia, Sisoo are available. The crop height varies from 10m to 15m in average. The Girth also varies from 75 cm to 120 cm depending upon species planted. The survival percentage is near 50%. These plantations were raised in between 1986 to 1995. Hence the trees available are 25 year to 35 year. Fuel wood species have been harvested by Villagers without following any silvicultural practices "**Jyoutha Parichalana Yojana**". No systematic survey for crop condition has been taken up. During field visit, the present situation has been studied at random.

iii) Encroachment:

Encroachment is a great problem in this tract. There are encroachments indicated in last outgoing plan. No land could be reclaimed / evicted. To give stress on eviction these lands have been included in this working circle. The land is mostly used for Agricultural purpose.



iv) Plantations under Compensatory Afforestation:

The non Forest Area provided against diversion of forest land under provisions of Forest (Conservation) Act,1980 are mutated infavour of Forest department and declared as Protected Forest under provisions of Odisha Forest Act,1972. The species planted are of timber species matched with natural vegetation. Some Natural growth has come up to fill up any void space developed in course of time. These forests are also to be managed for production of timber of long term rotation. (Preferable 100 yr)

16.6.2 Silvicultural system:

The Silvicultural System for woodlots of erstwhile Social Forestry Plantation / Protected Forest will be managed with Silvicultural System **“Uniform conversion silviculture system”**.The plantations with more than 60 yr age will be harvested, whereas those within 40-60 yr will be managed by silvicultural thinning. Gaps so created in the forest will be planted with Assisted Natural regeneration. Where ever promising coppice shoots will be developed / come up, the same will also be retained to reduce the replanting cost. The number of standards per hectare will depend upon biotic interference, possibility of dispersal of seeds for a high forest system, fruit bearing species, having timber value at a higher girth class. The minimum number of trees prescribed for retention is 25 number and maximum 75 numbers per hectare.

In case of Teak Plantation / Economic Plantation / Compensatory afforestation raised in outgoing Plans or under other schemes it will be Silviculturally tendered to have a good stand. Thinning along with Soil & Moisture conservation measures will be implemented to enhance growth rate with removal of **“Stems having Utility value”**.

The encroached areas after eviction will be planted up following standard planting procedure / norm.

16.6.3 Rotation period:

Rotation period for Sal, Teak and other species for the Division has been discussed at Para14.6.3.The Rotation Period of 120 years for Sal is prescribed and followed. In the outgoing Plan 120 years of Rotation age was prescribed for all species. During field visit and growth statistics available it is felt that except Teak for all other species, the Rotation Period of 120 years is accepted and followed. In case of teak which has been introduced in many Forest blocks in Block Plantation in blank areas under Economic Plantation, the growth is



very encouraging. Due to its high timber value it is in much demand in the locality, in the State and outside. Selective removal by illicit felling is a perceptible threat. Considering all its aspect i.e. Growth Status and Market demand, rotation age of 100 years for teak in this division is suggested. For other species usually planted is as follows.

Table No 16.13 Rotation Period for various species in Plantation			
Sl No	Species	Rotation Period in Year	Remark
1	Teak	100	In case of SFP Plantations Clear felling with Standard is being followed. Rotation period is applicable for Standards only.
2	Sisoo, Gambhari	100	
3	Eucalyptus, Other Soft wood, Acacia, Cassia etc	25	
4	Fruit bearing	As long as fruiting continues	
5	Timber species for Chariot construction	As per standard requirement of Temple management (Shree Jagannath Temple / Lingaraj Temple)	

16.6.4 Harvestable diameters:

Harvestable diameter is being prescribed in different plans for different species from time to time. The criteria considered for recommended “Harvestable Diameter / Girth” are as follows.

- The Annual Increment of the Species,
- Development of unsoundness due to climatic and biotic factors,
- Marketability & Demand,
- Site Quality and productivity of Soil

Considering the present scenario GBH for exploitation is prescribed as follows.

**Table No 16. 14 Harvestable Girth / Diameter of other planted species.**

Sl no	Species	Girth in cm	Diameter in cm	Remark
1	<i>Acacia auriculiformis</i> (Sunajhari)	90	29	
2	<i>Anacardium occidentale</i> (Cashew)			As long as Fruiting continues.
3	<i>Anogeissus acuminata</i> (Phashi)	180	48	
4	<i>Anthocephalus cadamba</i> (Kadamba)	150	48	
5	<i>Azadirachta indica</i> (Neem)	180	57	
6	<i>Bomax ceiba</i> (Simili)	150	48	
7	<i>Erythrina variegata</i> (Paladhua)	120	38	
8	<i>Gmelina arborea</i> (gambhari)	120	38	
9	<i>Melia azadirachta</i> (Mahaneema)	120	38	
10	Fruit bearing species			As long as Fruiting continues.
11	Teak, Sisoo	120	38	

This is applicable for all plantations under Economic Plantation head, Compensatory Afforestation program. And plantations raised under Jagamnnath Van Prakalpa which will be separately discussed under Car timber (Overlapping) Working Circle.

16.6.5 Reducing factors and reduced areas:

The yield from plantations will be small quantum and irregular. It will be regulated “by area only”. Hence no reduced factor is prescribed in this plan.

16.6.6 Felling cycle:

The area assigned to each Planting series will be covered within the plan period i.e. in 10 years. Hence a planting cycle / Treatment Cycle of ten years will be followed.

16.6.7 Division into Planting Section / Treatment Section:

For convenience in execution and distributed work load each Planting Series / Treatment Series is divided in to ten sections normally termed as **Coupe**. The Sections are constituted as in following table.



16.6.7.1 Nayagarh Thinning Series (NTS)

Table no 16.15 Sections of Nayagarh Thinning series							
Name of Series	Range	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe area (Total)
Nayagarh Thinning Series (NTS)	Gania	2021-22	NTS-I	Bankamunda RF	1	30.0	130.0
	Gania			Gania RF		20.0	
	Mahipur			Hatimunda RF	18	80.0	
	Panchirida	2022-23	NTS-II	Gochha RF	14	50.0	100.0
	Daspalla			Central RF	2	10.0	
	Nayagarh			Sulia RF	3	40.0	
	Gania	2023-24	NTS-III	Bankamunda RF	1	80.0	130.0
	Mahipur			Ratadei RF	1	20.0	
	Mahipur			Sulia RF	4	10.0	
	Panchirida			Gochha RF	14	20.0	
	Nayagarh	2024-25	NTS-IV	Sulia RF	3	50.0	160.0
	Gania			Gania RF		40.0	
	Gania			Matia PRF		20.0	
	Odagaon			Gayalsingh RF	4	20.0	
	Panchirida			Khatia-Damasahi	2	30.0	
	Nayagarh	2025-26	NTS-V	Hatimunda RF	11	10.0	145.0
	Khandapada			Sikharpur PRF		25.0	
	Gania			Gania RF		10.0	
	Odagaon			Gayalsingh RF	2	10.0	
	Panchirida			Khatia-Damasahi	3	15.0	
	Khandapada			Dengabahada RF	1	15.0	
	Gania			Gania RF		10.0	
	Odagaon			Sulia RF	8	50.0	
	Panchirida	2026-27	NTS-VI	Gochha RF	12	50.0	165.0
	Odagaon			Sulia RF	5	20.0	
	Odagaon			Gayalsingh RF	2	20.0	
	Panchirida			Patharaganda RF	4	10.0	
	Nayagarh			Patharakata RF		15.0	
	Odagaon			Bahadajhola RF		10.0	
	Nayagarh			Hatimunda RF	7	20.0	
	Gania			Gania RF		20.0	
Nayagarh Thinning Series (NTS)	Gania	2027-28	NTS-VII	Gania RF		50.0	180.0
	Gania			Gania RF		30.0	
	Gania			Bankamunda RF	1	50.0	
	Khandapada			Bandra RF		50.0	



	Odagaon	2028-29		Sulia RF	8	50.0	165.00
	Nayagarh			Hatimunda RF	7	15.0	
	Daspalla			Pokharigochha RF	2	10.0	
	Panchirida			Sukaramal PRF		15.0	
	Khandapada			Cadhebas RF		20.0	
	Gania			Arakhataila DPF		25.0	
	Odagaon			Kurala DPF		15.0	
	Panchirida		NTS-VIII	Binjhagiri DPF		15.0	
Nayagarh Thinning Series (NTS	Panchirida	2029-30		Sukaramal PRF		15.0	145.0
	Khandapada			Sapua RF	11	10.0	
	Odagaon			Kurala DPF near Panchupandav		25.0	
	Panchirida			Binjhagiri DPF		25.0	
	Mahipur			Ragadimada R.F	4	20.0	
	Khandapada			Dengabahada R.F	2	10.0	
	Gania			Manivadra Patch -I		10.0	
	Gania			Arakhataila DPF		10.0	
	Odagaon		NTS-IX	Gochha R.F	18	20.0	
Nayagarh Thinning Series (NTS	Mahipur	2030-31		Ragadimada RF	5	20.0	200.0
	Daspalla			Tumandi, Central RF	3	20.0	
	Gania			Matia RF Patch -II		10.0	
	Panchirida			Binjhagiri DPF		30.0	
	Odagaon			Makarapalli PRF		20.0	
	Odagaon			Nariamba DPF		30.0	
	Panchirida			Binjhagiri DPF		30.0	
	Nayagarh			Barabanka PRF near Saradhapur		30.0	
	Khandapada		NTS-X	Guriabari RF		10.0	
	Total					1520.0	1520.0

16.6.7.2 Encroachment Series:

In encroachment Series 48.785 ha has been included. It is not certain in which year, whivh area can be evicted. It is proposed to evict & plant about 5 ha of land from any block included in the series. During plan period it is expected to cover the entire encroached land under plantation. However a tentative Yearly Work Program is furnished below.



Table No 16.16 Sections of Encroachment Eviction Series- Nayagarh Division.

Name of Series	Range	Year of Working	Coupe No	Forest Block	Comp. No	Area in ha	Coupe area (Total)
Encroachment Eviction Series (EES)	Mahipur	2021-22	EES-I	Ratadei RF(P)		5.00	5.00
	Mahipur	2022-23	EES-II	Ratadei RF (B)		5.27	5.27
	Daspalla	2023-24		Pokharigochha RF	Pk-2	2.00	3.895
	Odagaon			Gochha RF	Com. 8	1.19	
	Khandapada			Patrabani-Jamubani RF		0.705	
	Khandapada	2024-25	EES-IV	Guriabari RF(P 1)		5.00	5.00
		2025-26	EES-V	Guriabari RF(P2)		5.00	5.00
		2026-27	EES-VI	Guriabari RF(P-3)		5.00	5.00
		2027-28	EES-VII	Guriabari RF(P-4)		5.00	5.00
		2028-29	EES-VIII	Guriabari RF(P-5)		5.00	5.00
		2029-30	EES-IX	Guriabari RF(P-6)		5.00	5.00
		2030-31	EES-X	Guriabari RF (B)		4.62	4.62
		Total				48.785	48.785

16.6.7.3 Village Woodlot Series:

(i) Daspalla- Gania- Mahipur VWL Series

Table No 16.17 Sections of Daspalla- Gania- Mahipur VWL Series

Name of Series	Range	Year of Working	Coupe No	Forest Block	Area in ha	Coupe area (Total)
Daspalla-Gania-Mahipur VWL Series	Daspalla	2021-22	DAS-I	Dalipadar	5.00	18.05
				Dalipadar	3.00	
				Adakata	10.05	
	Daspalla	2022-23	DAS-II	Nuasahi	8.97	19.97
	Gania			Andharakot	7.00	
	Mahipur			Jagannath Prasad	4.00	
	Daspalla	2023-24	DAS-III	Pankua (P)	15.0	15.0
	Daspalla	2024-25	DAS-IV	Pankua (B)	10.0	15.0
	Gania			Tentuliapalli	5.00	
	Gania	2025-26	DAS-V	Dhipisahi	5.00	18.80
				Nachipur	7.50	
	Mahipur			Badaberena	1.00	
				Goudachancharapalli	1.30	
	Daspalla			Subalaya	4.00	



	Daspalla	2026-27	DAS-VI	Poibadi (P)	15.00	15.0
	Daspalla	2027-28	DAS-VII	Poibadi(B)	10.00	18.00
	Gania			Karadapada	8.00	
	Gania	2028-29	DAS-VIII	Gholahandi	16.00	19.0
	Gania			Tamarijhola	3.00	
	Gania	2029-30	DAS-IX	Krishnapalli (P)	20.00	20.0
	Gania	2030-31	DAS-X	Krishnapalli (B)	10.00	25.00
	Gania			Karadamada	15.00	
	Total				183.82	183.82

(ii) Nayagarh- Khandpara- Odogaon VWL Series

Table No 16.18 Sections of Nayagarh- Khandpara- Odogaon VWL Series						
Name of Series	Range	Year of Working	Coupe No	Forest Block	Area in ha	Coupe area (Total)
Nayagarh-Khandpara-Odogaon VWL Series	Nayagarh	2021-22	NAY-I	Kirialanji (P)	10.17	27.07
	Khandapara			Antapada	3.90	
				Badabanapur	8.00	
	Odogaon	2022-23	NAY-II	Kumbhiapalli	5.00	24.78
	Nayagarh			Kirialanji (P)	10.28	
	Odogaon			Jambupatna	10.00	
Nayagarh-Khandpara-Odogaon VWL Series	Khandapara	2023-24	NAY-III	Barkhola	4.50	24.86
	Nayagarh			Kirialanji (B)	10.00	
	Khandapara	2024-25	NAY-IV	Baraganda	14.86	22.02
	Nayagarh			Machhipada	4.00	
	Khandapara			Malisahi	5.62	
	Odogaon			Chaitanpur	2.40	
Nayagarh-Khandpara-Odogaon VWL Series		2025-26	NAY-V	Dhanchangada	8.00	25.96
	Nayagarh			Phasipalli	2.00	
	Khandapada			Nadiali Ostapada	10.97	
	Odogaon	2026-27	NAY-VI	Badakhajuria	4.99	21.00
	Nayagarh			Jambupatna	10.00	
	Khandapada			Balipatna	9.00	
Nayagarh-Khandpara-		2027-28	NAY-VII	Kanasingh	7.00	26.39
	Nayagarh			Sabideipur	5.00	
	Khandapara			Radhanathpur	7.00	
				Khuntubandha	4.03	



Odogaon VWL Series	Odogaon			Sadhuapalli	5.16	
				Madanpur	10.2	
	Nayagarh	2028-29	NAY-VIII	Kanakata	4.52	19.31
	Khandapara			Patharachakada	13.94	
				Nihalprasad	0.85	
	Khandapara	2029-30	NAY-IX	Natabarpur sasan	23.77	23.77
	Khandapara	2030-31	NAY-X	Madhabereni	4.94	24.94
	Odogaon			Dholamaska	20.00	
	Total				240.10	240.10

iv) Panchirida VWL Series:

Table No 16.19 Sections of Panchirida VWL Series:						
Name of Series	Range	Year of Working	Coupe No	Forest Block	Area in ha	Coupe area (Total)
Panchirida VWL Series:	Panchirida	2021-22	PAN-I	Padiabhanga	6.99	15.00
				Baghera	8.01	
		2022-23	PAN-II	Baradihi	8.12	16.21
				Damasahi	8.09	
		2023-24	PAN-III	Baradihi	10.00	15.00
				Talaribandh	5.00	
		2024-25	PAN-IV	Binjhagiri	10.08	12.98
				Manapur	2.28	
				Godimada	0.62	
		2025-26	PAN-V	Darapada (P)	15.00	15.00
		2026-27	PAN-VI	Darapada (B)	14.21	14.21
		2027-28	PAN-VII	Lunisahi	17.00	17.00
		2028-29	PAN-VIII	Kalyanpur	10.07	20.13
				Kusapanderi	10.06	
		2029-30	PAN-IX	Notarapalli	10.00	15.00
				Talaribandha Damasahi Mouza (P)	5.00	
		2030-31	Pan-x	Talaribandha Damasahi Mouza (B)	15.00	15.00
	Series Total				155.53	155.53



16.6.7.4 Protected Forest Series:

(i) Gania- Khadpada PF Series

Table No 16.20 Sections of Gania- Khadpada PF Series						
Name of Series	Range	Year of Working	Coupe No	Forest Block	Area in ha	Coupe area (Total)
Gania- Khadpada PF Series	Gania	2021-22	GAN-I	Arakhataila PF	95.75	95.75
		2022-23	GAN-II	Bindhyagiri PF(p-1)	85.0	85.0
		2023-24	GAN-III	Bindhyagiri PF(P-2)	85.0	85.0
		2024-25	GAN-IV	Bindhyagiri PF (P-3)	85.0	85.0
		2025-26	GAN-V	Bindhyagiri PF(B)	92.87	92.87
	Khandapada	2026-27	GAN-VI	Kasia	65.0	65.0
		2027-28	GAN-VII	Kasia	65.0	65.0
		2028-29	GAN-VIII	Kasia	65.0	65.0
		2029-30	GAN-IX	Kasia	65.0	65.0
		2030-31	GAN-X	Kasia	61.98	61.98
Series Total					765.60	765.60

(ii) Odogaon- Mahipur PF Series

Table No 16.21 Sections of Odogaon- Mahipur PF Series						
Name of Series	Range	Year of Working	Coupe No	Forest Block	Area in ha	Coupe area (Total)
Odogaon- Mahipur PF Series	Odogaon	2021-22	ODO-I	KumbhiaPalli (P)	30.0	30.0
		2022-23	ODO-II	KumbhiaPalli (B)	32.24	32.24
	Mahipur	2023-24	ODO-III	Badadurupa (P)	32.0	32.0
		2024-25	ODO-IV	Badadurupa (B)	32.58	32.58
		2025-26	ODO-V	Banuasahi	40.21	40.21
		2026-27	ODO-VI	Bamuri	57.48	57.48
		2027-28	ODO-VII	Turuturi	30.0	30.0
		2028-29	ODO-VIII	Turuturi	30.0	30.0
		2029-30	ODO-IX	Turuturi	30.0	30.0
		2030-31	ODO-X	Turuturi	26.58	26.58
Series Total					341.09	341.09



(III) Panchirida PF Series

Table No 16.22 Sections of Panchirida PF Series						
Name of Series	Range	Year of Working	Coupe No	Forest Block	Area in ha	Coupe area (Total)
Panchirida PF Series	Panchirida	2021-22	PCR-I	Bhandar (P-1)	40.0	40.0
		2022-23	PCR-II	Bhandar(P-2)	40.0	40.0
		2023-24	PCR-III	Bhandar(B)	45.04	45.04
		2024-25	PCR-IV	Chhanchunia	45.0	45.0
		2025-26	PCR-V	Chhanchunia	45.0	45.0
		2026-27	PCR-VI	Chhanchunia	45.0	45.0
		2027-28	PCR-VII	Chhanchunia	45.0	45.0
		2028-29	PCR-VIII	Chhanchunia	45.0	45.0
		2029-30	PCR-IX	Chhanchunia	45.0	45.0
		2030-31	PCR-X	Chhanchunia	33.51	33.51
Series Total					428.55	428.55



16.6.7.5 Abstract of Sections (Annual Working Area Allotted)

Table No 16.23 Annual Working area assigned in Ha- Nayagarh Division)											
Series	Year										
	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	Total
NTS	130.00	100.00	130.00	160.00	145.00	165.00	180.00	165.00	145.00	200.00	1520.00
EES	5.00	5.27	3.90	5.00	5.00	5.00	5.00	5.00	5.00	4.62	48.785
DAS	18.05	19.97	15.00	15.00	18.80	15.00	18.00	19.00	20.00	25.00	183.82
NAY	27.07	24.78	24.86	22.02	25.96	21.00	26.39	19.31	23.77	24.94	240.10
PAN	15.00	16.21	15.00	12.98	15.00	14.21	17.00	20.13	15.00	15.00	155.53
GAN	95.75	85.00	85.00	85.00	92.87	65.00	65.00	65.00	65.00	61.98	765.60
ODO	30.00	32.24	32.00	32.58	40.21	57.48	30.00	30.00	30.00	26.58	341.09
PCR	40.00	40.00	45.04	45.00	45.00	45.00	45.00	45.00	45.00	33.51	428.55
Total	360.87	323.47	350.80	377.58	387.84	387.69	386.39	368.44	348.77	391.63	3683.475

16.6.8 Calculation of the yield:

The areas allotted to this working circle are planted up area, encroached land. The plantations are to be thinned out to put diameter growth. Plantations those are above 30 years are expected to yield poles / materials of utility and have a market. On an average the thinning grade is C to D. In NTS, Protected Forest series (GAN, ODO & PCR) series poles @ 20 numbers per hectare is predicted. In Village Woodlots Series (DAS, NAY & PAN) timber production is expected. Average yield is 8 cum of timber and 10 Tons/ ha of Firewood is predicted. In EES series no yield is expected. The yield is calculated basic on these predictions.



(Table No 16.24 Annual Yield Estimation- Nayagarh Division)

Series	Year										
	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	Total
NTS	130.00	100.00	130.00	160.00	145.00	165.00	180.00	165.00	145.00	200.00	1520.00
Yields @20 P /ha	2600	2000	2600	3200	2900	3300	3600	3300	2900	4000	30400
EES	5.00	5.27	3.90	5.00	5.00	5.00	5.00	5.00	5.00	4.62	48.785
No Yield	0	0	0	0	0	0	0	0	0	0	0
DAS	18.05	19.97	15.00	15.00	18.80	15.00	18.00	19.00	20.00	25.00	183.82
NAY	27.07	24.78	24.86	22.02	25.96	21.00	26.39	19.31	23.77	24.94	240.10
PAN	15.00	16.21	15.00	12.98	15.00	14.21	17.00	20.13	15.00	15.00	155.53
Sub Total	60.12	60.96	54.86	50	59.76	50.21	61.39	58.44	58.77	64.94	579.45
Timber @8cum/ha	480.96	487.68	438.88	400	478.08	401.68	491.12	467.52	470.16	519.52	4635.6
FW 10T/ha	601.2	609.6	548.6	500	597.6	502.1	613.9	584.4	587.7	649.4	5794.5
GAN	95.75	85.00	85.00	85.00	92.87	65.00	65.00	65.00	65.00	61.98	765.60
ODO	30.00	32.24	32.00	32.58	40.21	57.48	30.00	30.00	30.00	26.58	341.09
PCR	40.00	40.00	45.04	45.00	45.00	45.00	45.00	45.00	45.00	33.51	428.55
Sub Total	165.75	157.24	162.04	162.58	178.08	167.48	140	140	140	122.07	1535.24
Poles@20/ Ha	3315	3144.8	3240.8	3251.6	3561.6	3349.6	2800	2800	2800	2441.4	30704.8
Total	360.87	323.47	350.80	377.58	387.84	387.69	386.39	368.44	348.77	391.63	3683.475

Yield during plan period: i) Total Timber: 4635.6 Cum, ii) Firewood: 5794.5 T, iii) Pole: 61104

16.6.9 Table of felling/ treatment:

Table of annual felling / treatment is furnished at Table No 16.24. The corresponding details of forest blocks and extent of area has been described in the Para 16.6.7 above.

16.6.10 Method of executing the Felling / Planting & tending:

16.6.10.1 For Teak Plantations / Economic Plantations

- i) **Demarcation of Area:** The plantation area for treatment is required to be re demarcated in the assigned year of operation. Simple Coal tar ring on trees standing on boundary is suggested.
- ii) **Inspection & Report:** The plantation area is to be thoroughly inspected by the Section Forest and Forest Guard. After inspection required Silvicultural operation is to be suggested. Operations are cleaning in Sapling Stage (Plantation within 5 years of age). In case of plantations more than 5 years thinning can be suggested. Thinning regime for all teak plantations / Economic Plantations/ Compensatory Afforestation raised since 1983 onwards is on 8th Year, 16th Year, 32nd Year, 48th Year, 64th Year, 80th Year and final harvest on 100th Year. (Rotation period: 100 year)
- iii) **Thinning Grade to be suggested:** On 8th Year first thinning is suggested which is Mechanical thinning. Observing the Ground reality a modified Mechanical thinning is suggested. In this thinning Mechanical thinning will be carried out with a bend to retain promising stems. 2nd and 3rd thinning will be of C grade to D grade thinning i.e. light to moderate thinning. From 4th and onward, thinning consideration is of putting diameter growth, removal of utilizable trees / poles without lasting gap. Mostly Elite thinning principle is to be adopted. Trees attending exploitable Girth i.e. 120cm and above are to be removed and it will be of **Heavy to very heavy thinning**. Marking for thinning is strictly to be done by Range Officers and to be checked by Asst. Conservator of Forests.
- iv) **Retention of Natural Vegetation:** In some Plantations, Natural vegetation has come up. Sal, Asan and other prominent associates like Kendu, Bahada, Chara etc are coming up due to protection of the area. During Thinning these species are to be considered and retained as practicable.
- v) **Stems to be retained:** The number of stems that can be sustained by the land depends on its quality on Soil and moisture regime. The number of stems that is to be retained has been discussed at Para 16.6.1



16.6.10.2 For Social Forestry Plantation (VWL Series):

a) 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 operations may also be examined to reduce the cost of operation. After harvesting, the planting modality is also to be discussed at length.

b) Demarcation of Area:

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 personnel in presence of VFC Members. RCC pillars of 20cm x20cm 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. In the VF notification in many cases Plot no etc pertains to Sabik Settlement. The corresponding Hal (Major) Settlement records / maps required to be procured and record updated.

c) 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.



- All trees required for chariot constructions (Shree Jagannath Temple / Shree Lingaraj Temple)

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.	

d) Marking of trees for felling:

After selection of Standard trees, all remaining trees above 30cm GBH are marked for felling. However marking on sensitive areas, the following marking rules are to be followed.

- i) Trees near to perennial nala / river banks to a width of 40m measured from High Flood level are not to be marked.
- ii) Tree on which bird's nests is observed is to be retained.
- iii) Trees having cavity, suitable for nocturnal birds habitation up to five numbers per hectares is to be retained.
- iv) Trees on rocky surface / above 30° slope / high erosion prone area are not to be marked for felling.

Marking should be taken up by the section forester and to be checked by the Range Officer minimum up to 20% of marked trees. The marking list is to be prepared in quadruplicate in



standard format with a standard estimate of timber and fire wood production. Marking is to be done in February / March of previous year to year of working.

e) Delivery of Coupes for Harvesting:

The Coupe are to be delivered to OFDC Ltd for harvesting and marketing thereof. In case the VSS /VFC is willing to participate in harvesting operation, they may be engaged by OFDC Ltd for felling / logging & conversion operation. 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 / VFC may take up the harvesting operation as the yield expected will not be economical to OFDC Ltd. In that case, the removal of trees and sharing will be under supervision of Range Officer / Forest Department.

f) 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 provisions of Odisha Village Forest Rules, 1985 and amended there after is also to be followed. 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.

g) 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**.

h) Surrender of Coupe Area:

After harvesting the marked trees and removal thereof, the Coupe area shall be surrendered by OFDC Ltd as soon as possible so as to take subsidiary silvicultural operation / planting activities on the same area. In case of harvesting by VFC, preliminary operation for planting may be taken up simultaneously.



16.6.11(a) 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.

16.6.11(b) 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.

16.6.12 Regeneration:

The assigned area is to be restocked through Artificial Regeneration i.e. by planting of seedlings with adequate Soil & Moisture Conservation measures. In ANR with gap planting design, the Plantation will be taken up in available gap area.

16.6.12.1 Survey, demarcation, site preparation, alignment & stacking:

The assigned area has been well demarcated and pillars posted during coupe marking and described under **Para 16.6.10.1(b)**. In case of Block plantation @1600 trees per hectare spacing of 2.5mx2.5m is to be adopted. The approved cost norm is to be followed.

After recording the GPS and checking the records of each planting site the DFO shall certify that plantation is not taken up in the existing old plantation sites.

16.6.12.2 Pitting:

The areas under consideration are mostly of gravelly /alluvial soil. As per instructions all seedlings of 18month old is required to be planted. A pit size of 45cmx45cmx45cm is recommended. Though pitting is generally carried out during January- March, there is possibility of refilling of pits during pre-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.



16.6.12.3 Choice of Species & Nursery:

It is recommended to plant species matching to the vegetation of the forest. Government has also suggested not to plant Acacia, Eucalyptus, Sana Chakunda, Teak in natural forests. As this area is under VF, the choice of species depends upon VFC Resolution and local requirements. Some timber species required for chariot construction is to be planted (Atleast upto 15%) of the planted seedlings. The other species recommended are

- i) *Azadirachta indica*
- ii) *Anogeissus latifolia* (Dhaura),
- iii) *Bahunia purpuria* (Kanchan),
- iv) *Bahunia Vahilii* (Siali),
- v) *Bombax ceiba* (Simili),
- vi) *Dalbergia Sisoo* (Bali Sisoo),
- vii) *Dalbergia latifolia* (Pahadi Sisoo),
- viii) *Embllica officinalis* (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 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 125cm in case of 18 month 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.

16.6.12.4 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 following 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 provisions. 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.

16.6.12.5 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.

16.6.13 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.

16.6.13.1 Grazing:

The area planted is to be closed to Grazing for at least for 3 years. The VFC / VSS may be allowed to cut and take grasses from plantations to encourage stall feeding.



16.6.13.2 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.

16.6.13.3 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 16.25 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.

16.7 Interim Revision:

These prescription may be reviewed after 5 years jointly by the RCCF, Bhubaneswar circle and the Chief Conservator of Forests, Working Plans and the deviation if any suggested shall be subjected to the sanction of the competent authority.





CHAPTER- 17

PROTECTION WORKING CIRCLE (PR.WC)

17.1 Name of working circle:

The Division is coming within Lower catchment area of Mahanadi River. Forests close to Mahanadi need to be protected to a highest degree to check soil erosion in the forest and protect the life of Reservoir by checking siltation.

The Baisipali Wildlife sanctuary and Mahanadi Gorge Sanctuary combined declared as Tiger Reserve is adjacent to this division. It is also coming under Mananadi Elephant Reserve. Central Reserved Forest – Buguda Elephant corridor is within this division. Elephant movement is experienced in these Forests. The elephant corridor as well as the forests in the movement zone needs adequate protection with undisturbed vegetation.

Ratnaganda waterfall is also originating forests of Daspalla. This block is also needs protection. No silvicultural operation is also desirable. It is proposed to constitute a Protection Working circle with “**No Activity Zone**” except **Soil & Moisture Conservation** activities, if so warranted in passage of time. The total area assigned to this Working Circle is **3278.00 Ha** which is about 3.04% of the forest area under Management.

17.2 General constitution of working circle:

The forest blocks desired to be protected and included in this working Circle is at table No 17.1 below.

Table No 17.1 Area assigned to Protection Working Circle- Nayagarh Division				
Sl No	Block	Compt.	Area for management	Area assigned to Protection Working Circle
	Reserved Forest			
	Daspalla Range			
1	Central R.F	CI 4	1090.6640	76.0
	Central R.F	CI 5	551.6211	48.0
	Central R.F	CI 7	448.8703	32.0
	Central R.F	CI 8	553.2473	72.0
	Central R.F	CI 10	925.3559	86.0
	Central R.F	CI 11	1034.248	66.0
	Central R.F	CI 12	651.5344	64.0
	Central R.F	CI 13	957.5446	110.0



2	Chadiapalli R.F	Cp 4	510.5561	102.0
3	Poibari R.F		1619.844	160.0
4	Pokharigochha R.F	Pg 1	732.1588	54.0
	Pokharigochha R.F	Pg 2	624.0144	124.0
	Pokharigochha R.F	Pg 4	746.8277	150.0
	Pokharigochha R.F	Pg 5	533.7106	22.0
	Pokharigochha R.F	Pg 6	252.9628	50.0
	Pokharigochha R.F	Pg 7	460.0544	38.0
	Daspalla Range Total		11693.2144	1254.0
5	Mahipur Range			
6	Palva R.F	Pb 1	461.6117	36.0
	Palva R.F	Pb 2	337.6271	24.0
	Palva R.F	Pb 3	293.4185	26.0
	Palva R.F	Pb 4	429.987	26.0
	Palva R.F	Pb 5	440.3508	46.0
	Palva R.F	Pb 7	394.3466	100.0
	Sulia R.F	Sl 2	502.3064	100.0
7	Ragadimada R.F	Rm 4	427.5547	86.0
	Ragadimada R.F	Rm 5	727.8733	42.0
	Ragadimada R.F	Rm 8	267.8752	66.0
	Mahipur Range (Total)		4282.9513	552.0
	Odogeon Range			
8	Gochha R.F	Gc 1	452.5743	90.0
	Gochha R.F	Gc 2	413.7592	82.0
	Gochha R.F	Gc 3	218.7219	44.0
	Gochha R.F	Gc 6	433.0097	86.0
	Gochha R.F	Gc 7	877.278	154.0
	Gochha R.F	Gc 8 (a)	823.0117	150.0
	Gochha R.F	Gc 18	396.764	80.0
	Odogeon Range (Total)		3615.1188	686.0
	Panchirida Range			
	Gochha R.F	Gc 9	956.5656	100.0
	Gochha R.F	Gc 10	842.4302	88.0
	Gochha R.F	Gc 11	740.4688	80.0
	Gochha R.F	Gc 14	779.5681	74.0
	Gochha R.F	Gc 15	654.5882	130.0
9	Patharaganda R.F	Pd 2	273.4276	54.0

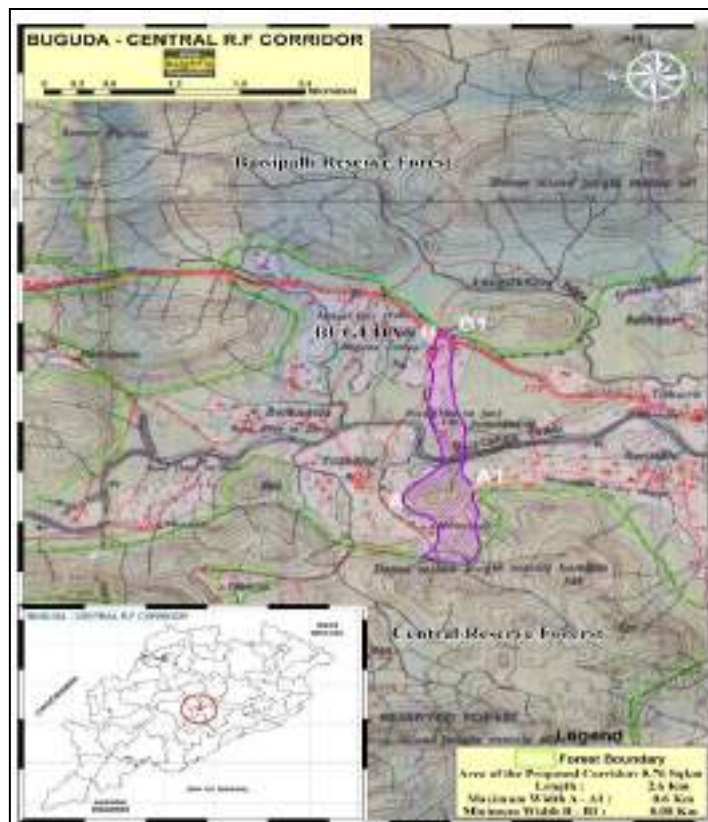


10	Sulia R.F	SI 7	885.2014	140.0
Panchirida Range (Total)			5132.2499	666.0
	Gania Range			
11	Baisipalli Ext-IV		609.1446	120.0
	Gania Range Total		1200.7796	120.0
	Total of the WC		25924.3140	3278.00

17.3 General characteristics of vegetation:

The vegetation is dense Sal Forests to Mixed Forests. Most of the Forest blocks assigned to this Working Circle were part of the Selection Working Circle in previous Plan. The Elephant Corridor “**Buguda- Central RF**” identified is fully coming within this proposed assigned area.

This corridor connects Baisipali WLS with North Ghumusar Forest Division through Central Reserve Forest of Nayagarh Forest Division. The corridor comprises of teak plantation, revenue lands, private lands, river, National Highway-57, college and human settlements. Existence of Buguda Colony, college and highway passing through the corridor are threats to the elephant movement through the corridor. Soil erosion further leads to fragmentation of the corridor.





The Forests included in this Working Circle are mostly coming within Elephant Corridors connecting Baisipalli WLS to Ghumsur North Division. A vast tract of forests are involved.

17.4 Treatment series / sections and JFM areas:

For better management & protection of these forests, forests coming within a range jurisdiction is considered as a Treatment Series. These are as follows.

Table No 17.2 Constitution of Protection Series- Nayagarh Division					
Sl No	Name of Series	Forest Block	Comp. No	Area in ha	Total area of the Series
1	Daspalla Protection Series (DPS)	Central R.F	Cl 4	76.0	1254.00
		Central R.F	Cl 5	48.0	
		Central R.F	Cl 7	32.0	
		Central R.F	Cl 8	72.0	
		Central R.F	Cl 10	86.0	
		Central R.F	Cl 11	66.0	
		Central R.F	Cl 12	64.0	
		Central R.F	Cl 13	110.0	
		Chadiapalli R.F	Cp 4	102.0	
		Poibari R.F		160.0	
		Pokharigochha R.F	Pg 1	54.0	
		Pokharigochha R.F	Pg 2	124.0	
		Pokharigochha R.F	Pg 4	150.0	
		Pokharigochha R.F	Pg 5	22.0	
		Pokharigochha R.F	Pg 6	50.0	
		Pokharigochha R.F	Pg 7	38.0	
2	Mahipur Protection Series (MPS)	Palva R.F	Pb 1	36.0	552.00
		Palva R.F	Pb 2	24.0	
		Palva R.F	Pb 3	26.0	
		Palva R.F	Pb 4	26.0	
		Palva R.F	Pb 5	46.0	
		Palva R.F	Pb 7	100.0	
		Sulia R.F	Sl 2	100.0	
		Ragadimada R.F	Rm 4	86.0	
		Ragadimada R.F	Rm 5	42.0	



		Ragadimada R.F	Rm 8	66.0	
3	Odogaon Protection Series (OPS)	Gochha R.F	Gc 1	90.0	
		Gochha R.F	Gc 2	82.0	
		Gochha R.F	Gc 3	44.0	
		Gochha R.F	Gc 6	86.0	
		Gochha R.F	Gc 7	154.0	
		Gochha R.F	Gc 8 (a)	150.0	
		Gochha R.F	Gc 18	80.0	686.00
4	Gania Protection Series (GPS)	Baisipalli Ext-IV		120.00	120.00
5	Panchirida Protection Series (PPS)	Gochha R.F	Gc 9	100.0	666.00
		Gochha R.F	Gc 10	88.0	
		Gochha R.F	Gc 11	80.0	
		Gochha R.F	Gc 14	74.0	
		Gochha R.F	Gc 15	130.0	
		Patharaganda R.F	Pd 2	54.0	
		Sulia R.F	Sl 7	140.0	
	Total			3278.0	3278.0

17.4.1 Abstract of Protection Series Constituted:

Table No 17.3 Abstract of Protection Series Constituted		
Sl No	Name of Protection Series	Area assigned in ha
1	Daspalla Protection Series (DPS)	1254.00
2	Mahipur Protection Series (MPS)	552.00
3	Odogaon Protection Series (OPS)	686.00
4	Gania Protection Series (GPS)	120.00
5	Panchirida Protection Series (PPS)	666.00
	Total	3278.0

17.5 Blocks, compartments and JFM area:

The blocks / compartments assigned to this Working Circle have been furnished at Table no 17.1 above. No forest block / area assigned to this working circle has been assigned to any VSS for protection & management.



17.6 Special objectives of Management:

The special objectives of Management of this Working Circle are within broader objectives of this working plan. The objectives are outlines as follows.

- i. To provide a continuous undisturbed habitat for elephants & ensure safe movement of mega animals.
- ii. To nalla banks / Spring origin are to be well covered with vegetation of all classes (Trees/ Herbs/ Shrubs/ Grasses) to provide a "Food Corridor" for animals.
- iii. The bamboo forests coming within the allotted area to be well maintained.
- iv. Soil Erosion of any form is to be completely reduced / checked.
- v. Full protection to vegetation against illicit felling, Fire.
- vi. Ensure regeneration of palatable food / grass stock all along the protected area.
- vii. No tree felling in any forest for any purpose within this area will be taken up.

17.6.1 Analysis of the crop:

The proposed area in this working circle comes within Mahanadi Elephant Reserve. The vegetation has been studied in details by the Asian Nature Conservation Foundation, Bangalore. According to their finding the vegetations concentration is well described below. (Table No 17.4)

17.6.2 Vegetation of Mahanadi Elephant Reserve:

There were 32 sample plots laid in Mahanadi Reserve of which 24 sample plots were classified as dry deciduous forest plots and 8 sample plots as moist deciduous forest. A total of 1479 individuals belonging to 71 species $\geq 20\text{cm BGH}(6.3\text{cm dbh})$ were recorded. There were 36 unique angiosperm families of trees in this reserve. Most dominant species was *Tectona grandis* (15.61%) followed by *Shorea robusta* (9.46%) and *Terminalia alata* (9.33%). Top ten species accounts for 67.4% of the cumulative abundance. At the community level, *Shorea robusta* had highest IVI value of 32.36 followed by *Tectona grandis* (30.97) and *Terminalia alata* (21.50). Table--- summarizes the dominance of top ten species

Table no17.4 Dominant species at Mahanadi Elephant Reserve (Data from field sampling)				
Species	Abundance	Relative abundance (%)	Cumulative abundance(%)	Importance value index (IVI)
<i>Tectona grandis</i>	231	15.61	15.61866	30.97
<i>Shorea robusta</i>	140	9.46	25.08452	32.36
<i>Terminalia alata</i>	138	9.33	34.41515	21.50



Cleistanthus collinus	106	7.16	41.58215	10.52
Anogeissus latifolia	89	6.01	47.59973	11.52
Pterospermum xylocarpum	85	5.74	53.34686	9.35
Haldina cordifolia	82	5.54	58.89114	7.48
Diospyros Montana	46	3.11	62.00135	5.38
Bridelia retusa	42	2.83	64.84111	6.04
Lagerstroemia parviflora	38	2.56	67.41041	4.41

Dry deciduous forests of Mahanadi ER had 1049 individuals belonging to 58 species from 24 sample plots. There were 32 unique angiosperm families recorded. Most dominant species was *Tectona grandis* (216 individuals , 20.5% of total abundance) followed by *Shorea robusta* (109 individuals , 10.5% fo total abundance) and *Terminalia alata* (91 individuals , 8.6% of total abundance). There were nine species with one individual each. They include species such as *Dillenia pentagyna* , *Polyalthia cerasoides* and *Holoptelea integrifolia*. Dominance of the top ten species is summarized in the table below. *Tectona grandis* had the highest IVI value (37.13) followed by *Shorea robusta* (36.08) and *Terminalia alata* (19.47)

**Table no 17.5 Dominant species in dry deciduous forests of Elephant Reserve
(Data from field sampling)**

Species	Abundance	Relative abundance (%)	Cumulative abundance(%)	Importance value index (IVI)
<i>Tectona grandis</i>	216	20.59	20.59	37.13
<i>Shorea robusta</i>	109	10.39	30.98	36.08
<i>Terminalia alata</i>	91	8.67	39.65	19.47
<i>Anogeissus latifolia</i>	78	7.44	47.09	14.03
<i>Pterospermum xylocarpum</i>	58	5.53	52.62	8.83
<i>Cleistanthus collinus</i>	56	5.34	57.95	8.09
<i>Bridelia retusa</i>	41	3.91	61.86	8.00
<i>Haldina cordifolia</i>	37	3.53	65.39	4.52
<i>Diospyros Montana</i>	36	3.43	68.82	5.86
<i>Lagerstroemia parviflora</i>	35	3.34	72.10	5.41



Moist deciduous forests of Mahanadi ER had 430 individuals belonging to 54 species of angiosperms. There were 30 different families of angiosperms represented in the species list. Most abundant species was *Cleistanthus collinianus* (50 individuals, 11.62% of abundance) followed by *Terminalia alata* (47 individuals, 10.93% of abundance) and *Haldina cordifolia* (45 individuals, 10.46% of abundance). Pattern of abundance of top ten species with their IVI is presented in table below. There were 13 species with one individual each. They included species such as *Bridelia retusa*, *Mitragyna parviflora* and *Strychnos potatorum*. Except for *Mitragyna parviflora* the other two species are typical of dry forest formation. *Terminalia allota* (28.03) had the maximum IVI followed by *Shorea robusta* (20.19) and *Cleistanthus collinianus* (17.10).

Table No 17.6 Dominant species in moist deciduous forests of Elephant Reserve
(Data from field sampling)

Species	Abundance	Relative abundance (%)	Cumulative abundance(%)	Importance value index (IVI)
<i>Cleistanthus collinus</i>	50	11.63	11.63	17.11
<i>Terminalia alata</i>	47	10.93	22.56	28.04
<i>Haldina cordifolia</i>	45	10.47	33.02	15.79
<i>Shorea robusta</i>	31	7.21	40.23	20.20
<i>Pterospermum xylocarpum</i>	27	6.28	46.51	10.99
<i>Tectona grandis</i>	15	3.49	50.00	14.63
<i>Madhuca indica</i>	14	3.26	53.26	5.51
<i>Anogeissus latifolia</i>	11	2.56	55.81	4.17
<i>Antidesma acidum</i>	11	2.56	58.37	3.70
<i>Dalbergia paniculata</i>	11	2.56	60.93	7.28



17.6.3 Silvicultural system:

The area assigned to this working circle will be under “360⁰ Protection” from all angles. Hence no Silvicultural System is prescribed for assigned blocks / areas. In case of exigency required “Soil & Moisture Conservations” of limited scale is recommended. It is better to allow nature to nurse the crop with an ideal concept **“Least management is the best management”**

17.6.4 Rotation period:

There is no prescription for removal of trees from these forest under this Working Circle. Hence no rotation period is prescribed.

17.6.5 Harvestable diameters:

As no felling is involved there is no **“Harvestable Diameter”** recommendation in this working circle.

17.6.6 Reducing factors and reduced areas:

No yield is predicted under this working circle. Hence there is no **Reducing factors and reduced areas consideration:**

17.6.7 Treatment Cycle:

The treatment cycle is 10 years i.e. coterminous with the Plan Period.

17.6.8 Division into Treatment Section:

For management purpose Five Protection Series have been constituted. As there is no working prescription than “General Principles & Guidelines” no sections have been constituted sub dividing the series stated above (Para- 17.4)

17.6.9 Calculation of the yield:

As there is no felling involved, there is no yield prediction.

17.6.10 Table of Treatment.

The Protection Series is considered as one unit within the Range jurisdiction. Any activities will be warranted in course of time will be implemented in a local approach. Hence any interventions / activities required to be taken up is **“As is Where is and where ever felt necessary basis”** No treatment table is suggested.



17.6.11 Method of execution:

The assigned area to this working circle will be strictly protected against fire, illicit felling, poaching, encroachment etc. No activities are generally prescribed. In case of any extraordinary situation, activities may be taken up with the approval of higher authority and with a justification for deviation. Annual deviation statement needs to be submitted and get approval.

17.6.12 Associated regulations and measures:

This working circle is constituted with an objective to maintain natural vegetation without any interference or managerial / silvicultural manipulation of crop composition. This principle is to be strictly adhering to.

CHAPTER -18

BAMBOO OVERLAPPING WORKING CIRCLE (BAMBOO (O) WC

18.1 Name of working circle:

Bamboo is an important NTFP available in this division. Daspalla Bamboo Forest has a great attraction since long. Due to various reasons the demand on Bamboo has reduced resulting Bamboo working uneconomic. Most of the bamboo forests are in a congested stage. Its management is of paramount importance. It is proposed to have Bamboo (Overlapping) Working Circle for better management of Bamboo forests of the division. All bamboo forests of outgoing plan included in Bamboo (Overlapping) Working Circle are included in this plan also for management. An area of 57071.9406 ha has been included in this working circle for management. This constitutes about 52.98% of the area under management.

18.2 General constitution of working circle:

The forest blocks having Bamboo in abundance has been included in this working Circle for future management. The list of Forests included is furnished at **Table No 18.1**

Table No 18.1 Forest Blocks assigned to Bamboo (O) Working Circle.					
SL.NO	Name of forest block	Comp. No	Area Available for Management.	Bamboo(O) WC	JFM(O) WC
	Reserved Forest				
	Daspalla Range				
1	Ambalimba		554.419	554.419	100.0
2	Central R.F	Cl 1	999.5352	999.5352	900.0
3	Central R.F	Cl 2	586.8663	586.8663	200.000
4	Central R.F	Cl 3	483.0487	483.0487	
5	Central R.F	Cl 4	890.664	890.664	
6	Central R.F	Cl 5	551.6211	551.6211	
7	Central R.F	Cl 6	644.4631	644.4631	
8	Central R.F	Cl 7	398.6703	398.6703	250.000
9	Central R.F	Cl 8	543.2473	543.2473	
10	Central R.F	Cl 9	749.127	749.127	
11	Central R.F	Cl 10	925.3559	925.3559	
12	Central R.F	Cl 11	964.448	964.448	
13	Central R.F	Cl 12	651.5344	651.5344	
14	Central R.F	Cl 13	957.5446	957.5446	
15	Chadiapalli R.F	Cp 1	419.5593	419.5593	350.000
16	Chadiapalli R.F	Cp 2	686.0548	686.0548	400.000



17	Chadiapalli R.F	Cp 3	927.0187	927.0187	
18	Chadiapalli R.F	Cp 4	510.5561	510.5561	
19	Chadiapalli R.F	Cp 5	483.0798	483.0798	200.000
20	Chadiapalli R.F	Cp 6	930.7682	930.7682	
21	Chadiapalli R.F	Cp 7	947.8103	947.8103	
22	Chadiapalli R.F	Cp 8	416.7687	416.7687	
23	Chadiapalli R.F	Cp 9	316.8639	316.8639	
24	Chadiapalli R.F	Cp 10	422.753	422.753	
25	Nuagaon R.F	NG-1	615.639	615.639	300.000
26	Nuagaon R.F	NG-2	580.1	580.1	200.000
27	Poibari R.F		1619.844	1619.844	
28	Pokharigochha R.F	Pg 1	732.1588	732.1588	
29	Pokharigochha R.F	Pg 3	521.9499	521.9499	450.000
30	Pokharigochha R.F	Pg 4	728.8277	728.8277	219.400
31	Nasaghar R.F	Ns.1	552.8431	552.8431	0
32	Nasaghar R.F	Ns.2	211.2504	211.2504	0
33	Nasaghar R.F	Ns 3	384.9720	384.9720	0
34	Nasaghar R.F	Ns 4	478.0713	478.0713	0
Daspalla Range Total			22387.4339	22387.4339	3569.400
	Gania Range				
35	Bankamunda RF	Bm 1	602.6840	602.6840	515.00
36	Bankamunda R.F	Bm-2	370.8514	370.8514	300.00
	Gania Range Total		973.5354	973.5354	815.00
	Khandapara Range				
37	Barakhola R.F		787.6532	787.6532	162.700
38	Mainsibindha R.F		637.3768	637.3768	400.000
39	Sapua R.F	Sp 4	555.974	555.974	450.000
40	Sapua R.F	Sp 5	805.3868	805.3868	700.000
41	Sapua R.F	Sp 6	725.3056	725.3056	
42	Sapua R.F	Sp 7	883.466	883.466	
43	Sapua R.F	Sp 11	521.5492	521.5492	
44	Sapua R.F	Sp 12	721.5915	721.5915	24.000
Khandapara Range (Total)			5638.3031	5638.3031	1736.700
	Mahipur Range				
45	Hatimunda R.F	Hm 1	603.1684	603.1684	300.000
46	Hatimunda R.F	Hm 6	319.8856	319.8856	
47	Hatimunda R.F	Hm 8	589.045	589.045	400.000
48	Hatimunda R.F	Hm 9	707.7462	707.7462	550.000



49	Hatimunda R.F	Hm 10	222.6502	222.6502	200.000
50	Hatimunda R.F	Hm 12	498.5381	498.5381	400.000
51	Ratadei R.F	Rd 1	314.8743	314.8743	215.000
52	Ratadei R.F	Rd 2	655.7564	655.7564	456.000
53	Ratadei R.F	Rd 3	349.6245	349.6245	300.000
54	Ratadei R.F	Rd 4	763.7505	763.7505	368.000
55	Palva R.F	Pb 1	461.6117	461.6117	
56	Palva R.F	Pb 2	337.6271	337.6271	
57	Palva R.F	Pb 3	293.4185	293.4185	
58	Palva R.F	Pb 4	429.987	429.987	
59	Sulia R.F	Sl 1	647.5751	647.5751	
60	Sulia R.F	Sl 2	502.3064	502.3064	
61	Ragadimada R.F	Rm 1	403.9182	403.9182	
62	Ragadimada R.F	Rm 2	661.2036	661.2036	360.000
63	Ragadimada R.F	Rm 3	405.1577	405.1577	
64	Ragadimada R.F	Rm 4	427.5547	427.5547	
65	Ragadimada R.F	Rm 5	727.8733	727.8733	
66	Ragadimada R.F	Rm 6	481.1499	481.1499	
67	Ragadimada R.F	Rm 7	544.5512	544.5512	430.250
68	Ragadimada R.F	Rm 8	267.8752	267.8752	
69	Panchupandav R.F	Pp 1	324.7043	324.7043	
70	Panchupandav R.F	Pp 2	417.0817	417.0817	
Mahipur Range (Total)			12358.6348	12358.6348	3979.250
Nayagarh Range					
71	Sulia R.F	Sl 3	738.3452	738.3452	800.000
72	Sapua R.F	Sp 1	337.4165	337.4165	269.000
Nayagarh Range(Total)			1075.7617	1075.7617	1069.000
Odogaoon Range					
73	Gayalsingh R.F	Gs 1	324.3672	324.3672	300.000
74	Gayalsingh R.F	Gs 2	393.3122	393.3122	350.000
75	Gayalsingh R.F	Gs 3	361.3458	361.3458	361.000
76	Gayalsingh R.F	Gs 4	320.5606	320.5606	
77	Gochha R.F	Gc 1	452.5743	452.5743	400.000
78	Gochha R.F	Gc 2	412.9092	412.9092	
79	Gochha R.F	Gc 3	218.7219	218.7219	200.000
80	Gochha R.F	Gc 4	459.7796	459.7796	460.000
81	Gochha R.F	Gc 5	311.7409	311.7409	300.000
82	Gochha R.F	Gc 6	432.2297	432.2297	



83	Gochha R.F	Gc 7	877.278	877.278	450.000
84	Gochha R.F	Gc 8 (a)	823.0117	823.0117	
85	Gochha R.F	Gc 18	396.764	396.764	157.000
86	Sulia R.F	Sl 4	915.8674	915.8674	
87	Sulia R.F	Sl 8	477.5446	477.5446	
Odogaoon Range (Total)			7178.0071	7178.0071	2978.000
Panchirida Range					
88	Gochha R.F	Gc 10	842.4302	842.4302	
89	Gochha R.F	Gc 12	774.6294	774.6294	454.000
90	Gochha R.F	Gc 14	779.5681	779.5681	564.000
91	Gochha R.F	Gc 15	654.5882	654.5882	600.000
92	Gochha R.F	Gc 16	465.5781	465.5781	430.000
93	Gochha R.F	Gc 17	446.5627	446.5627	
94	Patharaganda R.F	Pd 1	316.8457	316.8457	303.000
95	Patharaganda R.F	Pd 2	273.4276	273.4276	
96	Patharaganda R.F	Pd 3	298.5558	298.5558	246.000
97	Patharaganda R.F	Pd 4	394.0514	394.0514	375.000
98	Sulia R.F	Sl 6	1328.826	1328.826	909.000
99	Sulia R.F	Sl 7	885.2014	885.2014	
Panchirida Range (Total)			7460.2646	7460.2646	3881.000
Division Total			57071.9406	57071.9406	18028.350

18.2.1 Abstract of Area allotted to Working Circle:

The Bamboo mostly occurs in Reserved Forests of the division. The Range wise abstract is as follows.

Table No 18.2 Abstract of Area allotted to Working Circle			
Sl No	Range	Area in ha (included in WC)	Remark
1	Daspalla Range	22387.4339	52.64% of the Forest area is under Bamboo Forests as and under growth & forms a bamboo break in Daspalla and Mahipur range
2	Gania Range	973.5354	
3	Khandapada	5638.3031	
4	Mahipur	12358.6348	
5	Nayagarh	1075.7617	
6	Odogaoon	7178.0071	
7	Panchirida	7460.2646	
	Total	57071.9406	



18.3 General characteristics of vegetation:

The Bamboo forests are of high potential. 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 limited. Though bamboo forests exist with miscellaneous tree species, the occurrence of pure bamboo brakes is localised to Daspalla Range only. The associates of bamboo in these include mainly species like Sal, Piasal, Sissoo, Asan, Dhaura, Kurum, Kasi and Mitikinia etc.

There are 13 species are available in Odisha. These species are :

- *Bambusa vulgaris* *Bambusa vulgaris* Var. *Vulgaris* Schrad ex Wendle (Odisha)Sundarkani
- *Bambusa nutans* *Bambusa nutans* Wall ex Munro(Odisha)Badi
- *Bambusa tulda* *Bambusa tulda* Roxb (Odisha)Taleda
- *Dendrocalamus strictus* *Dendrocalamus strictus* Ness
- *Bambusa bamboos* *Bambusa bambos* voss (Odisha) Kanta / Daba
- *Thyrostachys oliveri* *Thyrsostachys oliveri* Gamble
- *Thyrostachys regia* *Thyrostachys regia*(Munro.) Bennet.
- *Dendroclamus longispathus*
- *Scizostachyum pergracile* *Schizostachyum pergracile*
- *Gigantochloa rostrata* *Gigantochloa rostrata* Wong. (*Gigantochloa maxima* var. *minor* Holttum *Oxytenanthera nigrociliata* Munro)
- *Dendroclamus giganteous* *Dendrocalamus giganteus* Munro
- *Bambusa striata* *Bambusa striata*
- *Bambusa wamin* *Bambusa wamin* Camus. *Bambusa vulgaris* var. *wamin*



The production of bamboo in the Division has shown reduction over the years as revealed from the bamboo production statistics furnished at Chapter 7 of this plan. 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 Working Scheme in force, many of the felling series have become unproductive, both economically as well as silviculturally. Also, the bamboo clumps have been heavily congested because of 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 do not have the minimum number of culms required for the healthy growth of the rhizome.

Despite the biotic interference, the bamboo forests still have good regeneration status and potential for harvest. However, these bamboo forests of the Division are in need of appropriate silvicultural operations to increase its productivity. Dry Mixed Deciduous Forests (5B/C₂) coupled with Dry Bamboo Brakes (5/E₉) is a common sight in Daspalla Range. Degeneration of Bamboo in the division is due to non working of Bamboo coupes during last plan period. Falling of Bamboo demand in locality as well as Paper Mills are the driving factors of non working by OFDC Ltd. A suitable mechanism involving VSS is highly required at this point of time.

18.4 Cutting Series, Cutting Sections and JFM areas:

For intensive management and distributed bamboo working 28 numbers of Bamboo Cutting Series are prescribed and constituted. The details of Bamboo Cutting Series are as in Table No 18.3

Table No 18.3 Bamboo Cutting Series- Nayagarh Division						
Sl No	Name of Bamboo Cutting Series	Range	Rorest Block	Comp.	Area in ha	Total series area
1	Poibari BC Series	Daspalla	Ambalimba		554.419	2174.2630
			Poibari R.F		1619.844	



2	Pokharigochha BC Series		Pokharigochha R.F	Pg 1	732.1588	1982.9364
			Pokharigochha R.F	Pg 3	521.9499	
			Pokharigochha R.F	Pg 4	728.8277	
3	Central 1 BC Series	Daspalla	Central R.F	Cl 1	999.5352	2069.4502
			Central R.F	Cl 2	586.8663	
			Central R.F	Cl 3	483.0487	
4	Central 2 BC Series	Daspalla	Central R.F	Cl 4	890.664	2086.7482
			Central R.F	Cl 5	551.6211	
			Central R.F	Cl 6	644.4631	
5	Central 3 BC Series	Daspalla	Central R.F	Cl 7	398.6703	2616.4005
			Central R.F	Cl 8	543.2473	
			Central R.F	Cl 9	749.127	
			Central R.F	Cl 10	925.3559	
6	Central 4 BC Series	Daspalla	Central R.F	Cl 11	964.448	2573.5270
			Central R.F	Cl 12	651.5344	
			Central R.F	Cl 13	957.5446	
7	Chadiapali 1 BC Series	Daspalla	Chadiapalli R.F	Cp 1	419.5593	2032.6328
			Chadiapalli R.F	Cp 2	686.0548	
			Chadiapalli R.F	Cp 3	927.0187	
8	Chadiapali 2 BC Series	Daspalla	Chadiapalli R.F	Cp 4	510.5561	1924.4041
			Chadiapalli R.F	Cp 5	483.0798	
			Chadiapalli R.F	Cp 6	930.7682	
9	Chadiapali 3 BC Series	Daspalla	Chadiapalli R.F	Cp 7	947.8103	1681.4429
			Chadiapalli R.F	Cp 8	416.7687	
			Chadiapalli R.F	Cp 9	316.8639	
10	Nuagaon BC Series	Daspalla	Chadiapalli R.F	Cp 10	422.753	1618.4920
			Nuagaon R.F	NG-1	615.639	
			Nuagaon R.F	NG-2	580.1	
11	Nasagarh BC series	Daspalla	Nasaghar R.F	Ns.1	552.8431	1627.1368
			Nasaghar R.F	Ns.2	211.2504	
			Nasaghar R.F	Ns 3	384.9720	
			Nasaghar R.F	Ns 4	478.0713	
	Daspalla Range Total				22387.4339	22387.4339



Sl No	Name of Bamboo Cutting Series	Range	Rorest Block	Comp.	Area in ha	Total series area
12	Sapua South BC Series	Khandapada	Sapua R.F	Sp 4	555.974	2608.2156
			Sapua R.F	Sp 5	805.3868	
			Sapua R.F	Sp 6	725.3056	
			Sapua R.F	Sp 11	521.5492	
13	Sapua North BC Series	Khandapada	Sapua R.F	Sp 7	883.466	3030.0875
			Sapua R.F	Sp 12	721.5915	
			Barakhola R.F		787.6532	
			Mainsibindha R.F		637.3768	
	Khandapara Range Total				5638.3031	5638.3031
14	Ragadimada 1 BC Series	Mahipur	Ragadimada R.F	Rm 1	403.9182	1897.8342
			Ragadimada R.F	Rm 2	661.2036	
			Ragadimada R.F	Rm 3	405.1577	
			Ragadimada R.F	Rm 4	427.5547	
15	Ragadimada 2 BC Series	Mahipur	Ragadimada R.F	Rm 5	727.8733	2021.4496
			Ragadimada R.F	Rm 6	481.1499	
			Ragadimada R.F	Rm 7	544.5512	
			Ragadimada R.F	Rm 8	267.8752	
16	Ratadei BC Series	Mahipur	Ratadei R.F	Rd 1	314.8743	2084.0057
			Ratadei R.F	Rd 2	655.7564	
			Ratadei R.F	Rd 3	349.6245	
			Ratadei R.F	Rd 4	763.7505	
17	Hatimunda BC Series	Mahipur	Hatimunda R.F	Hm 1	603.1684	2941.0335
			Hatimunda R.F	Hm 6	319.8856	
			Hatimunda R.F	Hm 8	589.045	
			Hatimunda R.F	Hm 9	707.7462	
			Hatimunda R.F	Hm 10	222.6502	
			Hatimunda R.F	Hm 12	498.5381	
18	Palva BC Series	Mahipur	Palva R.F	Pb 1	461.6117	1522.6443
			Palva R.F	Pb 2	337.6271	
			Palva R.F	Pb 3	293.4185	
			Palva R.F	Pb 4	429.987	
19	Sulia BC Series	Mahipur	Sulia R.F	Sl 1	647.5751	1891.6675
			Sulia R.F	Sl 2	502.3064	
			Panchupandav R.F	Pp 1	324.7043	
			Panchupandav R.F	Pp 2	417.0817	
Mahipur Range Total					12358.6348	12358.6348



Sl No	Name of Bamboo Cutting Series	Range	Rorest Block	Comp.	Area in ha	Total series area
20	Nayagarh BC Series	Nayagarh	Sulia R.F	Sl 3	738.3452	2049.2971
			Sapua R.F	Sp 1	337.4165	
		Gania	Bankamunda RF	Bm 1	602.6840	
			Bankamunda RF	Bm 2	370.8514	
Nayagarh & Gania Range Total						
21	Gayalsingh BC Series	Odogaon	Gayalsingh R.F	Gs 1	324.3672	1399.5858
			Gayalsingh R.F	Gs 2	393.3122	
			Gayalsingh R.F	Gs 3	361.3458	
			Gayalsingh R.F	Gs 4	320.5606	
22	Gocha 1 BC Series	Odogaon	Gochha R.F	Gc 1	452.5743	2252.4899
			Gochha R.F	Gc 2	412.9092	
			Gochha R.F	Gc 3	218.7219	
			Gochha R.F	Gc 4	459.7796	
			Gochha R.F	Gc 5	311.7409	
			Gochha R.F	Gc 18	396.764	
23	Gocha 2 BC Series	Odogaon	Gochha R.F	Gc 6	432.2297	2132.5194
			Gochha R.F	Gc 7	877.278	
			Gochha R.F	Gc 8 (a)	823.0117	
24	Odogaon BC Series	Odogaon	Sulia R.F	Sl 4	915.8674	1393.4120
			Sulia R.F	Sl 8	477.5446	
Odogaon Range Total					7178.0071	7178.0071
25	Gocha 3 BC Series	Panchirida	Gochha R.F	Gc 10	842.4302	2063.6223
			Gochha R.F	Gc 12	774.6294	
			Gochha R.F	Gc 17	446.5627	
26	Gocha 4 BC Series	Panchirida	Gochha R.F	Gc 14	779.5681	1899.7344
			Gochha R.F	Gc 15	654.5882	
			Gochha R.F	Gc 16	465.5781	
27	Patharaganda BC Series	Panchirida	Patharaganda R.F	Pd 1	316.8457	1282.8805
			Patharaganda R.F	Pd 2	273.4276	
			Patharaganda R.F	Pd 3	298.5558	
			Patharaganda R.F	Pd 4	394.0514	
28	Panchirida BC Series	Panchirida	Sulia R.F	Sl 6	1328.826	2214.0274
			Sulia R.F	Sl 7	885.2014	
Panchirida Range Total					7460.2646	7460.2646



18.4.1 Abstract of Cutting series Constituted:

Table No 18.4 Abstract of Bamboo Cutting series Constituted		
Sl No	Name of Bamboo Cutting Series	Area allotted in Ha
1	Poibari BC Series	2174.2630
2	Pokharigochha BC Series	1982.9364
3	Central 1 BC Series	2069.4502
4	Central 2 BC Series	2086.7482
5	Central 3 BC Series	2616.4005
6	Central 4 BC Series	2573.5270
7	Chadiapali 1 BC Series	2032.6328
8	Chadiapali 2 BC Series	1924.4041
9	Chadiapali 3 BC Series	1681.4429
10	Nuagaon BC Series	1618.4920
11	Nasagarh BC series	1627.1368
12	Sapua South BC Series	2608.2156
13	Sapua North BC Series	3030.0875
14	Ragadimada 1 BC Series	1897.8342
15	Ragadimada 2 BC Series	2021.4496
16	Ratadei BC Series	2084.0057
17	Hatimunda BC Series	2941.0335
18	Palva BC Series	1522.6443
19	Sulia BC Series	1891.6675
20	Nayagarh BC Series	2049.2971
21	Gayalsingh BC Series	1399.5858
22	Gocha 1 BC Series	2252.4899
23	Gocha 2 BC Series	2132.5194
24	Odogeon BC Series	1393.412
25	Gocha 3 BC Series	2063.6223
26	Gocha 4 BC Series	1899.7344
27	Patharaganda BC Series	1282.8805
28	Panchirida BC Series	2214.0274
	Total	57071.9406



18.4.2 Cutting Sections:

Table No 18.5 Cutting Sections of Bamboo Cutting Series

Table No 18.5 Cutting Sections of Bamboo Cutting Series							
Name of BC Series	Range	Cutting Section	Forest Block	Comp	Area in ha	Area of the Section	Total
Poibari BC Series	Daspalla	A	Poibari R.F		525.0	525.0	2174.2630
		B	Poibari R.F		525.00	525.00	
		C	Poibari R.F		569.844	569.844	
		D	Ambalimba		554.419	554.419	
Pokharigochha BC Series	Daspalla	A	Pokharigochha R.F	Pg 4	370.0	370.0	1982.9364
		B	Pokharigochha R.F	Pg 4	358.8277	358.8277	
		C	Pokharigochha R.F	Pg 1	732.1588	732.1588	
		D	Pokharigochha R.F	Pg 3	521.9499	521.9499	
Central 1 BC Series	Daspalla	A	Central R.F	Cl 3	483.0487	483.0487	2069.4502
		B	Central R.F	Cl 1	500.0	500.0	
		C	Central R.F	Cl 1	499.5352	499.5352	
		D	Central R.F	Cl 2	586.8663	586.8663	
Central 2 BC Series	Daspalla	A	Central R.F	Cl 6	644.4631	644.4631	2086.7482
		B	Central R.F	Cl 4	450.0	450.0	
		C	Central R.F	Cl 4	440.664	440.664	
		D	Central R.F	Cl 5	551.6211	551.6211	
Central 3 BC Series	Daspalla	A	Central R.F	Cl 7	398.6703	698.6703	2616.4005
			Central R.F	Cl 10(p)	300.00		
		B	Central R.F	Cl 10 (b)	625.3559	625.3559	
		C	Central R.F	Cl 8	543.2473	543.2473	
		D	Central R.F	Cl 9	749.127	749.127	
Central 4 BC Series	Daspalla	A	Central R.F	Cl 12	651.5344	651.5344	2573.5270
		B	Central R.F	Cl 11	600.00	600.00	
		C	Central R.F	Cl 11	364.448	664.448	
			Central R.F	Cl 13	300.00		
		D	Central R.F	Cl 13	657.5446	657.5446	
Chadiapali 1 BC Series	Daspalla	A	Chadiapalli R.F	Cp 3	460.0	460.0	2032.6328
		B	Chadiapalli R.F	Cp 3	467.0187	467.0187	
		C	Chadiapalli R.F	Cp 1	419.5593	419.5593	



		D	Chadiapalli R.F	Cp 2	686.0548	686.0548	
Chadiapali 2 BC Series	Daspalla	A	Chadiapalli R.F	Cp 4	510.5561	510.5561	1924.4041
		B	Chadiapalli R.F	Cp 5	483.0798	483.0798	
		C	Chadiapalli R.F	Cp 6P	465.0	465.0	
		D	Chadiapalli R.F	Cp 6B	465.7682	465.7682	
Chadiapali 3 BC Series	Daspalla	A	Chadiapalli R.F	Cp 7P	470.0	470.0	1681.4429
		B	Chadiapalli R.F	Cp 7B	477.8103	477.8103	
		C	Chadiapalli R.F	Cp 8	416.7687	416.7687	
		D	Chadiapalli R.F	Cp 9	316.8639	316.8639	
Nuagaon BC Series	Daspalla	A	Nuagaon R.F	NG-1P	300.0	300.0	1618.4920
		B	Nuagaon R.F	NG-1B	315.639	315.639	
		C	Nuagaon R.F	NG-2	580.1	580.1	
		D	Chadiapalli R.F	Cp 10	422.753	422.753	
Nasagarh BC series	Daspalla	A	Nasaghar R.F	Ns.2	211.2504	211.2504	1627.1368
		B	Nasaghar R.F	Ns 3	384.9720	384.9720	
		C	Nasaghar R.F	Ns 4	478.0713	478.0713	
		D	Nasaghar R.F	Ns.1	552.8431	552.8431	
Sapua South BC Series	Khandpara	A	Sapua R.F	Sp 4	555.974	555.974	2608.2156
		B	Sapua R.F	Sp 5	805.3868	805.3868	
		C	Sapua R.F	Sp 6	725.3056	725.3056	
		D	Sapua R.F	Sp 11	521.5492	521.5492	

Sapua North BC Series	Khandpara	A	Barakhola R.F		787.6532	787.6532	3030.0875
		B	Mainsibindha R.F		637.3768	637.3768	
		C	Sapua R.F	Sp 7	883.466	883.466	
		D	Sapua R.F	Sp 12	721.5915	721.5915	
Ragadimada 1 BC Series	Mahipur	A	Ragadimada R.F	Rm 1	403.9182	403.9182	1897.8342
		B	Ragadimada R.F	Rm 2	661.2036	661.2036	
		C	Ragadimada R.F	Rm 3	405.1577	405.1577	
		D	Ragadimada R.F	Rm 4	427.5547	427.5547	
Ragadimada 2 BC Series	Mahipur	A	Ragadimada R.F	Rm 5	727.8733	727.8733	2021.4496
		B	Ragadimada R.F	Rm 7	544.5512	544.5512	
		C	Ragadimada R.F	Rm 8	267.8752	267.8752	
		D	Ragadimada R.F	Rm 6	481.1499	481.1499	
Ratadei BC Series	Mahipur	A	Ratadei R.F	Rd 2	655.7564	655.7564	2084.0057
		B	Ratadei R.F	Rd 3	349.6245	349.6245	
		C	Ratadei R.F	Rd 4	763.7505	763.7505	

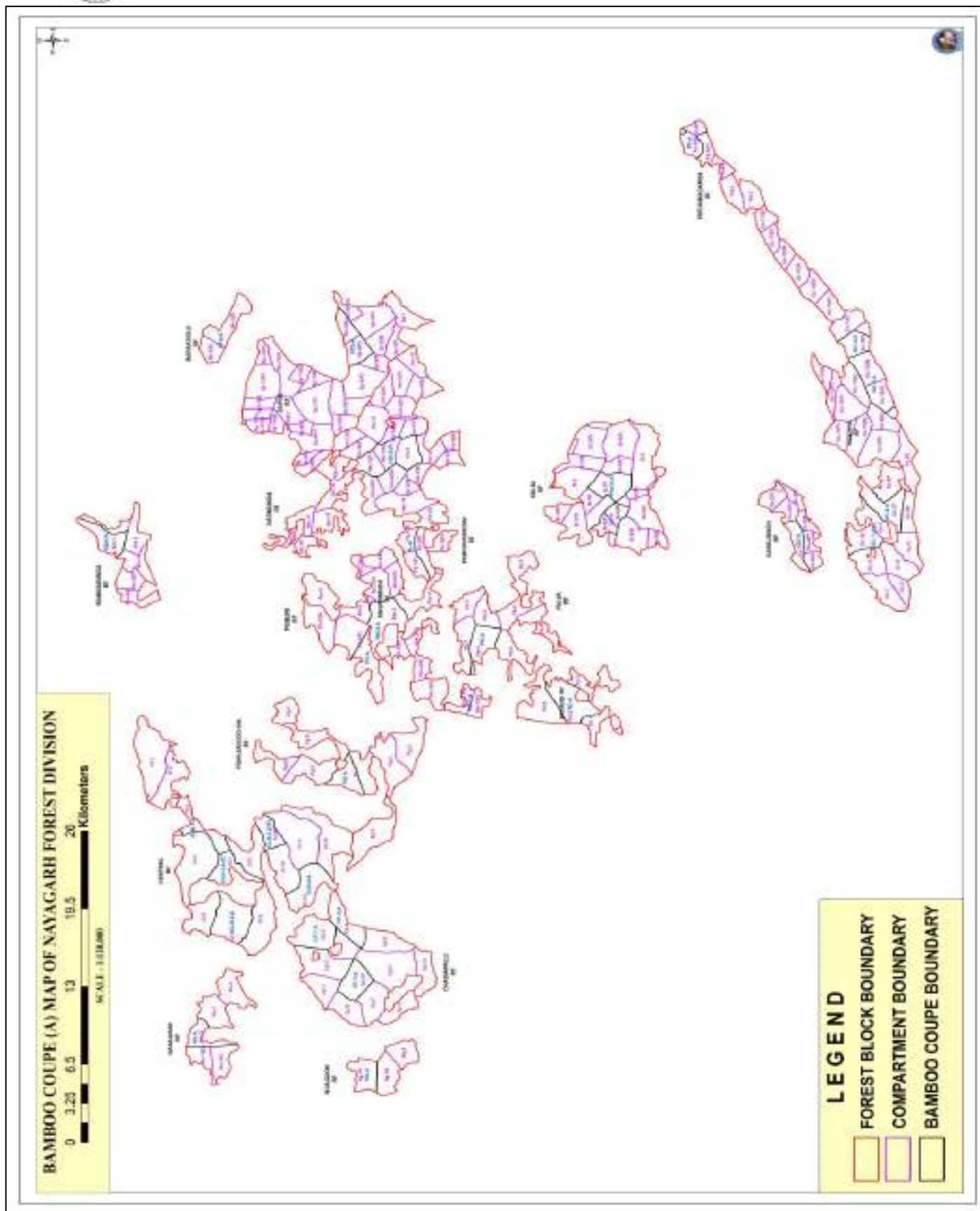


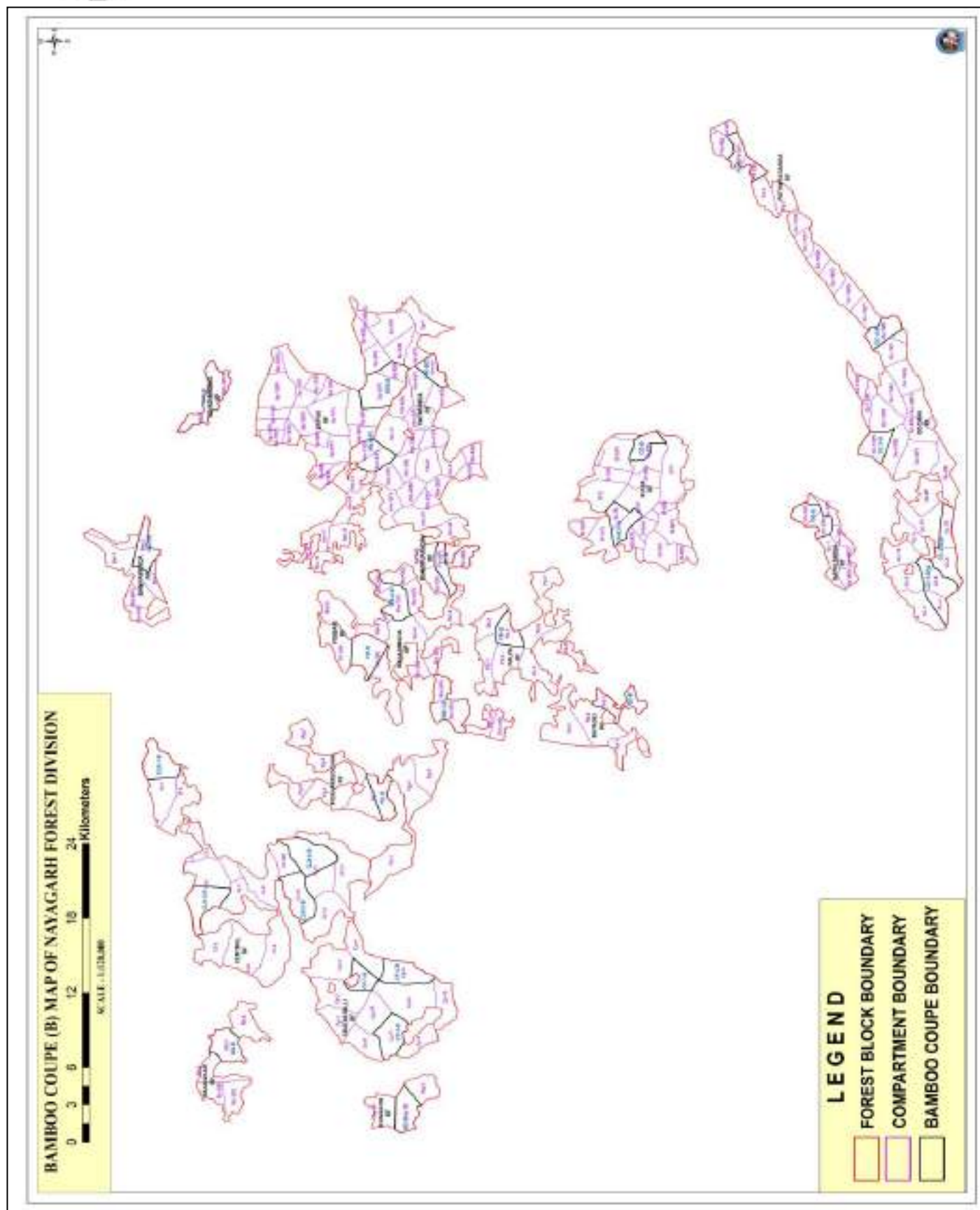
		D	Ratadei R.F	Rd 1	314.8743	314.8743	
Hatimunda BC Series	Mahipur	A	Hatimunda R.F	Hm 1	603.1684	923.0540	2941.0335
			Hatimunda R.F	Hm 6	319.8856		
		B	Hatimunda R.F	Hm 12	498.5381	721.1883	
			Hatimunda R.F	Hm 10	222.6502		
		C	Hatimunda R.F	Hm 8	589.045	589.045	
		D	Hatimunda R.F	Hm 9	707.7462	707.7462	
Palva BC Series	Mahipur	A	Palva R.F	Pb 4	429.987	429.987	1522.6443
		B	Palva R.F	Pb 3	293.4185	293.4185	
		C	Palva R.F	Pb 2	337.6271	337.6271	
		D	Palva R.F	Pb 1	461.6117	461.6117	
Sulia BC Series	Mahipur	A	Panchupandav R.F	Pp 1	324.7043	324.7043	1891.6675
		B	Panchupandav R.F	Pp 2	417.0817	417.0817	
		C	Sulia R.F	Sl 1	647.5751	647.5751	
		D	Sulia R.F	Sl 2	502.3064	502.3064	
Nayagarh BC Series	Gania	A	Bankamunda RF	Bm 1	602.6840	602.6840	2049.2971
		B	Bankamunda RF	Bm 2	370.8514	370.8514	
	Nayagarh	C	Sulia R.F	Sl 3	738.3452	738.3452	
		D	Sapua R.F	Sp 1	337.4165	337.4165	
Gayalsingh BC Series	Odogaon	A	Gayalsingh R.F	Gs 1	324.3672	324.3672	1399.5858
		B	Gayalsingh R.F	Gs 2	393.3122	393.3122	
		C	Gayalsingh R.F	Gs 4	320.5606	320.5606	
		D	Gayalsingh R.F	Gs 3	361.3458	361.3458	

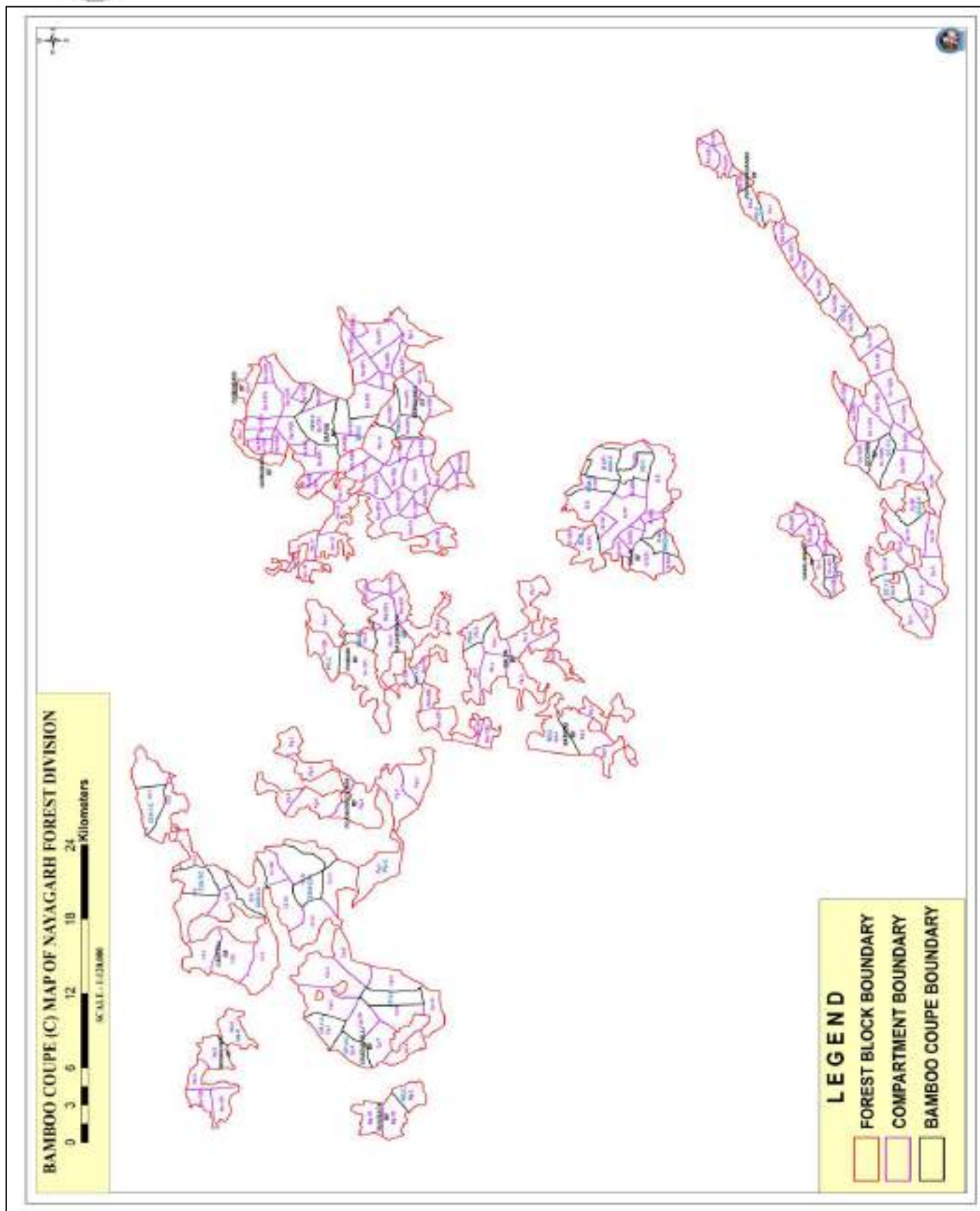
Gocha 1 BC Series	Odogaon	A	Gochha R.F	Gc 5	311.7409	708.5049	2252.4899
			Gochha R.F	Gc 18	396.764		
		B	Gochha R.F	Gc 3	218.7219	678.5015	
			Gochha R.F	Gc 4	459.7796		
		C	Gochha R.F	Gc 2	412.9092	412.9092	
		D	Gochha R.F	Gc 1	452.5743	452.5743	
Gocha 2 BC Series	Odogaon	A	Gochha R.F	Gc 7(P)	600.0	600.0	2132.5194
		B	Gochha R.F	Gc 7(B)	277.278	709.5077	
			Gochha R.F	Gc 6	432.2297		
		C	Gochha R.F	Gc 8 (a)(P)	400.0	400.0	
Odogaon BC Series	Odogaon	A	Sulia R.F	Sl 8	477.5446	477.5446	1393.4120
		B	Sulia R.F	Sl 4	300.0 (P)	300.0	

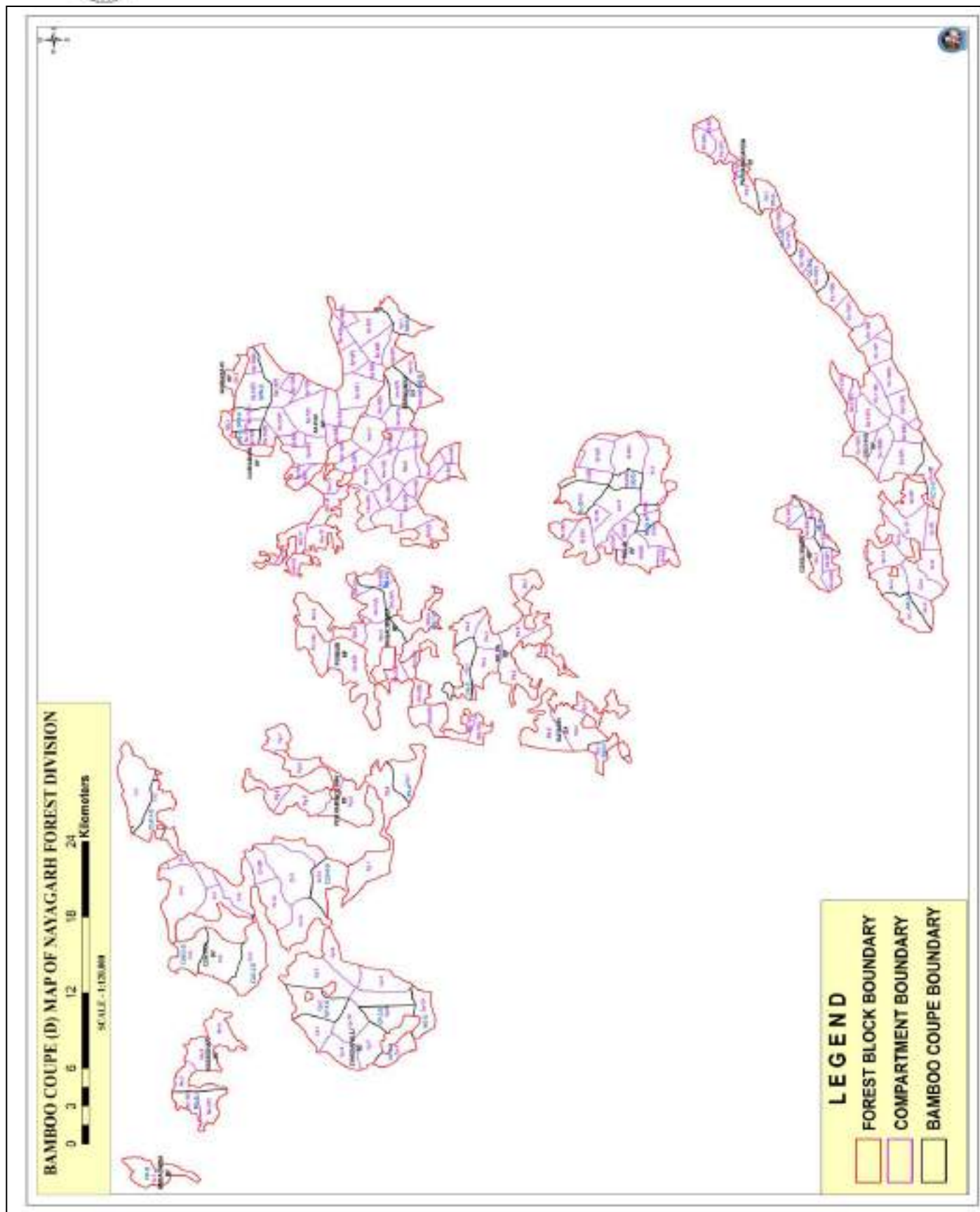


		C	Sulia R.F	SI 4	300.0(P)	300.0	
		D	Sulia R.F	SI 4	315.8674(B)	315.8674	
Gocha 3 BC Series	Panchiri da	A	Gochha R.F	Gc 12	774.6294	774.6294	2063.6223
		B	Gochha R.F	Gc 10	420.0	420.0	
		C	Gochha R.F	Gc 10	422.4302	422.4302	
		D	Gochha R.F	Gc 17	446.5627	446.5627	
Gocha 4 BC Series	Panchiri da	A	Gochha R.F	Gc 14(P)	400.0	400.0	1899.7344
		B	Gochha R.F	Gc 14(B)	379.5681	379.5681	
		C	Gochha R.F	Gc 15	654.5882	654.5882	
		D	Gochha R.F	Gc 16	465.5781	465.5781	
Patharaganda BC Series	Panchiri da	A	Patharaganda R.F	Pd 4	394.0514	394.0514	1282.8805
		B	Patharaganda R.F	Pd 3	298.5558	298.5558	
		C	Patharaganda R.F	Pd 2	273.4276	273.4276	
		D	Patharaganda R.F	Pd 1	316.8457	316.8457	
Panchirida BC Series	Panchiri da	A	Sulia R.F	SI 7 (P)	450.0	450.0	2214.0274
		B	Sulia R.F	SI 7(B)	435.2014	435.2014	
		C	Sulia R.F	SI 6(P)	650.0	650.0	
		D	Sulia R.F	SI 6(B)	678.826	678.826	





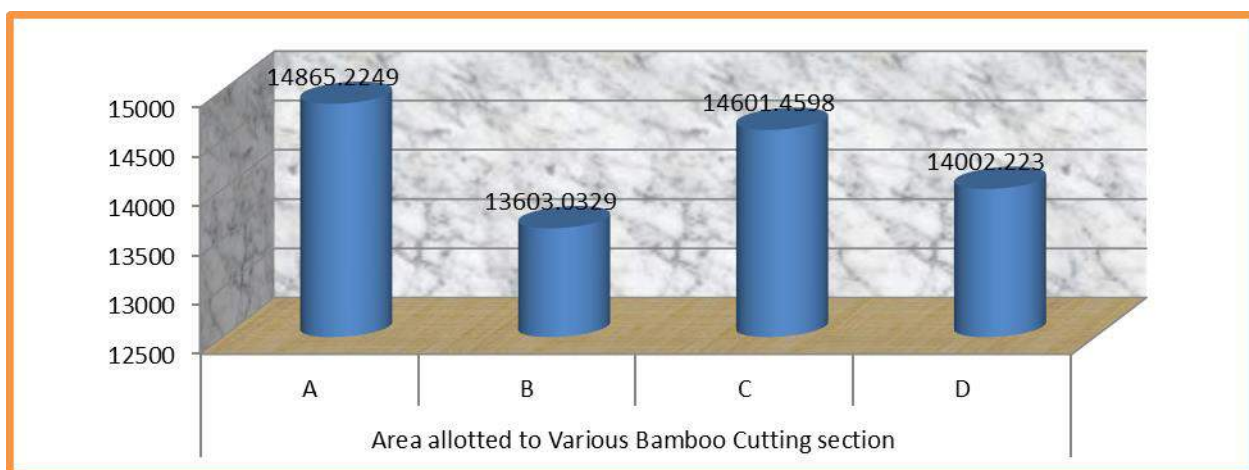






18.4.3 Abstract of Sections constituted:

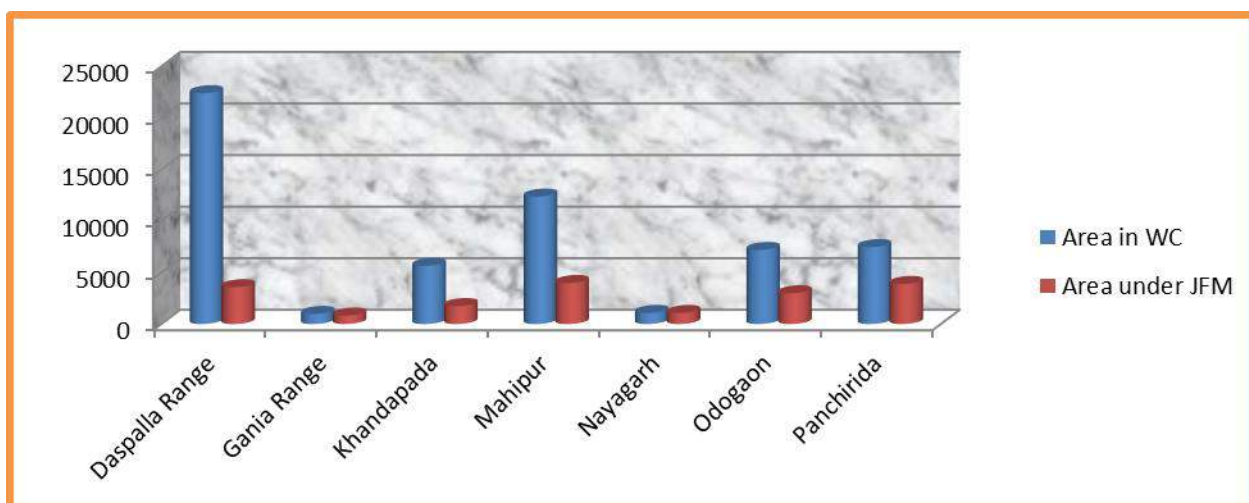
Table No 18.6 Abstract of Cutting Sections constituted						
Sl No	Name of Series	Section Area				Total
		A	B	C	D	
1	Poibari BC Series	525.0000	525.0000	569.8440	554.4190	2174.2630
2	Pokharigochha	370.0000	358.8277	732.1588	521.9499	1982.9364
3	Central 1	483.0487	500.0000	499.5352	586.8663	2069.4502
4	Central 2	644.4631	450.0000	440.6640	551.6211	2086.7482
5	Central 3	698.6703	625.3559	543.2473	749.1270	2616.4005
6	Central 4	651.5344	600.0000	664.4480	657.5446	2573.5270
7	Chadiapali 1	460.0000	467.0187	419.5593	686.0548	2032.6328
8	Chadiapali 2	510.5561	483.0798	465.0000	465.7682	1924.4041
9	Chadiapali 3	470.0000	477.8103	416.7687	316.8639	1681.4429
10	Nuagaon	300.0000	315.6390	580.1000	422.7530	1618.4920
11	Nasagarh	211.2504	384.9720	478.0713	552.8431	1627.1368
12	Sapua South	555.9740	805.3868	725.3056	521.5492	2608.2156
13	Sapua North	787.6532	637.3768	883.4660	721.5915	3030.0875
14	Ragadimada 1	403.9182	661.2036	405.1577	427.5547	1897.8342
15	Ragadimada 2	727.8733	544.5512	267.8752	481.1499	2021.4496
16	Ratadei	655.7564	349.6245	763.7505	314.8743	2084.0057
17	Hatimunda	923.0540	721.1883	589.0450	707.7462	2941.0335
18	Palva	429.9870	293.4185	337.6271	461.6117	1522.6443
19	Sulia	324.7043	417.0817	647.5751	502.3064	1891.6675
20	Nayagarh	602.6840	370.8514	738.3452	337.4165	2049.2971
21	Gayalsingh	324.3672	393.3122	320.5606	361.3458	1399.5858
22	Gocha 1	708.5049	678.5015	412.9092	452.5743	2252.4899
23	Gocha 2	600.0000	709.5077	400.0000	423.0117	2132.5194
24	Odogaon	477.5446	300.0000	300.0000	315.8674	1393.412
25	Gocha 3	774.6294	420.0000	422.4302	446.5627	2063.6223
26	Gocha 4	400.0000	379.5681	654.5882	465.5781	1899.7344
27	Patharaganda	394.0514	298.5558	273.4276	316.8457	1282.8805
28	Panchirida	450.0000	435.2014	650.0000	678.8260	2214.0274
	Total	14865.2249	13603.03	14601.46	14002.22	57071.9406
	Under Salia Bamboo 60%	8919	8162	8761	8401	34243
	Under Daba Bamboo 40%	5946	5441	5841	5601	22829



18.5 Blocks, Compartments and JFM area:

The blocks allotted to this working Circle and corresponding JFM area in each block has been furnished at Table No 18.1 above. The abstract is reproduced below Table No 18.7

Table No 18. 7 Area assigned to VSS in Bamboo Workibg Circle.			
Sl No	Range	Area in ha (included in WC)	Area allotted to VSS in ha
1	Daspalla Range	22387.4339	3569.400
2	Gania Range	973.5354	815.00
3	Khandapada	5638.3031	1736.700
4	Mahipur	12358.6348	3979.250
5	Nayagarh	1075.7617	1069.000
6	Odogaon	7178.0071	2978.000
7	Panchirida	7460.2646	3881.000
	Total	57071.9406	18028.350
	Percentage		31.59



18.6 Special objectives of Management

The special objectives of management in respect of this Over Lapping Working Circle are within the scope of general objectives of management of forest. These are as follows:

- To enforce scientific harvesting of Bamboo and provide bamboo to local artisans and industrial purpose basically to paper mills for raw materials on sustainable basis.
- To restore the bamboo forests through intense silvicultural practices and checking fire & soil erosion.
- To enhance fodder availability to wild animals from bamboo crops.
- To improve the bamboo growing stock through plantations.
- To improve bamboo forests through JFM and provide employment to bamboo artisans

18.6.1 Analysis of the crop:

Bamboo is a major NTFP species available in Nayagarh Division. *Dendrocalamus strictus* (Salia Bamboo) is the main species available in the forests which constitutes about 60% of the bamboo crop in the division. Rest 40% is of *Bambusa Arundinasis* (Daba bamboo). Most of the Daba bamboo clumps are in cosseted and forms an impenetrable barrio. Salia bamboo is in a path of degradation must still in a vigorous stage having a good potential. Due to non harvesting / poor harvesting in previous few years bamboo is in a congested stage. Out of total forest area under Bamboo, the crop condition is summarized below.



Table No 18.8 summary of Bamboo Forests- Nayagarh Division			
Salia bamboo	60% of the area		34243 ha
Daba Bamboo	40% of the area		22829 ha
Salia bamboo	60% in Good condition / luxuriant growth	More than 125 clumps per ha	20546ha
	25% in Good condition	75- 90 Clumps per ha	8561ha
	15% on path of Degradation	Below 60 Clumps per ha	5136 ha

18.6.2 Silvicultural system:

For Bamboo forests proposed for commercial harvesting will be worked under “**Culm Selection Cum Improvement System**”. Under this system, Bamboo culms are selectively removed depending upon number of culms available under different age i.e. 1st yr to 4th year and above. After cutting of bamboo as per rules, Simultaneous Silvicultural operation is to be taken up to improve the clump and induce good regeneration.

18.6.3 Cutting Cycle:

A four year cutting cycle and treatment Cycle is prescribed in this plan. During the Plan period 2 & ½ Cycle will be completed.

18.6.4 Harvestable Bamboo Clumps:

Bamboo will be removed from a clump selectively. Bamboo of four year old and above can only be removed after leaving minimum required number of culms in a clump according to its quality class i.e. Class-I /II /III

Table No 18.9: Number of Clums required to be retained		
Quality Class of Clump	Criteria for assigning Quality class to clumps	Number of Culms required to be retained.
Clump Quality I	Culm height of Bamboos from 9 meters and up.	20
Clump Quality II	Culm height of Bamboos between 6 meters to 9 meters.	15
Clump Quality III	Culm height of Bamboos below 6 meters.	10



18.6.5 Reduced Factors and reduced areas:

The yield will be regulated on area basis. No reduced factor / area have been assessed.

18.6.6 Calculation of the yield:

The annual yield has been estimated on cutting series wise. It has been based on number of clumps per ha and number of harvestable bamboo available per clump.

18.6.6.1 For salia Bamboo

Table Ni 18.10 Calculation of Yield from Bamboo Coupes (Salia Bamboo)						
Name of Cutting Series	Description	Section Area				
		A	B	C	D	Total
All Series	Area	8919	8162	8761	8401	34243
	Clumps/ ha	100	100	100	100	
	Harvestable culms / Clump	12	12	12	12	
	Yield No of bamboo	4281120	3917760	4205280	4032480	16436640
	SU =350 no CB	12231	11193	12015	11521	46961
NB: Bamboo available over 40% of area assigned to series / sections estimated						

18.6.6.2 For Daba Bamboo

Table Ni 18.11 Calculation of Yield from Bamboo Coupes (For Daba Bamboo)						
Name of Cutting Series	Description	Section Area				
		A	B	C	D	Total
All Series	Area	5946	5441	5841	5601	22829
	Clumps/ ha	45	50	50	55	
	Harvestable culms / Clump	20	20	20	20	
	Yield No of bamboo	1605420	1632300	1752300	1848330	6838350
	SU =350 no CB	4587	4664	5007	5281	19539
NB: Bamboo available over 30% of area assigned to series / sections estimated						

**Total Yield in SU**

Table No 18.12 Total Yield in SU					
Section	A	B	C	D	Total
Salia Bamboo	12231	11193	12015	11521	46961
Daba Bamboo	4587	4664	5007	5281	19539
Total	16818	15857	17022	16802	66500
Yield in Ton 1SU=1 T for Salia	12231	11193	12015	11521	46961
1SU=2.5 T in Daba	11468	11660	12518	13203	48848
Total	23699	22853	24533	24724	95809

The yield per year is estimated to be around 12000 SU on an average which may weigh about 24000 MT if entire assigned area is worked out.

18.6.7 Table of Cutting:

The Section wise felling area has been indicated above. The year of Working is as follows.

Cutting section	Year of Operation
A	2021-22, 2025-26 & 2029-30
B	2022-23, 2026-27 & 2030-31
C	2023-24 & 2027-28
D	2024-25 & 2028-29

18.6.8 Method of executing the Felling:**18.6.8.1 Demarcation of Coupe:**

Bamboo Coupes (Section A, B, C & D) in each Cutting Series has been indicated on the Topo Sheet i.e. Management Map (1:50000 Scale). Coupe demarcation shall be taken up in April-June every year assigned for working. It shall be demarcated by giving double coal-tar rings at the breast height of the trees standing on the coupe lines (Coupe and Section are Synonym), which will distinctly visible from each other. Signboards shall be displayed on compartment lines, road crossings, nalla crossings and other strategic points mentioning



the details such as sequence of the coupe, its area, year of working and compartment number. After Coupe / section demarcation is completed, it shall be reported to Division Office along with a map of the area.

18.6.8.2 Preparation of Treatment Map:

After demarcation is complete, the OFDC Ltd may be asked to jointly visit the area of the assigned coupe and prepare a treatment map with sequence of felling and yield estimation. The Coupe area may be indicated in to different treatment types. Following guidelines may be kept in mind while preparing the treatment map.

- Treatment map shall be prepared on available Management Map with Distinct Contour Lines.
- Treatment types to be distinguished shall be based on the assessment of the standard Salia bamboo quality classes and actual clump condition.
- Areas less than 4 Hectare in extent will not be separated out as distinct Treatment Types.
- An abstract of area under different treatment class / Blank Area / area available for Bamboo Plantation etc to be furnished with the report.

Treatment Types:

Treatment types (A, B& C) have been prescribed for Salia Bamboo area and described below:

Treatment Type-A:

Areas with healthy and well-stocked Bamboo Clumps having harvestable bamboo have been classified to Treatment Type –A. This type is further classified to Quality Class depending upon average Culm height in a clump.

Table No 18.13 Bamboo Clump Classifications – Quality Class.	
Quality Class- I	Average Culm height of Bamboos from 9 meters and up
Quality Class-II	Average Culm height of Bamboos between 6 meters to 9 meters
Quality Class-III	Average Culm height of Bamboos below 6 meters



Treatment Type-B:

Areas with well-stocked but degraded, damaged, congested and / or fire burnt Bamboo Clumps are considered for Treatment Type- B.

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.

18.6.8.3 Execution of Cutting:

The cutting of Salia Bamboo is regulated through a set of Bamboo Cutting Rules. The Rule is reproduced below.

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 than 3 years of age, shall be retained in the clump and their number, should not be less than number of Karadis.
- ii. **Distinguishing Morphological characters of the Culms of different age:**

Culm age	Morphological Character
Karadi (the first year clum)	Culm sheath present on lower half of Culm. Branches present throughout the length of Culm. Green uniformly, bloom is abundantly present and comes off easily on finger. A fresh cut just under the node shows the same fresh coloration even after one or two minutes
Kasi (the second year clum)	Culm sheath mostly absent except some remnants. Culm dark in colour. Branches present practically at all nodes. Bloom is patchy, grayish-white in colour and comes off less easily on finger. A fresh cut just under the node shows the same fresh coloration even after one or two minutes
Pakala (the 3rd & 4th year clum)	Culm sheath absent. White bloom absent. Blackish gray or dark blotches appear which come off on finger slightly on rubbing. A fresh cut under the node shows reddish-brown coloration after one or two minutes.



- iii. 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.
- iv. Clumps having the minimum or less than minimum prescribed number of culms shall not be commercially exploited. Only broken, dead, dry, badly damaged and malformed bamboos will be felled.
- v. 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.
- vi. 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.
- vii. Rhizomes will not be dug.
- viii. 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.
- ix. The cut shall be made with a sharp instrument to ensure that the stump remains intact without splitting.
- x. 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.
- xi. Climbers shall be cut from all the bamboo clumps during working of the coupes.
- xii. Bamboo strips will not be used in tying bamboo bundles.
- xiii. Bamboo cutting will not be done from 1st July to 30th September.
- xiv. In case of sporadic flowering of bamboo, the flowered clumps will be clear-felled, once the seeds from such clumps have fallen.
- xv. 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.

- xvi. Lopping of bamboos either for feeding livestock or otherwise is strictly prohibited.
- xvii. As far as possible, bamboo cutting should be completed by the end of May.
- xviii. 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.
- xix. No grazing shall be permitted during rains in bamboo forests, which have been worked in the previous season.

18.6.8.4 Rules applicable to specific treatment types:

1. Treatment Type – A.

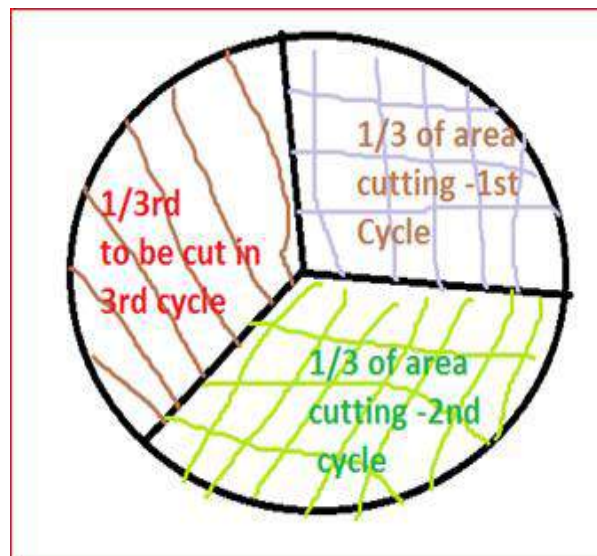
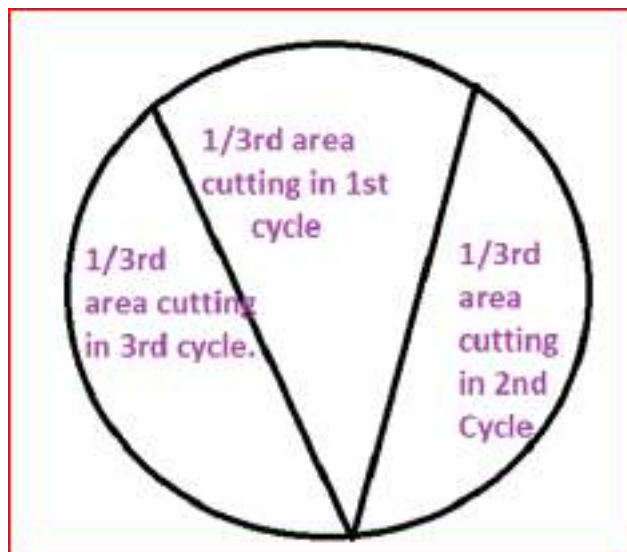
- a. Commercial felling will be done in those clumps, which have more than the prescribed minimum number of culms in each.
- b. Cultural operations will be carried out in clumps having less than the prescribed minimum number of culms in each. In such clumps commercial felling will not be done.

2. Treatment Type – B

- i. There will be no commercial felling 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:



3. Treatment Type – C



- iii. Only cultural operations will be carried out in the existing bamboo clumps.
- iv. 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.
- v. Tending and cultural operations in the area planted with bamboo will be done as per the standard practice.

18.6.8.5: Precautionary measures (Do's and Don'ts) in Bamboo Coupe:

Besides the prescriptions contained in the Bamboo Cutting Rules, some general principles are required to be followed to avoid any damage to the Bamboo Clumps. The simple guidelines will improve coupe working without damage to the present / future crop.

Do's	Don'ts
➤ Sharpen the cutting instrument daily. ➤ While cutting a leaned bamboo Culm, cut from the inner side. ➤ Give a slanting cut to bamboo than a horizontal cut. ➤ Leave all 1st year and 2nd year old bamboo, invent its number is more than minimum bamboo required in clumps.	➤ Never use blunt cutting instruments. ➤ Avoid splitting of bamboo stumps. ➤ Never lit a fire near to bamboo clumps. ➤ Never cut peripheral bamboo culms.



➤ See that Rhizomes are not disturbed in cutting process. ➤ Clean the bamboo clumps after cutting and remove the debris to a ditch or road side. ➤ Collect bamboo twigs and takeout for fencing in nearby plantations. ➤ Never leave a congested clump, though it is not economical. ➤ Start cutting bamboo from top to bottom of a hilly terrain. ➤ Start cutting from interior part of the coup than from Road side.	➤ Never cut bamboo just after a good rain during working. ➤ Don't remove branches of standing bamboo above 3m. it helps interlocking the bamboo each other and withstand wind pressure.

18.6.8.6 Cutting Rules for Daba Bamboos (*Bambusa arundinacea*):

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 less than 10. In case of congested clumps where Culm selection is not possible the clump should be carefully felled by forming segments as per any of two diagrams given above and depending on the interlocking of the bamboos with a view to provide support to the remaining segments against wind damage. The maximum number of segments under which a congested clump should 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 uncut. Where three segments are formed, the middle segment will be in the shape of a triangle. Only the middle segment should be felled at the first working. Two Diagrams showing divisions of the clump in three segments are given above.

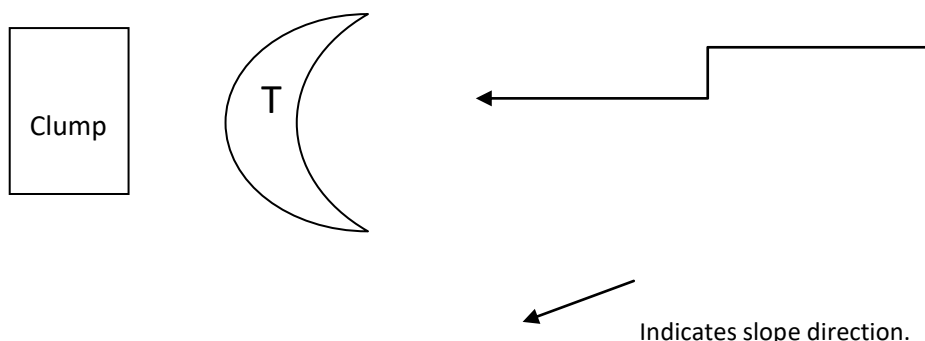
18.6.9 Simultaneous Silvicultural Operations:

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 cut back.
- III. The exposed rhizomes shall be covered with soil scrapped from the uphill side of a hilly or undulating terrain not more than 20cm thick over the pre-working level. Where ever, necessary, vegetative barriers shall also be erected on the downhill side to support the soil till its stabilization; this shall be concentrated mainly in steep slope areas above 30⁰.
- IV. Care should be taken to ensure that no damage is caused to the rhizomes and rootstock.
- V. 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.
- VI. Besides, pulverization and sufficient soil working around the clumps shall be done to improve the overall quality and productivity of the bamboo forests.
- VII. Attempt is to be taken to cover entire area in the same year of working



T : Half Moon Trench

18.6.10 harvesting of Bamboo in a Gregarious flowering Situation:

Sporadic flowering in bamboo forests is normally observed. In case of gregarious flowering entire forest is under flowering. A comparison Statement on Sporadic Flowering / Gregarious Flowering is furnished below for academic interest.

Sporadic Flowering	Gregarious Flowering
Scattered nature of flowering only Few clumps are involved in flowering.	Flowering occurs almost in the entire areas.
Only few culms flower in a clump	It involves almost all or some proportion Flowering takes place in all the culms in clump.



The culm may or may not die after flowering	All the culms of a clump die after flowering.
The clump does not die.	Flowering is followed by the death of the clump
It takes place usually irregularly almost every alternate year.	If follows a cycle of long interval 20 to 65 years.
	It progress in a definite direction like an epidemic wave.
	It takes 2 to 4 years to complete the flowering in the area.

In Selection forest, the age of clump varies and accordingly varies the intensity of gregarious / sporadic flowering. The delay in flowering in poor sites is due to the effect of site quality, which is related with the growth, and storage of starch, sugar and other substances in the clump, which help flowering. In a well-managed forest intensity of flowering is less in comparison to an un-worked forest consisting congested clumps. Intensity of flowering is more in area having more biotic interference in form of grazing and fire in comparison to protected area. It is important to identify the characters of flowering in Salia Bamboo to decide appropriate management technique.

In case of gregarious flowering, all flowered bamboo to be removed just after seeding in month of December. Adequate arrangement is to be made to cut and remove all bamboo without leaving any culms / clumps.

18.6.11 Regeneration:

18.6.11.1 Simultaneous Silvicultural Operation (SSO):

Simultaneous Silvicultural Operation (SSO) is a regeneration practices required to be completed in the same year of working. SSO induces coming up new Karadi in the clumps. In case of delay, the rising of Karadi is also slowed down / delayed. As a result one year will be lost for getting good kardi in bamboo clumps.

Besides the SSO it is proposed to improve bamboo forests in two ways i.e. assisting High Forest System by broadcasting Bamboo seeds and Restocking by planting.

18.6.11.2 Broadcasting of Seeds:

Just after coupe is surrendered or in month of June 1st fortnight, Salia Bamboo seeds @ 5 Quintals per year in a coupe / treatment section for two consecutive year is to be broadcasted . In very barren hard soils, ground preparation i.e. howing of soil is recommended to receive the seeds. It will also retain the seeds being carried out by runoff.



Just after germination and growth above 1 meter height, the seedlings may be thinned out to a spacing of 2mx2m and thinned out seedlings to be planted in open space. Strict Fire protection measures are to be adopted for five years to allow seedlings to establish and clump formation. If so required, the slow forming clumps may be assisted by application of fertilizer / Farm Yard Manure. This is to be adopted in both coupe sections and treatment section during the allotted year. This treatment is also to be extended to gregarious flowering area.

Treatment of gregariously flowered areas& Seed broadcasted area:

- Bamboo seedlings at a spacing of about 2 m x 2 m are to be adopted and retained and the rest are to be thinned out and planted elsewhere.
- Cleaning, soil working and weeding is to be done around the adopted bamboo seedlings upto a radius of 50 cm.
- To maintain the continuity, planting up of bamboo rhizomes is also to be resorted to especially in big gaps.
- The area should be closed for grazing.
- Elaborate fire protection measures are also to be taken.

18.6.11.3 Planting of bamboo:

Planting of bamboo is a good option to restock the depleted bamboo forests. Standard planting techniques as per approved cost norm is to be followed. A 400 plant density per hectare is suggested. Instead of seed origin seedlings which take a long time for clump formation, it is suggested to have bamboo seedlings from layering method and planting of off sets after dismantling the raised congested clumps.

NB; Raised congested clumps have no future at all in restocking a bamboo forest rather; it symbolizes bad management of bamboo forests.

Quantum of activities Suggested:

Bamboo Silvicultural Operation in entire assigned area i.e. 57071.9406 ha x 2& 1/2 Cycle in the plan period = 142679.9 ha. Bamboo Seed broad casting: 28 series x 4 section x 5 quintals x 2 year x 2&1/2 cycle= 1400 quintals

- a) Planting of Bamboo over 5% of the area assigned i.e. 5% of 57071.94 = 2853.0 ha in 10 years.



18.6.12 Associated regulations and measures:

There are bamboo artisans whose livelihood depends on bamboo forests. They usually required 1st year / 2nd year bamboo for their use. The demand and the bamboo cutting rules are contradicting. As a result cutting of 1st year / 2nd year bamboo in an unscientific way prevails all over. This is one reason for depletion of Bamboo Forests. Now it is proposed to regulate their need by selectively availing required bamboo under supervision of Foresters.

Similarly, in Odisha collection of very young shoots i.e. Karadi for food purpose is very prevalent. This practice is to be checked through

- Through Legal means.
- Through Public awareness from June to November every year. Voluntary organizations working in field of motivation, training and publicity may be engaged for the purpose.
- Constant patrolling by special squad is essential. Framing of complete working modalities is suggested.

18.7 InterimRevision:

These prescription may be reviewed after 5 years jointly by the RCCF, Bhubaneswar circle and the Chief Conservator of Forests, Working Plans and the deviation if any suggested shall be subjected to the sanction of the competent authority.



CHAPTER- 19

NON TIMBER FOREST PRODUCE (OVERLAPPING) WORKING CIRCLE

19.1 Name of working circle:

The Non Timber Forest Produces (NTFP) including Medicinal & Aromatic Plants (MAP) is mostly seen in moist forests of Daspalla and Mahipur Range of the division. Besides Char, kendu, Kusuma, myrobolan, Siali leaves, Kendu leaf, Bana haldi, Satabari, Sarpagandha, Honey are available to a greater extent in this division. Cane is naturally occulating along the nalla course on moist areas. Bamboo has been covered under a separate Working Circle of this Plan. For management of Kendu leaf, separate divisions i.e. Phulbani Kendu leaf Division is looking after it exclusively. For management of rest of the NTFP available in the division this **Non Timber Forest Produce (Overlapping) Working Circle [NTFP (O) WC]** has been constituted. The entire forest area excluding those of erstwhile Social Forestry Plantation and area declared as PF due to its small and scattered in nature has been assigned to this Working Circle. The area assigned is **-103766.5105 ha.**

19.2 General constitution of working circle:

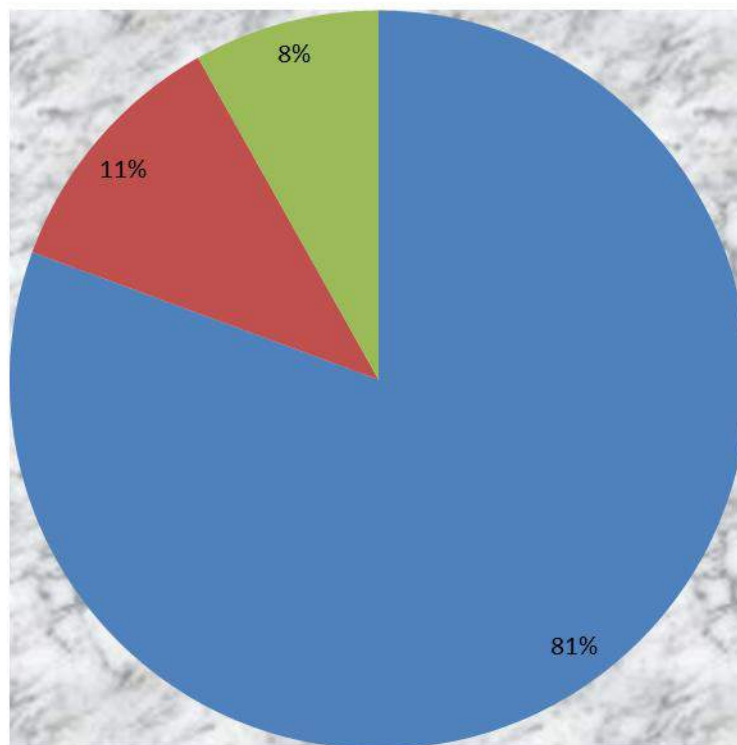
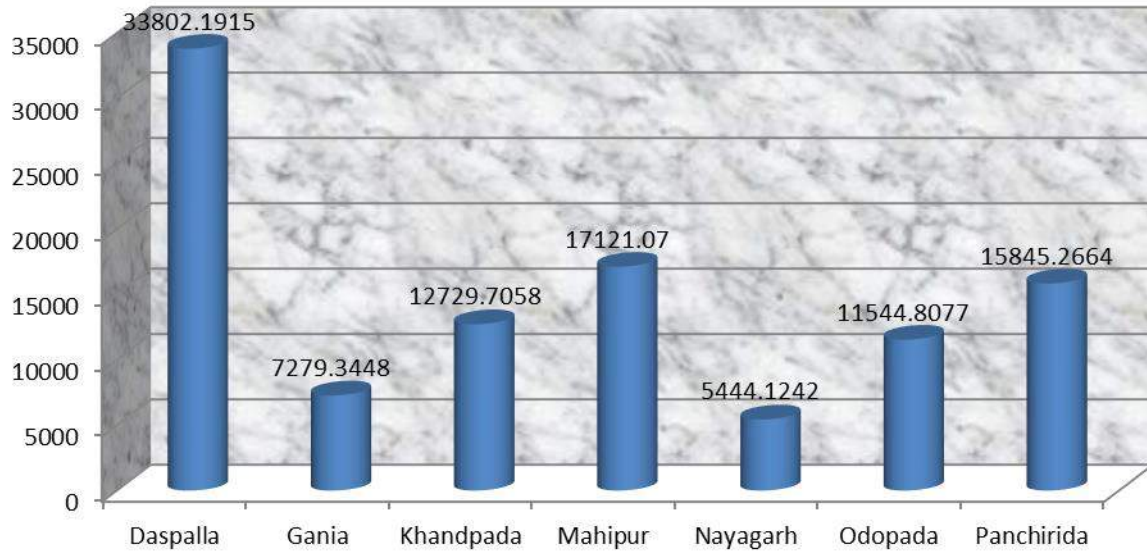
The natural forest area bears many Herbs / Shrubs / Medicinal & Aromatic Plants. The man made forest i.e. Village Forests, Protected Forests hardly bears NTFP items except those are of planted up. The forests assigned to this Working Circle are all Reserved Forests, All PRF, and DPF of the Division. The range wise area assigned to this working circle is as in Table No 19.1.

Table No 19.1 Area assigned to NTFP (O) WC Nayagarh Division.

Range	RF	PRF	DPF	Total	%	JFM area
Daspalla	25930.2241	3189.8304	4682.137	33802.1915	32.58	4320.0000
Gania	4531.8316	1200.7796	1546.7336	7279.3448	7.02	1743.0000
Khandpada	12729.7058	0		12729.7058	12.27	4919.5140
Mahipur	17058.9937	0	62.0763	17121.0700	16.50	5734.2500
Nayagarh	4864.2053	579.91890		5444.1242	5.25	4783.0500
Odopada	8657.3283	1124.390	1763.0894	11544.8077	11.13	4256.5600
Panchirida	9873.2470	5580.288	391.7314	15845.2664	15.27	6495.0000
Total	83645.5358	11675.207	8445.7677	103766.5105	100.00	32251.3740



Area assigned in Ha



**19.3 General characteristics of vegetation:**

The forests of Nayagarh Division are mostly Moist Deciduous Sal Forests and partly Dry Deciduous Mixed Forests. Moist forests are rich in herbs / shrubs of medicinal value, Aromatic in nature, Cane, Mushrooms, Siali leaf etc. The dry forests are rich in fruits, berries, flowers of importance of commerce in NTFP items. In Nayagarh Division important NTFP species available are enlisted at Table No 19.2

Table No 19.2 Important NTFP species and parts for use.

Sl. No	Local Name	Botanical Name	Parts Used	Uses
1	Arjuna	<i>Terminalia arjuna</i>	Bark & Fruits	Tannin for leather, Medicinal
2	Asan	<i>Terminalia tomentosa</i>	Bark	Tassar cocoons, Medicinal
3.	Amba	<i>Mangifera indica</i>	Roots bark, seed kernel	Fruit is edible, medicinal,
4.	Ambada	<i>Spondias pinnata</i>	Roots, barks, fruits seeds	Medicinal
5	Anla	<i>Embllica officinalis</i>	Root bark leaves fruits	Fruit is Edible, Medicinal
6	Arakha	<i>Calotropis gigantea</i>	Whole plant	Medicinal
7	Aswastha	<i>Ficus religiosa</i>	Bark, shoots, fruits seeds	Medicinal, Rope making, Fruits for animals.
8	Anchhu	<i>Morinda tinctoria</i>	Roots and leaves	Medicinal
9	Bandhan	<i>Ougeinia oojeinensis</i>	Bark	Medicinal
10	Bara	<i>Ficus bengalensis</i>	Root bark leaves buds latex	Rope making, Medicinal, Fruits for Birds and Animals
11	Bela	<i>Aegle marmelos</i>	Roots, leaves & fruits	Fruit is Edible, Medicinal
12	Bhalia	<i>Semecarpus anacardium</i>	Fruits	Medicinal
13	Bichhuati	<i>Tragia involucrate</i>	Roots and leaves	Medicinal
14	Baidanka	<i>Mucuna pruriens</i>	Roots, leaves, seeds and hair	Medicinal
15	Bana haladi	<i>Curcuma aromatica</i>	Rhizomes	Medicinal
16	Baula	<i>Mimusops elengi</i>	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 bellerica	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	Buchnanania 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 ghasa	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	Dhanantwari	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	Leaves, flowers seeds	Medicinal



		abotrstris		
43	Ghikuanari	Aloe vera	Leaf juice	Medicinal
44	Harida	Terminalia chebula	Fruits	Tannin for leather, Medicinal
45	Hinjala	Barringtonia acutangu	Roots, leaves, fruits	Medicinal
46	Hadabhanga	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	Kathhacham pa	Plumeria rubra	Root, leaves and latex	Medicinal
52	Kochila	Strychnos nuxvomica	Bark, leaves and seeds	Fruit is edible- birds, Medicinal
53	Kendu	Dyospyros melanoxyton	Fruits and leaves	Fruit is Edible, Leaves Bidi
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	Pan industries Medicinal
58	Kantamaris	Amaranthus spinasus	Whole plant	Medicinal
59	Kanteikuli	Flacourtia indica	Roots, leaves and fruits	Medicinal
60	Kurein	Holarrhena antidysentrica	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	Symplocos racemosa	Bark	Medicinal
67	Mahula	Madhuca Indica	Flower and Fruits	Edible Oil, Fruits, country liquor
68	Mohalimba	Melia composite	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	Rithha	Sapindus laurifolia	Roots, bark and fruits	Herbal Shampoo, 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	Strebulus asper	Roots Bark, leaves latex	Medicinal
91	Siali	Bauhinia vahlii	Fiber	Binding KL, Rope making
92	Siju	Euphorbia antiquor	Roots juice	Medicinal
93	Tentuli	Tamarindus indica	Roots, fruits and seeds	Fruit is Edible, Medicinal



19.4 Management Unit:

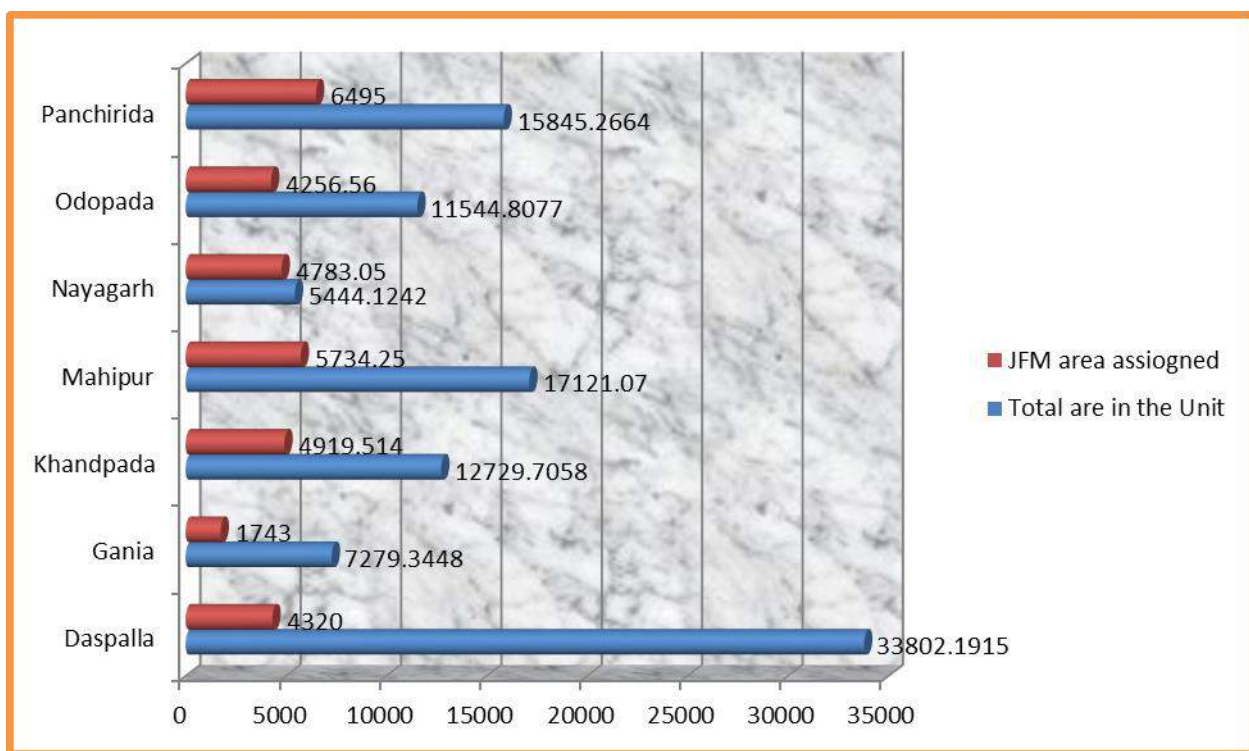
For management purpose each range is considered as a Unit. Accordingly the Division is divided to seven units. The Unit and area under each unit is furnished below. (Table No 19.3)

Table no 19.3 Constitution of Management Unit			
Sl No	Range / Unit	Total area in ha	Percentage
1	Daspalla	33802.1915	32.58
2	Gania	7279.3448	7.02
3	Khandpada	12729.7058	12.27
4	Mahipur	17121.0700	16.50
5	Nayagarh	5444.1242	5.25
6	Odogaon	11544.8077	11.13
7	Panchirida	15845.2664	15.27
	Total	103766.5104	100.00

19.5 Blocks, compartments and JFM area:

The total area in each unit and JFM area is furnished at Table No 19.1 above. Out of total area assigned to this working circle i.e. 103766.5104 ha, 32251.374 ha has been assigned to VSS which constitutes about 31.08% of the area. The range wise position is furnished below. (Table No 19.4)

Table No 19.4 Management Area and JFM involvement				
Sl no	Range	Total are in the Unit	JFM area assigned	Percentage
1	Daspalla	33802.1915	4320.0000	12.78
2	Gania	7279.3448	1743.0000	23.94
3	Khandpada	12729.7058	4919.5140	38.65
4	Mahipur	17121.0700	5734.2500	33.49
5	Nayagarh	5444.1242	4783.0500	87.86
6	Odogaon	11544.8077	4256.5600	36.87
7	Panchirida	15845.2664	6495.0000	40.99
	Total	103766.5104	32251.3740	31.08



19.6 Special objectives of Management:

The special objectives of management are as follows.

- i. To educate VSS / JFM Committee and Gram panchyat about scientific collection methods of NTFP on a sustainable basis.
- ii. To educate primary collectors of NTFP about contribution of NTFP towards their livelihood and share of income from NTFP.
- iii. To educate VSS / Primary collectors about propagation of various herbs / shrubs / climbers and how to improve the stock in forest both quality and quantity.
- iv. To enhance abundance of NTFP species in forest through regulatory mechanism in non-assigned VSS areas / VSS areas.
- v. To conserve and protect the depleting natural medicinal plant resources in the forest area.
- vi. To encourage local community for ex-situ / in situ conservation of NTFP & medicinal plants through VSS.
- vii. To generate self employment and livelihood support for the forest fringe dwellers.



- viii. To develop and disseminate scientific harvesting, processing and storage techniques relating to NTFP products.
- ix. To share market information to primary gatherers.
- x. To impart training on value addition

19.6.1 Analysis of the crop:

No systematic study has been made to assess the potentiality of NTFP species wise. However on general observation, the area is rich in Sal leaf, Siali Leaf & Fiber. , Kendu, Chara, Bahada, Harida, Anla, Kusum, bana Haladi, Mango, Jack Fruit, Honey, Wax, Siali Leaf & Fibre, Sal seeds, Cane various barks and tubers. It is desired to have a complete study and documentation of available NTFP and MAP in the region. The availability of NTFP is in a declined trend all over the division with depletion of forest resources.

19.6.2 Silvicultural system:

No silvicultural System is prescribed for management of NTFP species found in the forests. It is proposed to manage the NTFP resource through

- Regulated collection & trading with Value addition by regular training.
- Impart training on Scientific Collection.
- Improve growing Stock by checking biotic interference.
- In-situ & Ex-situ Conservation.

19.6.3 Collection Cycle:

The NTFP like fruits / leaves, tubers, etc are normally collected in an annual cycle depending on its maturity and requirement/ utility. Honey, wax, mushrooms are widely collected depending upon availability & season. Many MAP (Medicinal & Aromatic) Plants are collected as and when required throughout the year.

19.6.4 Harvesting Period:

Various NTFP Species are collected at different stages of flowering to fruiting / tender to matured leaf, Barks and tubers etc The Calendar of collection / harvesting of NTFP species is furnished below.

Sl	Name	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
1	Amla												
2	Arrow root												
3	Bahada												



4	Banatuli seeds												
5	Bel												
6	Broom grass												
7	Cashew nut												
8	Char seed												
9	Dantari bark												
10	Dhatki flower												
11	Genduli gum												
12	Gum												
13	Harida												
14	Hill broom												
15	Honey												
16	Honey wax												
17	Jatropha seed												
18	Kamal gundi												
19	Karanja seed												
20	Kendu fruits												
21	Kendu leaf												
22	Khair												
23	Khajuri leaves												
24	Kochila seed												
25	Kurei fruit												
26	Kusum seed												
27	Lemon grass												
28	Lodha bark												
29	Mahua flower												
30	Mahua seed												
31	Mango												
32	Mango kernel												
33	Marking nut												
34	Mushroom												
35	Neem seed												
36	Phen phena bark												
37	Sabai grass												
38	Sal resin												
39	Sal seed												
40	Semal cotton												
41	Siali fibre												
42	Siali fibre												
43	Siali leaf												
44	Sunari Bark												
45	Tentuli												
46	Thatch grass												



19.6.5 Division into Management Section:

For collection & marketing of NTFP, the Gram Panchyats are regulating the collection, Registration of Primary gatherer etc at Panchyat Level as per NTFP Policy and Orissa Gram Panchayats (Minor Forest Produce Administration) Rules 2002. For forest point of view no further section has been suggested. Hence Range is taken as an administration & execution unit.

19.6.6 Calculation of the yield:

Except Kendu leaf and Bamboo there is no record to indicate the quantum of NTFP that can be collected from the division. It is difficult to assess the yield that can be harvested without causing harm to trees / wildlife and regeneration of the species.

19.6.7 Collection Sequence.

The collation of NTFP is particularly a time bound operation. The part of the tree herbs / shrubs that are use full for any purpose determines the collection sequence. The time schedule for various items has been furnished 19.6.4 above.

19.6.8 Collection procedure as per Rules.

Orissa Gram Panchayats (Minor Forest Produce Administration) Rules 2002 The state government made these rules in November 2002, which has following salient features. ·

- The GP shall have the power to regulate procurement and trading of MFP, whether produced in government lands and forest areas within the limits of Grama or collected from the Reserved Forests and brought into the Grama.
- Priority would be given to the VSS and its members for collection and trading of MFP.
- Price fixation would be done by the Panchayat Samiti (PS) in September and would be circulated to different offices of district administration and to all the GPs. The Gram Sabha would ratify prices fixed and necessary changes can be made based on the local needs. If Panchayat Samiti fails to fix the price then the District Collector would call a meeting of PS preferably in October to fix up the minimum procurement prices.
- The trader registered to procure MFP from the GP shall furnish monthly return and also annual return on a prescribed format. The GP shall furnish an annual return on the procurement and sale to the Forest Range Officer.



- In case of violation of payment of minimum procurement prices by the registered traders, the Sarapanch shall conduct an inquiry and then it shall be discussed in the GP meeting and then GP shall resolve to cancel the registration of the trader.
- If the trader after cancellation of the registration continues to procure MFP from the GP area then the Sarapanch or Secretary shall lodge complaint before the DFO. The MFP seized by the DFO from the trader shall be publicly auctioned and the sale proceeds thereof be deposited under the appropriate head of account under the Orissa Forest Act.
- If a trader is engaged in procurement of MFP without registering with the GP then the Sarapanch or Secretary shall lodge complaint before the DFO for taking appropriate action.
- Process of Price fixation of NTFP The government has a system of fixation of minimum price for procurement of MFP in order to protect the tribal and forest dwelling communities from exploitation. The fixation of minimum procurement price was started in 1971 by the Agriculture and Cooperation Department. The price was then fixed at the district level. During the last 30 years there have been many changes in the structure and mechanism of price fixation in the state.
- Now there are two different types of price fixation mechanisms in Orissa. For the nationalised items there is an advisory committee at the state level to decide the prices (started in 1982) and for other produces, which are under the control of Gram Panchayat, the Panchayat Samitis have been empowered in November 2002 to fix up the minimum procurement prices. Till 1997 a committee under the chairmanship of the District Collector fixed prices at the district level and the concerned Revenue Divisional Commissioner was approving these prices.
- Usually by the end of September every year the committee was supposed to fix up the prices, which would remain in force till next September.
- In 1997 the Welfare Department fixed the prices of NTFP at the state level especially keeping the operation of TDCC in mind. It continued till 2000. After the transfer of ownership rights to Gram Panchayat in 2000 the mechanism for fixation of price was to be done by the GPs.
- In November 2002 the government finally declared that the minimum procurement prices for NTFP would be fixed at the Panchayat Samiti level, which is being followed.
- The prices would be fixed in September in a meeting attended by the DFO, representatives of TDCC, OFDC and TRIFED. Once the prices are being fixed it would



be discussed in Gram Sabha and Gram Panchayat to approve it. The GP can also make some changes in the prices based on the local needs. If the Panchayat Samiti fails to fix up the prices then the District Collector would call for a meeting to fix up the prices. Price fixation has always remained as a matter of concern.

- The registered traders should give a monthly report of the volume of different NTFP collected, sold and transferred to other places to the concerned GPs and the trader would also submit an annual return. Each GP has to submit an annual report to the Forest Range Officer.
- Secondly, GP has the authority to reprimand the traders who are found to be paying less than the minimum procurement price fixed by the Government. The concerned Sarapanch will carry out an inquiry if there is a complaint in this regard.
- The GP has the ownership right over MFP it can't seize the MFP procured by an illegal trader. This would be seized by the DFO and the sale proceeds would not come to the GP as it would go to the government.

19.6.8.1 Scientific Collection Procedure:

Collection procedure for a sustainable harvest is most important in scientific management. The collection procedure varies for different parts of trees / plants. An attempt have been made to categorize the NTFP items depending upon parts of utility and method of collection. These are as follows.

Many times, while collecting NTFP items, the local inhabitants do not use proper scientific method. The setting fire in the forest floor for collecting Sal seed, cleaning beneath Mohua trees by setting fire for collecting Mohua flowers, lopping of branches bearing seeds and fruit uprooting the plants bearing useful roots and tubers, complete debarking of trees having barks of commercial importance etc are the examples of unscientific exploitation. The items shall be collected without causing any harm to the trees and plants yielding them. Following scientific methods are suggested for collection of various NTFP items.

i. Leaf:

Leaf is the vital part of a plant. Photosynthesis takes place in the leaf. Hence removal of leaves reduce production of food materials for the plant. Only matured leaves can be removed if necessary. In many cases tender leaves are useful as a NTFP e.g. Sal leaf, Siali leaf, Palas leaf etc in that case leaves can be collected by plucking the leaf alone. In no case a branch can be sacrificed to collect leaf easily. In a year not more than 1/3rd of the leaf in a branch can be collected in different spell. This will not hamper the growth of the plant.



ii. Bark:

Bark of a plant is the protecting cover against external injury and against pathogens. Removal of bark of a tree / plant exposes it to external diseases. The debarking of trees yielding bark of commercial importance, viz, Lodha, Medha, Phanphana, Arjun, Asan, and Ashok etc is to be done at least at least 3 feet above the ground so as to prevent injuries from fire, microbes and white ants. The debarking should be confined to the arms reach only for preventing damage to tender barks and juvenile buds. It is to be confined to one face only and should not exceed more than $1/3^{\text{rd}}$ of surface of the bole. The remaining portion of bole should be left untouched so as to maintain continuity of the cambium. However, in view of the PCCF, Orissa instructions vide memo No. 10144 (31) dt.24-04-91, the lease for barks are to be discontinued on silvicultural grounds.

iii. Fruits / Seeds:

Fruits and Seeds are means of propagation of most of the species. Collection of Fruits / seeds should be taken up when the fruits are matured. In no case immature fruits should be collected as the desired result / medicinal value is not obtained from an immature fruits / seeds. All fruits should not be collected as there will be no seed / fruits for further propagation. For collection of fruits / seeds, it is observed that the branches containing ripe and green fruits are cut down and carried to home for selective plucking. This is the most destructive practice being followed. The following points may be bear in mind while collecting fruits / seeds.

- Only Ripe fruits to be collected.
- No lopping of branches containing the fruits.
- Tree branches to be shaken vigorously so that ripe fruits will fall. Then it can be hand pricked.
- If the fruits are small then collect the panicle / bunch having matured fruits above 75%.
- Clean the forest floor by a broom for ease collection from ground rather setting fire to have a clean floor.
- Leave at least $1/3^{\text{rd}}$ of fruits on the tree for seed dispersal by animals / birds for future regeneration.

iv. Flowers:

Flowers of many plants are required for medicinal / Dye purpose. Dhatki, Sankha puspa (Aparajita), Palas, Ashok etc are collected. Mahua Flower is also collected in huge scale for



alcohol and Cattle feed. While collecting flowers the following precautionary measures required to be taken.

- Some flowers fall freely from trees just after few hours of blooming. In such case collect the same from ground i.e. Mahul. Some mahua flowers shall be left on ground every day for wild animals.
- Some flowers remain attached to calyx for a long time. In that case, collect the flower handpicked climbing the tree.
- In cases of very small flowers, the entire inflorescence may be collected. It should be collected from the tree crown here and there not in a continuous fashion.
- Not more than $1/3^{\text{rd}}$ of flowers should be removed from tree as it will mature to fruit / seed and held its propagation.
- Always remember that flower / fruits/ seeds are the future crop of the forest and its collection shall be limited leaving $2/3^{\text{rd}}$ of the crop for future regeneration.

v. Tubers / Roots / Rhizomes:

Tubers / Roots / Rhizomes of herbs / shrubs / climbers are used for medicinal and for food purpose. Primary collectors dig out the Tubers / Roots / Rhizomes and throw the plant to die. The primary collectors shall be trained to take the lower part of the tuber. Rhizomes and top of the tuber which is used for propagation should be replanted in the same pit duly compacted to give rise a new plant for the next season. After planting, the debris are required to be removed from the site so as to save the tuber / rhizome from fire.

vi. Gum and resin:

Now availability of Gum and resins has been reduced. Still then Sal resins are being collected in many parts of the division. While collecting gums and resins, no deep cut shall be given to the trees yielding them. Artificial incision made over trunk should not be too large and deep to adversely affect the growth of trees. Intensive tapping for gums and resins is to be avoided as it may lead to damage and death of trees. The blazing will be done in staggered manner and not haphazardly. The shape of blaze should be triangular with angles pointing towards the ground. The initial blaze should be given at the breast height.

vii. Bark.

Barks of many trees are use full as medicine. Ashok Bark, Lodha, Phenphena barks, Asan barks are most commonly collected from forests. Bark is the protective cover of any plant. Once bark is damaged, it is susceptible to attack by any insects / disease. Bark should not be removed within 2m above the ground level or from main trunk. It can be collected from



branches of the tree, climbers etc. from a particular branch not more than 30% of the surface area, bark should not be stripped off.

viii. Honey & Wax:

Collection of Honey & Wax by tribal is an age old practice. The method adopted is very destructive and many Bee group are destroyed in the process. Sometimes bee hives were torched with naked fire killing most of the bee. Honey is extracted by squeezing the entire comb by hand, which leads to accumulation of dirt in the honey. The honey collectors are required to be trained to collect honey by using slight smoke, removing the honey from the comb by using extractor. Then the comb shall be placed appropriately for use by the bee workers.

The forest fringe villagers should be educated about use of insecticides in agricultural crop and damaged caused to bee / other useful insects

ix. Mushrooms:

Mushrooms are collected from forest floor during rainy season. Mushrooms are usually spreads through Spoors. Not more than 705 of the mushroom should be collected from forest floor so as to have a better collection during the season.

19.6.9 Measures to Improve Production of NTFP Items:

In all the rehabilitation areas NTFP yielding species are to be given due importance. Efforts are to be made to improve regeneration of NTFP yielding species in all forest blocks. As per the site requirement, the proportion of fruit bearing and NTFP yielding species are to be encouraged. The growth of existing NTFP yielding species is to be boosted by taking suitable silvicultural measures. The NTFP yielding species are not to be felled unless dead and uprooted. Over exploitation of seeds of various important NTFP, yielding species is to be prevented for encouraging natural regeneration. The following points may be kept in mind to improve NTFP status in forest.

- Harvest / collect NTFP items by trained local collectors. Extensive training may be organized by the department. This is the only way to save NTFP resource in forests.
- Over exploitation is to be prevented. During collection period, forest staff should remain vigilant.
- Items of NTFP and period of Collection may be displayed at vintage points and VSS members are made aware of the fact.



- Steps to be taken to avoid unhealthy competition for collection. This leads to pre-mature collection, cutting of branches even felling trees for collection of fruits.

19.6.10 Regeneration:

Regeneration of NTFP species in forests will improve quality collection. For inducing regeneration of NTFP species both In- situ conservation and ex-situ conservation is suggested.

19.6.10.1 In-situ Conservation:

The forest blocks of Mahipur Range, Daspalla Range and part of Nayagarh Range bear good NTFP species. It is recommended to have in situ conservation plots for good seed production, future propagation and will act as store house of NTFP Species of the locality. The area needs to be closed to grazing and strict fire protection measures and no collection for five years will substantially enhance NTFP availability in the area and locality.

19.6.10.2 Ex-situ Conservation:

Under Ex situ conservation it is proposed to have plantations of important NTFP species which became rare and endangered in the locality. It is proposed to cover at least **100 ha** of plantation of following species in different patches of Sulia RF, Mahipur Range and Central RF, Daspalla Range.

- Ashok (Saraca indica)*
- Cane (Saccharum officinarum)*
- Harida (Terminalia chebula)*
- Anla (Emblica officinalis)*
- Genduli (Sterculia urens)*
- Sunari (Cassia fistula)*
- Guluchi (Tinospora cordifolia)*
- Satabari (Asparagus racemosus)*
- Siali (Bauhinia vahlii)*

19.6.10.3 Demonstration Plots:

In order to educate the public / baidyas and students Demonstration plots of climbers having medicinal value is required to be developed within forests of Daspalla, Khandpara close to visiting places on limited scale. A ten hectare demonstration plot may be developed in one compartment suitable and near to Daspalla / Odogaon.



19.6.11 Associated regulations and measures:

As per **the Orissa Grama Panchayats (Minor Forest Produce Administration) Rules, 2002**, collection of most of the NTFP is vested with the Grampanchyat. The Rule is at **Annexure-XVIII** and NTFP policy of 2000 rule is attached as **Annexure-X**. The provisions may be followed for all purpose relating to NTFP (Minor forest Produce).





CHAPTER -20

WILDLIFE (OVERLAPPING) WORKING CIRCLE [WL(O)WC]

20.1 Name of Working Circle:

Wildlife is an integrated part of forest management. The National Forest Policy 1988 has emphasized the need to conserve Wild Life and their habitat. Wildlife management is the management process influencing interactions among and between wildlife, its habitats and people to achieve predefined impacts. It attempts to balance the needs of wildlife with the needs of people using the best available science. Wildlife management is interdisciplinary that deals with protecting endangered and threatened species and subspecies and their habitats, as well as the non-threatened agricultural animals and game species. The Wildlife Management program emphasizes both applied and basic research in wildlife ecology, management, education and extension.

Wildlife management takes into consideration the ecological principles such as carrying capacity of the habitat, preservation and control of habitat, reforestation, predator control, re-introduction of extinct species, capture and reallocation of abundant species and management of “desirable” or “undesirable” species.

In order to have a basic management approach this working circle has been constituted i.e. **Wildlife (Overlapping) Working Circle**. All forest blocks (RF, PRF, and DPF) included for management are also included in this working circle. The total area assigned to this Working Circle is **103766.5105 ha**.

20.2 General constitution of working circle:

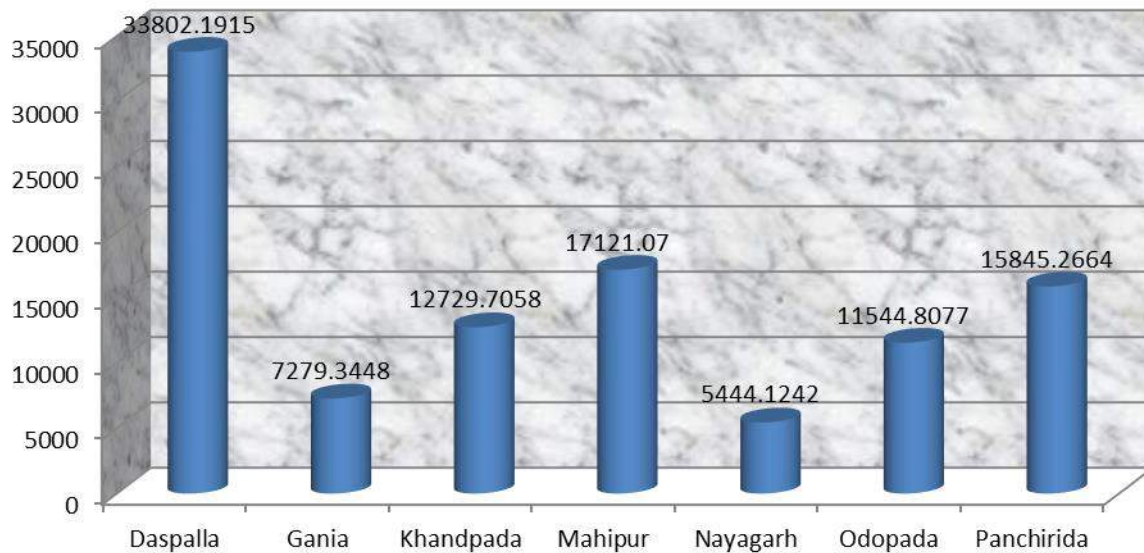
The natural forest area is the niche for the Wild animals. Due to Proximity to Baisipali Sanctuary, Mahanadi Gorge Sanctuary under Mahanadi Wildlife Division, the movement of animals from and to Sanctuary is commonly noticed. These Sanctuaries are also declared as Satkosia Tiger Reserve. The forests of this division are also part of Mahanadi Elephant Reserve. Buguda- Central Reserved Forest Elephant corridor is entirely within the divisional jurisdiction. Elephants from Central RF move to Ghumsur North Division via this corridor. The forests assigned to this Working Circle are all Reserved Forests, All PRF, and DPF of the Division. The range wise area assigned to this working circle is as in Table No 20.1

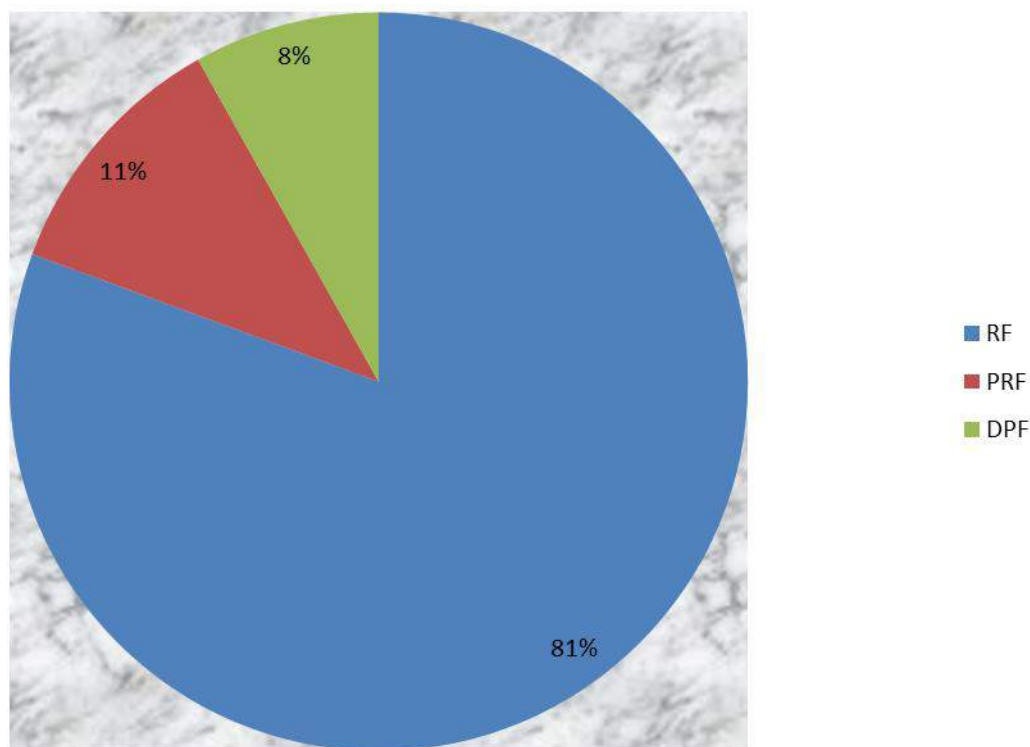


Table No 20.1 Area assigned to WL(O) WC Nayagarh Division.

Range	RF	PRF	DPF	Total	%	JFM area
Daspalla	25930.2241	3189.8304	4682.137	33802.1915	32.58	4320.0000
Gania	4531.8316	1200.7796	1546.7336	7279.3448	7.02	1743.0000
Khandpada	12729.7058	0		12729.7058	12.27	4919.5140
Mahipur	17058.9937	0	62.0763	17121.0700	16.50	5734.2500
Nayagarh	4864.2053	579.91890		5444.1242	5.25	4783.0500
Odopada	8657.3283	1124.390	1763.0894	11544.8077	11.13	4256.5600
Panchirida	9873.2470	5580.288	391.7314	15845.2664	15.27	6495.0000
Total	83645.5358	11675.207	8445.7677	103766.5105	100.00	32251.3740

Area assigned in Ha





20.3 General characteristics of vegetation:

The forests of Nayagarh Division are mostly Moist Deciduous Sal Forests and partly Dry Deciduous Mixed Forests. Nayagarh division is famous for its Bamboo forests in the State. The forests are of all age classes with bamboo and other fodder species for animals. Due to proximity to river Mahanadi, many rivulets flowing in the forests meet the requirement of water to animals. Kuanria Irrigation Project attracts many birds / wild animals / amphibians to the surrounding forests. Probability of sighting of elephant in any forests of Mahipur, Daspalla, Odogaon are very high. Other animals / birds available in the division has been described under Chapter 3 of this plan.



20.3.1 Special features:

a) Mahanadi Elephant Reserve:

Elephant is an animal included in Schedule-I of the Wildlife (Protection) Act, 1972. Project Elephant was launched in February 1992 by Govt. of India to consolidate the programmes for conservation of elephant and its habitat. The Project seeks to address

- (a) The threats to the survival of elephant in our country on account of loss of its habitat, migration path and poaching for tusks; and
- (b) Issues arising out of elephant depredation in villages.

Project Elephant also seeks

- (i) To maintain an appropriate size of the population in any habitat to safeguard it against extinction; and
- (ii) to maintain genetic continuity of isolated populations, which are otherwise susceptible to inbreeding.

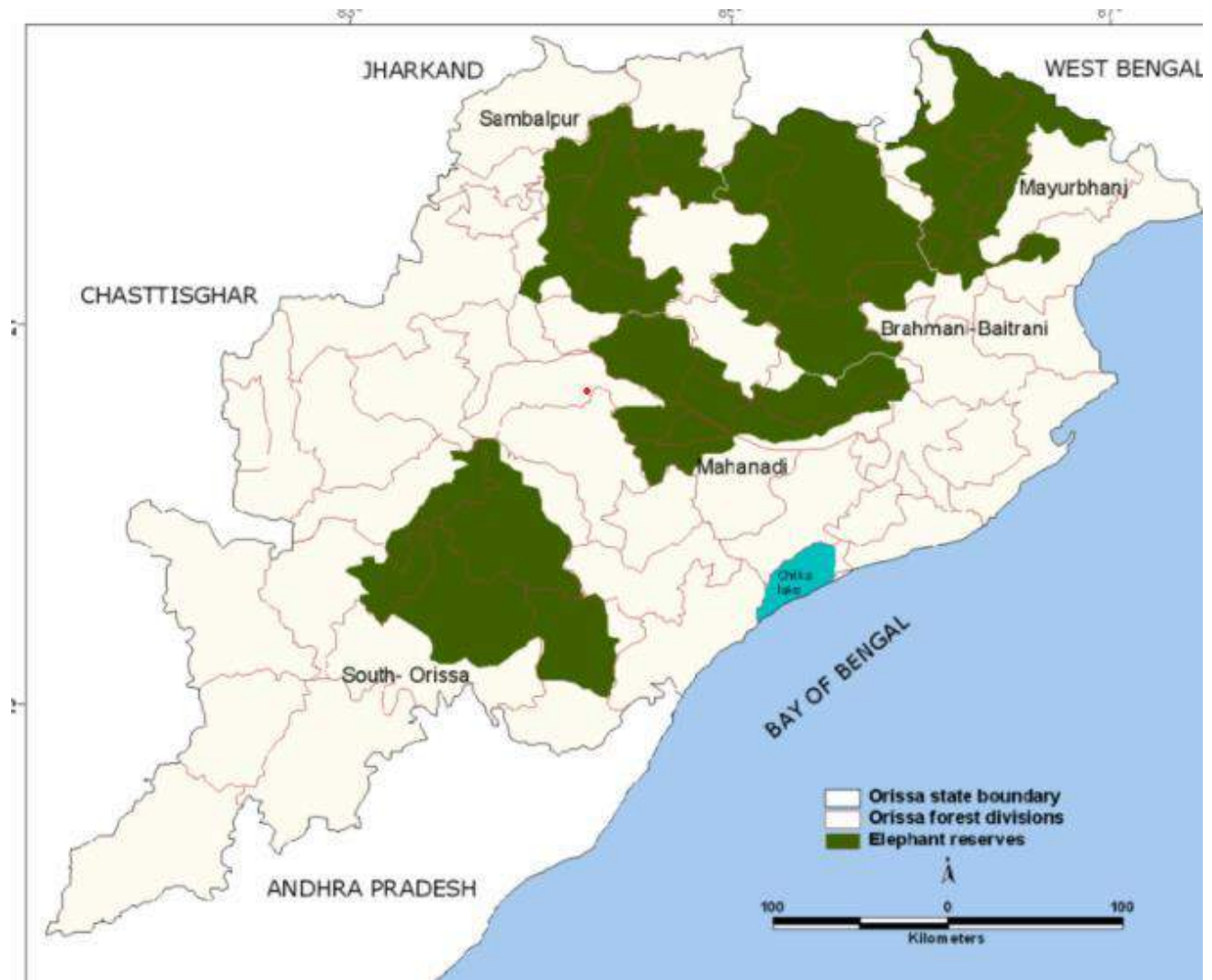
Project Objectives

- To conserve and protect elephant populations and to ensure that any population remains healthy and viable within its ecosystem.
- To conserve and protect the habitat of the elephant, and to reverse the deterioration of these habitats.
- To conserve, protect, and open up traditional migration corridors linking the different habitats.
- To create conditions, through eco-development activities, welfare measures and mitigation of elephant depredation for nurturing the traditional compassion and tolerance of the people living in and around elephant habitats.
- To take concrete measures to protect the elephant from poaching and other threats.
- To create viable mechanisms to ensure inter-state and inter regional coordination in protecting and conserving the elephant and its ranges.
- To create infrastructure and facilities, including training of manpower, for conservation support activities, veterinary care, humane methods of tranquilising and translocation, etc.



- To encourage, and create facilities for research related to the ecological significance of elephant and veterinary care of the animal.
- To educate people about the ecological significance of conserving the elephants and to revive the historical reverence and compassion for elephants.
- To devise strategies and programmes of providing alternative source of livelihood to craftsmen and communities adversely affected due to ban on the trade of ivory products.





Mahanadi ER (Proposed in 2004)

(First constituted: March 2002; Revision Proposed in June 2004) [As per 2002 constitution, the Mahanadi ER includes total area of Satkosha Gorge Sanctuary (795.52sq.km); Baisipalli Sanctuary (168.35sq.km); Hatidhara RF in Boudh District (63.89sq.km); Makaraprasad RF in Nayagarh District (10.54sq.km)]

Location

Districts: Angul, Cuttack, Nayagarh, Kondhmal, Dhenkanal



Forest Divisions: Portions of Angul , Athagarh, Cuttack, Nayagarh, Boudh and Dhenkanal, and entire Satkosia Wildlife Division, Mahanadi Wildlife division and Athamallik Forest Division.

Latitude: North - 20°. 10' to 21°.5' Longitude: East: - 84°. 15' to 85°.58'

Area of Mahanadi ER (as in 2004):

Table No 20.2 Area of Mahanadi Elephant Reserve.			
Name of the Division	Elephant Habitat (RF, PRF)	Zone of Influence	Total
Satkosia Wildlife Division	447.79	207.2	654.99
Mahanadi Wildlife Division	300.50	136.79	437.29
Angul Division	252.28	355.72	608.00
Dhenkanal Division	513.51	1333.16	1846.67
Athagarh Division	400.48	680.93	1081.41
Athamallik Division	538.39	1302.61	1841.00
Boudh Division	335.01	110.00	445.01
Nayagarh Division	299.00	708.35	1007.35
Cuttack Division	52.20	62.40	114.60
Total	3139.16	4897.16	8036.32

Elephant Conservation Issues:

The factors impinging on conservation of elephants in Odisha fall under two distinct categories.

- Activities like hunting for tusks and killing by villagers in retaliation for depredation caused by single elephants or herds;
- Diversion of forest lands, mainly for mining of forest land, encroachment, and shifting cultivation leading to loss/ decline/fragmentation/degradation of elephant habitat.



Strategy and Action Plan:

- (i) Constitution of 'Elephant Reserves' by including the contiguous elephant habitats, ranges and the corridors between them.
- (ii) Evolving appropriate management of the designated 'Elephant Reserves' and other Elephant Habitats and conservation of the traditional migratory paths.
- (iii) Measures to minimise the problem of crop-raiding, house damage and killing of humans.
- (iv) Management of problem elephants or 'Problem Populations' by means of capture/ translocation/ domestication and other methods.
- (v) Adoption of 'Animal Welfare' measures. Domestication and use of elephants for tourism, patrolling, etc have to be done carefully without subjecting the elephant to undue stress and ensuring proper upkeep and care of the animals.
- (vi) Improvement of the quality and security of the life of the human population who share any elephant habitat and its resources for daily living.
- (vii) Research on aspects of elephant conservation.
- (viii) Education and awareness campaign.
- (ix) Setting up of veterinary units for medical attention to sick elephants in each Elephant Reserve.
- (x) Training of mahouts and elephant managers.

b) Eco Sensitive Zone of Baisipali Sanctuary: & Mahanadi Gorge Sanctuary:

Baisipali Wildlife Sanctuary and Mahanadi Gorge Sanctuary are under Mahanadi Wildlife Division. The Eco Sensitive Zone has not yet been declared. In default area coming within 10 km is considered as Eco Sensitive Zone. The entire ESZ area of these Sanctuaries is within Nayagarh Division.

c) Satkosia Tiger Reserve:

Both the sanctuary has been clumped up as declared as Satkosia Tiger reserve. Its ESZ coincides with ESZ of WLS.

**d) Kuanaria Irrigation Project**

Kuanria Irrigation Project / Dam is located on the outskirts of Daspalla in Nayagarh District of Odisha. It is built across the Kuanria River, which is a tributary of the Mahanadi River. The basic motive of constructing this dam was to help in the irrigation of the farmlands of this region. The dam is just 7 kilometers away from Daspalla town and situated near to Odasar village in Nayagarh district. It's the largest dam of Nayagarh district. One can find forests with incredibly lush flora and fauna, a very good nature spot with a deer park in this place. The Dam intercepts a catchment area of 124 km² across the stream Kuanria and Khalkhala. This project provides irrigation facilities to an ayacut of 3600 ha. in Khariff and 1908 ha. in Rabi. The maximum height of the dam is 21 m. This dam provides a very good place for avifauna and a good water source to animals / amphibians. Many Reptiles those feed on fishes are observed in near by forests.

20.4 General characteristics of Fauna available:

Elephant is the focus animal of the division. Leopards are also live in dense forests of Daspalla, Mahipur range. Other carnivours and hervivourous animals are seen in abundance to good concentration in this division. Due to proximity to Mahanadi River and other wet lands within the division, aquatic life in wild, avifauna, winter birds are observed.

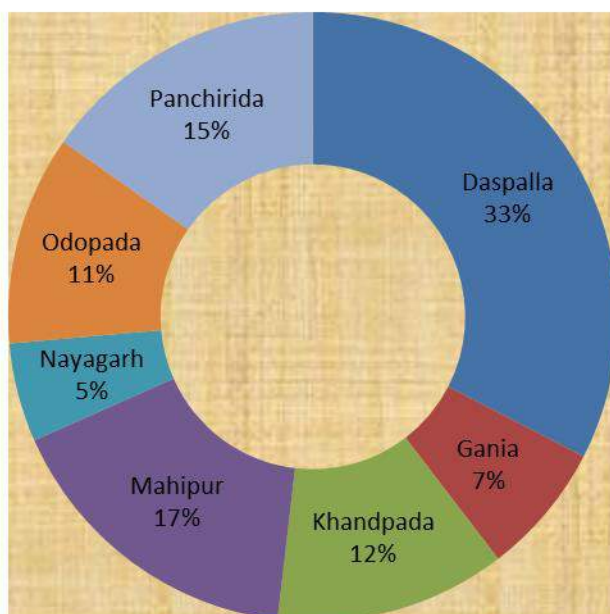
20.5 Management Series and JFM areas:

For manangement purpose the Range is being considered as a Unit. As such Division has been divided in to seven management Units as detailed below. (Table No 20.3)

Table No 20.3 Constitution of Management Unit & area involved			
Sl No	Range	Total	%
1	Daspalla	33802.1915	32.58
2	Gania	7279.3448	7.02
3	Khandpada	12729.7058	12.27
4	Mahipur	17121.0700	16.50
5	Nayagarh	5444.1242	5.25
6	Odogaon	11544.8077	11.13
7	Panchirida	15845.2664	15.27
	Total	103766.5104	100.00



Area under Management Unit

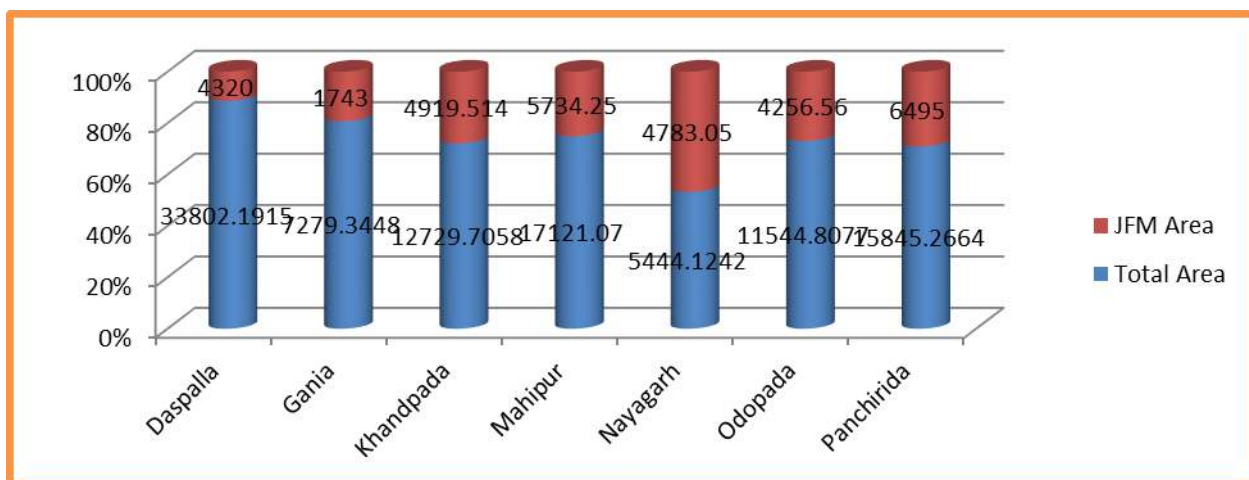


20.5.1 Blocks, Compartments and JFM area:

The area assigned to Wildlife (O) Working Circle has been assigned to VSS for protection and management. The area assigned to VSS under JFM Resolution is at Table No 20.4

Table No 20.4 Area assigned to WL(O) WC Nayagarh Division.

Range	RF	PRF	DPF	Total	%	JFM area
Daspalla	25930.2241	3189.8304	4682.137	33802.1915	32.58	4320.0000
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Total	83645.5358	11675.207	8445.7677	103766.5105	100.00	32251.3740



20.6 Special objectives of Management:

The special objectives of management are in line of general objectives of Working Plan. All objectives under Elephant Reserve are also objectives of this working Circle. Besides the above other objectives are as follows.

- To Conserve, Protect and improve existing wild life and their habitat.
- To enhance bio-diversity and Wild Life population in the region.
- To involve people in management of Wildlife & associate them in preventing crime against Wild animals.
- To build up scientific knowledge on wildlife resources of the region.
- To train personnel at various levels for conservation and management of wildlife.
- Carry out research relevant to management including the development of techniques appropriate to Indian conditions especially to this locality.
- To educate people about wildlife and need for their conservation.
- To prevent sporadic and strategic crime against wild animals / birds.
- To protect Life and properties of public against animal depredation.



20.6.1 Concentration of Fauna.

The probability of sighting of animals etc in various forest blocks indicates the concentration of Fauna. The sighting frequency is furnished below.

Table No 20.5 Important Forest Blocks & probability of Sighting of animals

Sl No	Animals / Birds	Forest Block.	Probability of Sighting / Abundance			
			<20%	20% to <40%	40% to <60%	60% and above
Nayagarh Range						
1	Barking Deer, Sambar	Sulia RF	-	-	Barking Deer, Wild Boar	-
2	-	Rukhi RF	-	-	Barking Deer, Wild Boar	-
3	Wild Boar	Balaram RF	-	-	Barking Deer, Wild Boar	-
4	Barking Deer, Wild Boar	Patharkata RF	-	-	Barking Deer, Wild Boar	-
Daspalla Range						
5	Barking Deer, Sloth Deer, Wild Boar, Spotted Deer, Leopard	Pokharigochha RF	Leopard, Spotted Deer	Sloth Bear	Barking Deer	-
6	Leopard, Jungle Cat, Spotted Deer, Barking Deer, Mouse	Central RF	Leopard, Spotted Deer	-	Barking Deer	Jungle Cat, Mouse
7	Elephant, Leopard, Hyana, Deer, Bison, Barking Deer	Chadiapalli RF	Elephant (Migratory), Leopard	Hyna, Deer, Bison	Barking Deer	-



8	Leopard, Hyana, Deer, Barking Deer, Wild Boar, Spotted Deer	Nuagaon RF	Leopard, Spotted Deer	Hyana	Barking Deer, Wild Boar	Deer
9	Leopard, Hyana, Deer, Barking Deer, Wild Boar	Nasaghar RF	Leopard	Hyana	Barking Deer, Wild Boar	Deer
10	Leopard, Hyana, Deer, Barking Deer, Wild Boar	Ambalimba RF	Leopard	Hyana	Deer	Barking Deer
11	Rabbit, Monkey, Jackle, Wild Boar	Khaman P.R.F		Jackle	Monkey, Wild Boar	Rabbit
12	Rabbit, Monkey, Langoor, Wild Boar	Baisipalli Extn. I, II, III. P.R.F.	Langoor	Wild Boar	Monkey	Rabbit
13	Monkey, Jackle, Wild Boar, Spotted Deer, Hyana	Sirisabadi D.P.F.	-	Jackle, Spotted Deer, Hyana	Wild Boar	Monkey
14	Barking Deer, Wild Boar, Leopard	Sikharapanga D.P.F.	Leopard	Sambar	Barking Deer, Wild Boar	-
Mahipur Range						
15	Elephant (Migratory), Bear, Wild Boar, Spotted Deer, Barking Deer, Peacock, Hyana	Hatimunda RF	Peacock, Mongoose	Spotted Deer	Wild Boar, Barking Deer	-
16	Peacock, Mongoose, Wild Boar, Spotted Deer, Barking Deer	Ratadei RF	Elephant (Migratory), Bear, Peacock	Spotted Deer, Barking Deer	Hyana, Wild Bear	-



17	Elephant (Migratory), Spotted Deer, Barking Deer, Bear, Peacock, Wild Boar	Palva RF	Elephant (Migratory), Peacock	Spotted Deer, Barking Deer	Bear	Wild Boar
19	Barking Deer, Hyana, Wild Boar, Spotted Deer, Porcupine	Ragadimada RF	Percupine	Barking Deer, Hyana, Spotted Deer	Wild Boar	-
20	Jackal, Rabbit, Mongoose, Wild Boar	Bhagabati D.P.F.		Jackal, Mongoose	Rabbit, Wild Boar	-
Odagaon Range						
21	Elephant (Migratory), Bear, Spotted Deer, Barking Deer, Sambar, Bison, Rabbit, Peacock	Gochha RF	Elephant (Migratory), Sambar, Bison	Bear, Spotted Deer, Barking Deer	Rabbit, Wild Boar	Parcupine
22	Fox, Mongoose, Jungle Fowl, Wild Boar, Spotted Deer	Gayalsingh RF	Jungle Fowl	Wild Boar	Spotted Deer	Fox, Mongoose
23	Gendalia (Stork), Spotted Deer, Black Buck, Peacock, Fox, Langoor	Balisinsa-Badhulipur RF	Black Buck	Peacock, Langoor	Spotted Deer	Stork
24	Monkey, Rabbit, Wild Boar, Black Buck, Peacock	Makarapalli P.R.F	-	-	Black Buck, Peacock	Monkey, Rabbit



Gania Range						
25	Mongoose, Rabbit, Hyena, Wild Boar, Barking Deer	Bankamunda RF	Hyena	Rabbit	Wild Boar, Barking Deer	Mongoose
26	Spotted Deer, Deer, Python, King Cobra, Wild Boar	Manibhadra RF	Python, King Cobra	Spotted Deer	Deer	Wild Boar
27	Barking Deer, Wild Boar, Bear, Hyna	Sapua RF	Hyena	Barking Deer, Beer	Wild Boar	-
28	Barking Deer, Wild Boar, Bear, Cobra, Jackle	Dengabahada RF	Hyena Cobra	Barking Deer, Beer	Jackle	Wild Boar
Panchirida Range						
29	Wild Boar, Langoor, Jackle, Fox, Mongoose, Rabbit	Patharganda RF	Rabbit	Langoor	Wild Bora, Jackle, Fox	-
30	Rabbit, Wild Boar, Fox, Monkey	Sukarmala P.R.F.	Rabbit	-	Fox, Monkey	Wild Boar
31	Barking Deer, Leopard, Hyna, Wild boar, Deer	Ambamundia P.R.F.	Leopard	Hyna Wild Boar	Deer	Barking Deer

20.6.2 Management Approach:

For management of wildlife the basic elements are outlined as follows.

Management of wildlife depends on certain elements such as public support and awareness to protect wildlife and their habitats.

- a) **Public Participation:** It is necessary to make local people realise and accept the idea and importance of wildlife protection. Public interaction can help in making local people responsible and cooperate in enforcement of wildlife management laws and regulations. Their feedback should also be taken for effective functioning of wildlife management.
- b) **Public Awareness:** People should understand the concept of conservation of natural resources. The wildlife managers and other responsible persons should held public discussions, shows, and talks and should also take help of other media like newspapers, magazines, radio and television to make people aware about the basic concepts behind wildlife management. This can stop people from exploiting natural resources, which is the major threat to wildlife and their habitats
- c) **Education:** The role of education in public awareness programs is very important. There should be environmental subjects based on wildlife conservation in school and college curricula. The well-educated and trained specialists on environmental and forest issues should participate in public training and interact with people and solve their queries to make them more responsible towards their wildlife management duties.
- d) **Nature Interpretation Centres:** Nature interpretation centres may include setting up of educational camps or exhibition in nearby regions of wildlife importance.
- e) **Coordination:** Wildlife management is operated at four basic levels – local, state, national and international. Overall coordination for animal conservation, propoagation and management is essential.

In general, the following guiding Principle may be adopted.

The general management practices involves

- a) Improvement of existing habitat and Development of new habitat for any species found in the locality.
- b) Preservation of existing wetlands.
- c) Adequate Fore Protection Measures.
- d) Providing a conducive and safe breeding zone for existing animals.
- e) Protect nesting of migratory Birds in Mahanadi River and Hirakud Reservoir.



- f) Provide water to animals during summer.
- g) Create & maintain grass lands.
- h) Remain vigilant against poaching of animals by live electric wire and loops.
- i) Take legal action against poachers.
- j) Public education / awareness camps on wild animals.

20.6.3 Methods of Treatment:

20.6.3 (i) Improvement of 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 prescription of the Plan to maintain these special habitats.

a) Snags:

As a thumb rule, 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, and Owlets etc during subsequent years.

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, birds and insects.







Down Wood:

Many species require or use down wood (fine and coarse woody debris) as habitat. Where forestry has been practiced for several rotations large proportions of these species are considered threatened. Key attributes determining the suitability of down wood as habitat are decay stage, tree species, and size, specifically diameter. Both quantity and distribution of suitable down wood influence species' presence and abundance.

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 fuel wood. 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 microhabitat 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.





a) Large Old Trees:

These would naturally occur in low densities. The Ficus species 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 or tending operation. These retained trees (2 to 4 per ha) need to be entered in the compartment histories and serve as daytime roosts or nesting sites for birds, large owls of Bubo species.

b) Trees with Fluting Boles, Buttresses and Holes:

These are expected to occur in very low densities represented by a small number of species. They provide significant microhabitat functions for small mammals like the Mouse Deer and reptiles. One such trees at least, the largest possible, needs to be retained per hectare and entered on the compartment history.

c) Lianas and Tangled Climbers:

Climber cutting operation is a standard practice, which has been prescribed 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 woody well distributed tangled climbers all over the area may be retained & entered in the compartment histories.

d) Fruit Bearing Trees and Shrubs:

In all operations keeping fruit bearing tree species in





felling or tending operations is the standard practice. Species providing fruits to local human inhabitants and Wild Life are to be retained / nursed and propagated. The information on human use is probably complete but the same cannot be said to Wild Life. The species liked by animals/ birds needs to be elaborately listed by local observation and distribution needs to be recorded.

e) Roosting or Nesting Trees:

All trees which are known to support nesting colonies of water birds or roosting congregations of raptors or other birds need to be retained. This is crucial especially with reference to vultures, which are critically endangered along with Pallas's Fishing Eagle and White-bellied Sea Eagle, which have become very rare in this tract. It helps migratory birds along Rivers / creeks etc.



f) Maintenance of Creeks:

From forests nallas are flowing to Kuanria Reservoir and River. During full reservoir level back water from reservoir remain for 3/ 4 months on these nalla within the forest area. Such nalla / creeks are required to be maintained so that water is retained on nalla for a longer period.

g) Maintenance of Wet lands:

Wetlands are breeding grounds of reptiles, birds etc. Day by day wetlands are vanishing due to land filling / construction etc. Many wetlands are under administrative control of Revenue department. Initiative is to be taken by the forest department to map the wetlands through Satellite imagery and GPS. The list of such wetlands needs to be approved by the District administration and maintenance of such wetlands may be regulated by the Forest department. The maintenance involves

- Demarcate extent of wetland.
- Partial de-silting of wetland.
- Allow growth of submerged weeds palatable to birds to some extent.
- Allow fish fauna / snails/ crabs to breed & grow naturally.
- Prevent fishing, poaching of birds in the designated wetland.



i) Creation & Maintenance of Grass Land:

The common wildlife species available in the division are herbivorous. They also support carnivores to sustain on their prey base. Day by day grass lands are reducing posing a stress time for herbivorous. It is highly required to create and maintain grass lands inside forest blocks, Village forests, river banks, near wetlands and swampy areas. This will boost the concentration of food base for herbivorous vis a vis carnivores.

j) Providing water to animals:

The forest blocks are mostly of hilly terrain and water impounding within forest area is poor. During summer, provision of water inside the forests is important. Hence creation of water holes / Water body and impounding of water through check dams is suggested.

20.6.4 (i) Providing Protection:

It is of paramount importance to provide adequate protection to available fauna / migratory birds and elephants/ tiger / leopard. Adequate protection measures are required. Deployment of squad, construction of watch tower and patrolling are suggested measures for protection of Wildlife.

20.6.4(ii) Detail study of Animal behaviour & scientific Documentation:

Detail study of various animal behaviours / life cycle, reason for dwindling population and effect of increase in human interface is required in depth with a scientific approach. Periodical documentation is also stressed upon.

20.6.4(iii) Creation of Public awareness & public participation in management:

For better management and co-habitation with animals, required public awareness is required. It is proposed to conduct awareness camps with villagers, School Children and other functionaries including voluntary organizations.

20.6.5 Threat to wild animals & Suggested Mechanism:

The threats to wildlife have been dealt with at length in chapter-3. Some of important threats are

- a) Annual Fire and loss of Ground Flora.
- b) Heavy biotic interference and intrusion by domestic animals (Cattle/ Goat/ Sheep)
- c) Transmission of contagious diseases from domestic cattle to Wild animals.
- d) Poaching by putting nets/ loops and live electric wires.
- e) Hunting of birds.
- f) Public irritation against crop damage.



In order to handle the situation it is proposed to

- Prevent forest fire with the help of VSS/ Public.
- Equip the forest staff with modern fire fighting tools.
- Have intelligence network deep inside the forest especially close to Sanctuary.
- Make public aware about ill effect of loss of bio diversity and loss of threatened flora and fauna.
- Enforce provisions of the wildlife (Protection) Act,1972.
- Take help of Wildlife Crime Investigation burro in Inter District Organized Crimes.

20.6.6 Associated regulations and measures:

In order to combat against transmitted diseases from domestic cattle, regular cattle immunization program in forest fringe villages is required. Grazing though prohibited in forests, it could not be enforced. It can only be checked if grass land could be developed outside forest area.

The attitude of public towards wildlife is required to be moulded to a conducive atmosphere. The mother earth is “**for all living creatures both Plant & Animals**”. This principle is to be adopted universally.

20.7. Intermediate Revision:

No intermediate revision is anticipated. However, if so required, the Regional Chief Conservator of Forests in consultation with the Chief Conservation of Forests (Working Plans), will send a proposal for amendment of prescriptions to the competent authority for necessary approval.





CHAPTER-21

JOINT FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE [JFM(O)WC]

21.1 Joint Forest Management Working Circle:

Joint Forest Management often abbreviated as **JFM** is the official and popular term in India for partnerships in forest movement involving both the state forest departments and local communities. The policies and objectives of Joint Forest Movement are detailed in the Indian comprehensive National Forest Policy of 1988 and the Joint Forest Management Guidelines of 1990 of the Government of India.

Joint forest management is concept of developing relationships between fringe forest groups and forest department on the basis of mutual trust and jointly defined roles and responsibilities for forest protection and development. Odisha remains the first to pass the first resolution for JFM. At present, the JFM Resolution 2011 is the basis on which forests are assigned as follows.

“The forests of the State to be covered under this Resolution shall be grouped into the following two categories:

- (a) Reserved Forests, Protected forests, Village forests, Revenue forests etc. Not covered under Protected Areas.
- (b) Protected Areas (National Park and Sanctuaries) excluding Core Areas, and Mangrove Wetlands.

The Committee constituted for the first category of forests will be known as **Vana Surakshya Samiti (VSS)** while the Committee constituted for the second category will be known as **Eco-Development Committee (EDC)**. To have a common approach for Joint Forest management this Working Circle has been constituted and named as “**Joint Forest Management (Overlapping) Working Circle**” abbreviated as **JFM (O) WC**.

21.1.1 Salient Features of Joint Forest Management:

Joint Forest management encourages the development of partnerships between local people and forest department to manage forest resource jointly. It provides a communication structure for consultation and negotiation between forest Department and forest users and provides legalized access for the local communities to forest lands. JFM encourages local people to protect forest areas in order to prevent free grazing of livestock



and to assist in preventing illegal activities by outsiders. JFM assures local people that a certain proportion of the intermediate and final harvests from forest lands will accrue to them.

21.2 General Constitution of Working Circle:

The main principle of JFM is to motivate the forest communities to protect the forest from over exploitation so that it meets the subsistence needs of the rural poor. JFM represents a significant shift in India's forest policy that balances community and government interest while remaining sensitive to local conditions, institutions and forest dependence. With this background, the JFM Resolution has outlined the category of Forests that has been assigned or to be assigned to VSS / EDC. The scope is spelled out as follows.

Area that can be assigned to VSS may be Reserved Forests, Protected forests, Village forests, Revenue forests etc. not covered under Protected Areas.

Area that can be assigned to EDC may be Protected Areas (National Park and Sanctuaries) excluding Core Areas, and Mangrove Wetlands.

At present 336 VSS has been constituted as per JFM Resolution and functioning as such. Besides VSS constituted under JFM Resolution 1993 / 2011, there are Village Forest Committees constituted under the Odisha Village Forest Rules, 1985 for management of 579.45 ha of Village Woodlots created during Social Forestry Project. The Forests assigned to various VSS have been indicated in Chapter 13. The abstract of area assigned to VSS is furnished at Table No 23.1

Range	No of VSS	Category of Forests assigned to VSS – Nayagarh Division				
		RF	PRF	DPF	Total	Percentage
Daspalla	38	4270.0000	50.0000	0.0000	4320.0000	13.39
Gania	28	1544.5000	86.0000	112.5000	1743.0000	5.40
Khandapara	75	4919.5140	0.0000	0.0000	4919.5140	15.25
Mahipur	52	5734.2500	0.0000	0.0000	5734.2500	17.78
Nayagarh	54	4583.0500	200.0000	0.0000	4783.0500	14.83
Odogaon	41	3604.5000	200.0000	452.0600	4256.5600	13.20
Panchirda	48	4945.0000	1475.0000	75.0000	6495.0000	20.14
Div. Total	336	29600.8140	2011.0000	639.5600	32251.3740	100.00
All PF					1535.24	
Total					33786.614	



21.3 General characteristics of Vegetation:

The forests assigned to JFM (VSS) are mostly forest fringe area and categorized as Degraded Forests.

The village forests assigned to VFC (Village Forest Committee) are all manmade forests raised in between 1985 to 1993. The crop density varies from 30% to 70% and bears a good crop mostly of Eucalyptus, Acacia, San Chakunda, Bamboo etc. In some places Teak has been planted.

All PF are of planted areas with timber species of importance. The growth pattern varies with age and nature of species.

21.4 Felling Series / Cutting Section and JFM Area:

The JFM assigned area is an Overlapping Working Circle. The forests assigned to respective independent working Circle will be applicable. Mostly the forests are assigned to Rehabilitation Working Circle, Protection Working Circle, Plantation Working Circle and also Bamboo (overlapping) Working circle.

21.5 Blocks, Compartments and JFM Area:

The area, allotted to different VSS is depicted on the Management Map (Topo Map of 1:50000 Scale). The list of VSS / EDC and area assigned is furnished in Chapter 8 of this plan.

21.6 Special Objectives of Management:

The special objectives of Management of this Working Circle are as follows.

- i) To restock the degraded Forests through community participation.
- ii) To ensure protection, regeneration and management of the forest wealth through a participatory approach.
- iii) Mass Awareness campaign and motivation to the villagers is to be spread to every forest fringe village.
- iv) To make the people and Forest Department equal partners in management process.
- v) Demarcation and Survey of the area allotted under V.S.S.
- vi) Artificial regeneration in the degraded forest area is to be taken up to restore the barren and blank area.



- vii) Soil and Moisture Conservation Measures have to be adopted in the VSS assigned area and preparation of micro-plan to each VSS.
- viii) To reduce the dependency on forest, income generating activities are to be created.
- ix) The other Department involve in peoples participatory aspects like Agriculture, Horticulture, Soil Conservation, veterinary; Health, mass education etc. have to be involved to achieve all-round socio-economic development of the village.
- x) To develop VSS as an institution at local level to manage **“Natural Resource”**.
- xi) To have special thrust on **“Fringe Forest Management.”**

21.6.1 Analysis of the crop:

The Forests assigned to VSS are mostly degraded in nature except plantations under various schemes like Forest Development Agency and Social Forestry Project Plantations. Crop varies from natural forest to monoculture like Eucalyptus. Crop Density also varies from 30% in case of natural forest to 70% in plantations.

21.6.2 Silvicultural System:

The VSS area is under overlapping working circle. It overlaps with Rehabilitation Working Circle, Protection Working Circle, Plantation Working Circle and also Bamboo (Overlapping) Working Circle. The silvicultural system prescribed to these working circles will be followed as applicable. The Micro Plan of VSS is required to be revisited after approval of this working plan so as to accommodate the prescriptions of the working plan. The overall prescription of Micro plan shall be in line of prescriptions of this working Plan. In case of any contradictory prescription in micro plan is made by any VSS, the working plan prescription will supersede the micro plan prescription.

21.6.3 Method of Execution:

1. Demarcation of VSS Area:-

Demarcation of area assigned to VSS is very important task. The demarcation of area is to be done with pillar posting. It helps to give a specific identity to the VSS and to motivate them to protect and to avoid dispute between the villages. A uniform system may be adopted over the entire division while demarcating the VSS area. The Village forests of erstwhile Social Forestry Project needs special thrust as village forests have remained unattended since 2003.



A five year cycle for demarcation should be drawn up and it may be made mandatory for all Section Foresters / Range Officers to complete the demarcation process as scheduled. A special drive for it is essential.

2. Preparation of Micro-plan:-

Micro-plans should be prepared for each VSS irrespective of whether money for implementation is available or not. The micro-plan should be prepared keeping in view the overall prescription of the concerned Working Circle. Prescription like prescribed exploitable girth class of different species of the final harvest, specific marking rules, limiting the final yield with due emphasis conservation measures and biotic pressure etc. should be followed while preparing the micro-plan. The yield in the area assigned to the VSS should be calculated with due consideration to safeguard against erosion, illicit felling and other biotic pressure. The Plantation and Soil and Moisture Conservation Measures is to be undertaken and effort should be taken to obtain funds from different sources and while preparing the Micro-plans, PRA exercise are to be followed. Other tools like GIS and MIS can also be taken in to account. The detail process has been provided in the JFM Resolution-2011 Para -10. The same should be followed. In case of village forest, the management plan shall be prepared as per Rule 11 of the Odisha Village Forest Rule, 1985 (as amended vide F.F. and A.H. Deptt. Notification No. 27109 Dt. 17.11.1989).

3. Plantation & Choice of Species.

In many of the VSS assigned area due to protection by villagers' bamboo and other species have attend harvestable situation. After harvesting, the area may be planted up. The Choice of Species may be carefully decided so as to suit the soil condition and requirement of the villagers.

Whenever plantation exist in VSS allotted area, these plantation should be thinned and pruned as per requirements. (Prescription under Plantation Working Circle may be the guiding principle) Sweeping of floor of the plantations and twigs should be avoided since it affects the cycling of nutrients. Grazing and fire protection should be provided to all plantations. In natural vegetation area where crop is approaching established stage regulated grazing may be allowed after discussion in the VSS. These prescriptions should serve as a guideline while preparing the micro-plan in these areas.



4. Incentive Schemes for the VSS

The following incentive based activities shall be introduced under the Joint Forest Management (JFM) in order to increase village participation.

(i) Entry Point Activities (E.P.A.) in other words called Community Development Works (CDW) which includes small community infrastructures such as water tanks, rural roads/community halls as desired by the villagers which attract people's attention to the forest development activities. Forest/water conservation related activities as well as non-forest activities can also be selected for CDW based on the needs of each VSS. CDW shall be selected based on the Rapid Rural Appraisal (RRA)/Participatory Rural Appraisal (PRA) and incorporated in the Micro Plan prepared by the VSS. The implementers of these activities should start preferably before the plantation and other activities take place. The JFM Committee is required to collect user's fee for the assets provided by the CDW. EPAs are part of the community mobilization process taken up in the respective villages at the initial stage of project implementation. EPA will be selected in a well facilitated participation manner.

(ii) Income Generation Activities (I.G.A.) shall be identified at the micro planning stage. However, the local NGOs shall be required to provide inputs with regards to the marketability potential of the goods to undertake the IGAs by Self Help Groups (SHG) existing within a VSS. It is confirmed that IGA are not restricted in the forest related activities but any potential IGA activities are to be encouraged based on the agricultural, horticultural and forestry etc. produces are concerned. The value addition in the produces may be encouraged with handholding, capacity building and market linkage supports provided by the NGOs. Each Self Help Groups (SHG) may be provided. Revolving Fund supports from JFM Committee on loan basis to undertake the Income Generation Activities. Prior to beginning of IGAs a market research will be undertaken by the group of specialists from specialized market research organization. It will look at a macro level market environment as well as field level situations in close collaboration with the NGOs assigned to the community. A final shortlist of potential options of project areas based IGAs for forest dependents and other poor communities will be assessed through the market research study for implementation to the IGAs.



IGA will be implemented by the Self Help Groups through the help of Revolving Fund loans provided to the JFM Committee.

(iii) The Basic Livelihood Improvement Activities: Under such component, the fulfilment of basic human needs to make the local people capable for participating in JFM activities are to be prioritized during the micro planning process in the community. The provision of incentives to the local people towards the information dissemination on environmental protection and basic livelihood improvement activities. The following activities may be facilitated in the community on priority basis.

- a) Medical & Health Camps in convergence with the Govt. PHC/Hospitals.
- b) Prevention and Control of Vector & Water Borne Diseases.
- c) Reproductive and Child Health Care through providing seeds to VSS for kitchen garden.
- d) Non Formal Education Centres in the VSS for drop outs to school going.
- e) Promotion of Fuel Efficient Devices in convergence with OREDA.

(iv) Capacity Building Programmes: To enable VSS to manage the respective JFM areas, organizations and forests a standard JFM Management Manual in Odia will be prepared. Different trainings modules also to be prepared by the consultant agencies for imparting trainings to the JFM Committee in the following thematic areas.

- (a.) Maintenance and submission of records, reports and bills to forest departments at VSS level.
- (b.) Financial management, budgeting and book keeping.
- (c.) Duties and responsibilities of the General Body and Executive Body
- (d.) Conflict resolution mechanism.
- (e.) Forest protection and management arrangements.
- (f.) Sustainable harvesting management for different forest products.
- (g.) Beneficiary management within the community.
- (h.) Exposure trips/ exchange visits.

(v) VFDF (Village Forest Development Fund): A financial establishment is essential for the VSS activities to be sustained. Provisions of budget for EPA, Revolving Fund for Income Generation Activities and Basic Livelihood Improvement Activities



should be made under the Forest Department for implementation of a scheme. VSS will contribute to a Village Forest Development Fund by raising money from user fees for the asset created under EPA, penalty for illegal actions, interest from bank savings and sales for the forest products. The budget provided by the Forest Department for EPA, IGA & Livelihood Improvement Activities should be utilized only for the original designed objectives of a scheme while VFDF could be flexibly used according to the needs of the VSS. Provision of Corpus Fund may also be arranged under a scheme for strengthening of the JFM, VFDF. It suggested that at least 50% of the savings of the VFDF should be allocated for maintenance of the forest area after completion of the scheme.

(vi) Formulation of Micro Planning: A Micro Planning is a comprehensive document to guide the VSS in pursuing all forest management for its JFM area, community development and institutional development and other intervention under a scheme designed. The VSS will be responsible for formulation of their Micro Plan which will be assisted by the contracted NGOs/Experts and the forest division concerned. PRA for resource assessment for analysis will be conducted for this purpose. Micro Planning is vital for any JFM Committee for ensuring their participation at different levels of implementation of a scheme.

(vii) Engagement of specialized agencies for input support to JFM

1. For Micro Planning Preparation- Local NGOs
2. For capacity building of JFMC- Local NGOs
3. For IGAs- Specialized IGA Support Agencies

(viii) Training camps for VSS Members.

The JFM Resolution-2011, Para-9, the role of Forest department has been defined. The role includes

- To assist in capacity building of VSS / EDC members on different aspects of forest management, planning, silviculture, nursery technology, forest laws, accounting, book keeping, micro-enterprise development, value addition and processing of NTFPs etc.
- To provide technical help to the VSS / EDCs in preparation and implementation of the Micro plan/ annual work programme.



To fulfill the responsibility in this aspect, it is recommended that the DFO, may arrange training camps for 2/3 days duration for VSS members where plantations/ Rehabilitation and harvesting operation is likely to be taken during the same year / coming year. It may be made an annual feature and included in the work schedule of the division.

21.6.4 Usufruct Sharing Mechanism:

The Joint Forest Management Resolution 2011 Para 11 elaborately deals with usufruct sharing. The Para is reproduced for immediate reference.

“11. Usufruct sharing:

(i) The VSS / EDC shall be entitled to the usufructuary benefits from the assigned forests as under:—

(a) Usufructs like fallen leaves, fodder grasses, thatch grass, broom grass, fencing materials, brushwood, fallen lops, tops and twigs to be used as fuel shall be available to the members free of cost.

(b) All intermediate yields in the shape of small wood, poles, firewood etc as maybe obtained as a result of silvicultural operations and bamboo harvested in VSS / EDC assigned area shall be made available to the VSS / EDC members in a manner as may be decided by EC. If sold at a price, the funds so obtained shall be deposited in the VSS / EDC account.

(c) In case of Kendu leaves and specified forest produce other than bamboo, if any, the VSS will have the right to collect the same from the assigned forest but these items will be disposed of as per the prevailing provisions of Government and practices.

(d) While maintaining the forest cover in perpetuity, if any major harvest or final felling occurs in the assigned forest, the same shall be taken up by the forest department as per the prescription of the working plan/ duly approved micro plan. In case of natural calamities, harvesting of wind-fallen trees shall be treated as final harvest. Priority will be given to the members of the VSS / EDC for salvaging and harvesting work. Valuation of the produce so obtained shall be done and information shared with the VSS / EDC and the produce will be sold / disposed of by the forest department or by agents of the forest department. The VSS / EDC will receive 50% share of the sale price after deduction of proportionate harvesting cost and this will be deposited in the “VSS account”. The VSS may



also opt for 50% of the forest produce so harvested if it is for their bona fide domestic use and they agree to pay the proportionate cost of harvesting.

(e) In case of village woodlots created and maintained by the VSS / EDC on non-forest land, all usufructs including interim and rotational harvests shall go to the VSS / EDC.

(f) In the event of a natural calamity occurring in the village there may be a demand for house building materials and other forest produce from the assigned forest. In such cases, the VSS / EDC may go for harvesting the required quantity of timber or other forest produce as a deviation to the Micro Plan, with due approval of the Divisional Forest Officer concerned.

(ii) The EC shall be responsible for the distribution of the usufructuary benefits equitably among the members of the VSS. Need of the group or community, who do not have any livelihood support other than depending on the forests, should be specially considered.

(iii) In cases where member/ a group of members of the VSS /EDC play a major role in the collection of intelligence, detection and seizure of illegal forest produce in transit the concerned VSS/EDC shall be entitled to the prescribed percentage of the sale price of the forest produce as per Rule 4 (3) of the Orissa Rewards for Detection of Forest Offences Rules, 2004. Such amount shall be deposited by the DFO in the "VSS account/EDC account" after disposal of the seized produce following due procedure of law."

In case of Village Forest created during Social Forestry Project, the sharing mechanism will be as per Rule -9 of the Village Forest Rule, 1985. The rule reads as follows.

"9. Sharing of Forest Produce:

(1) The beneficiaries shall on payment, as prescribed under Rule 13, be entitled to the forest produce from the village forest for their bona fide use or consumption. The beneficiaries shall obtain necessary permit under Rule 8 in case of their bona fide use or consumption. The Committee will be entitled to sell part of the forest produce for generating funds for management and regeneration of the village forests and the buyer shall obtain necessary permit under the Rule 8 for transportation of the village forest produce.

(2) The Committee shall be responsible for the proper distribution of all available forest produce from the village forest amongst the beneficiaries for their bona fide use or



consumption on the basis of one equal share for each kitchen as far as possible. The Committee shall maintain a record of distribution of the forest produce and all the distributions made before a particular meeting shall be reviewed in the said meeting of the Committee.

21.6.5 Rights and Concessions:

Rights 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 Government of Odisha policy with regard to JFM. Community rights as allowed under The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 will also be honoured. The provisions of the Odisha Village Forest Rule, 1985 will also be followed for allowing the rights and concession to villagers.

21.6.6 Scope of expanding JFM Working Circle:

(i) Out of 105301.7505 ha of forest area under management fold, 33786.614 ha has been assigned to different JFM committee (VSS) which workout to be 32.10% of the forest area. There is ample scope to increase the area under JFM. At present “**AJY -Aama Jungal Yojana**” is being implemented which provides an avenue to expand area under JFM.

(ii) There are many forested area under the administrative control of Revenue department. The JFM resolution 2011 has extended its purview to manage Revenue Forests in a **Joint Forest Management** approach. Where PRI (Panchyat Raj Institutes) are interested in management of such forests, the same may be taken for management under VSS.

21.6.7 Evaluation of Performance & Incentive:

The incentive to VSS / VFC or any other group is always drive the group in a positive direction. It encourages the villagers for better participation. The Principal Chief Conservator of Forests, Odisha Bhubaneswar has formulated a set of parameters for evaluation of performance of VSS. The Government also rewards the VSS every year either on “World Forest day” or World Environment day in state level functions. The evaluation is being carried out on ten important criteria and each point is evaluated out of 10 mark scale. The criteria's are

- a. Extent of Forest area under effective control, Protection and management of VSS.
- b. Regularity & frequency of holding eetings of General Body and Executive committee of the VSS, proper attendance in those meetings, deliberation of vital issue and record keeping.
- c. Improved status of Forest Protection.



- d. Quality of control exercised by the VSS on day- to- day management of the forest.
- e. Resolution of conflict.
- f. Sustainable collection of NTFP.
- g. Effective preservation & control of Forest Fire.
- h. Reduction of day- to- day dependency on Forest Produce.
- i. Effectiveness in implementation of afforestation, soil moisture conservation measures and silvicultural operation.
- j. Equity and gender equity.

Similarly the Divisional Forest Officer shall under take motivation cum evaluation camps and reward the VSS / NGO/ Staffs for their contribution for Joint Forest Management.

21.6.8 Associated Regulations and Measures:

(i) The JFM area is mostly covered either plantations or degraded forest area intended to regenerate the area through Aided Natural Regeneration. Plantation area will be managed through clear felling with Standard followed by planting. During planting period till its establishment, control of Grazing is of paramount importance. In the Village Forest Rule, 1985, elaborated provisions have been made for Control of Grazing. Rule 10 of the Odisha Village Forest Rule is reproduced below for reference and guidance.

“Rule 10(1) The Committee shall regulate grazing in the village forest by alternate closing and opening of areas for such period as it may deem proper and by such methods as it may adopt:

Provided that the provisions in the Orissa Forest (Grazing of Cattle) Rules, 1980 shall, as far as possible may be adopted to regulate such grazing.

(2) The Committee shall have the power to impound the cattle that enter the village forest contrary to these rules.

(3) Pasture development and fodder cultivation in Gochar lands within the limits of the village may be taken up by the Committee in accordance with schemes drawn up by the Sub-Collector or the Divisional Forest Officer, or the Soil Conservation Officer in that regard, For implementing the schemes, the Committee shall ensure that every household owning cattle has access to the benefit of the scheme.”

The same principle may be extended to the VSS area / area worked out under National Afforestation Program by Forest Development Agency. The Divisional Forest Officer shall declare the plantation area, Regeneration area closed to Grazing at least for three years



from year of plantation. After third year Rotational Grazing may be allowed depending upon growth Pattern of plantations.

(ii) Auditing / accounting of VSS Account.

The accounting procedure for VSS has been well defined in the JFM Resolution. The accounts of VSS involved in FDA program, AJY are regularly maintained and audited. In case of other VSS, the Secretary of VSS shall make it a point to update the Account and get audited annually. It will increase the interest of VSS and transparency in VSS Executive Committee activities.

In VFC constituted during Social Forestry Project may not have their own account? The Secretary of VFC may open an account jointly as in line of Rule 12 of the Odisha Village Forest Rules-1985 and in line of JFM Resolution-2011 & up to date amendments.

(iii) Regular Meeting of EC/ General body:

In many VSS / VFC monthly meeting of EC and Annual Meeting of General body is found to be irregular. The Secretary of VFC / VSS shall make a point to convey / conduct regular meeting of VSS / VFC in his jurisdiction.

21.7. Intermediate Revision:

No major changes in the prescriptions of this working circle are anticipated. However, if so required, the Regional Chief Conservator of Forests in consultation with the Chief Conservation of Forests (Working Plans), will send a proposal for amendment of prescriptions to the competent authority for necessary approval.



**HAPTER-22****Miscellaneous Working Circle (MWC)****22.1 Name of working circle:**

There are forest blocks where Central Nursery has been developed, Eco tourism has taken ground and need special management practices than Silvicultural prescriptions generally prescribed for management of Forests. These areas has been included in this working Circle namely “**Miscellaneous Working Circle**”

22.2 General Constitution:

The area assigned to Misc. Working Circle is at Table No 22.1 below.

Table No 22.1 Area assigned to Miscellaneous Working Circle- Nayagarh range					
Sl No	Block	Compt.	Area for Management	Misc WC	Remark / purpose
	Khandapada Range				
1	Pithakhai R.F		365.6600	10.0	Durgapur Permanent Nursery
	Mahipur Range				
2	Hatimunda R.F	Hm 9	707.7462	15.0	Rajgir Eco-tourism Spot (Religious destination & Water Fall)
	Nayagarh Range				
3	Balaram RF		341.1061	50.0	Balangi Bandha Park Eco-tourism Spot adjoining to Nayagarh Municipalty
4	Hatimunda R.F	Hm 20	367.5184	15.0	Sampada Mega Nursery Nursery Tourism & Eco-tourism
Nayagarh Range(Total)			708.6245	65.0	
	Odagaon Range				
5	Gayalsingh R.F	Gs 3	361.3458	5.0	Samuka Stream Eco-tourism Spot adjoining to NAC, Odagaon



6	Sulia R.F	Sl 8	477.5446	5.0	Ralaba(Deity Place) Eco-tourism Spot
Odagaon Range Total			838.8904	10.0000	
	Pancharida Range				
7	Gochha R.F	Gc 14	779.5681	10.0	Simili Stream Eco-tourism Spot
8	Sulia R.F	Sl 7	885.2014	10.0	Samuka Stream Eco-tourism Spot
Pancharida Range Total			1664.7695	20.0000	
	Division Total		4285.6906	120.0000	

Table No 22.2 ABSTRACT of Sites (Purpose Wise)			
Proposad Use	No of Sites	Area in ha	Remark
Central Nursery	2 Sites (Sl no 1 &4)	25.00	For Reserch / Propagation & supply of QPM for plantation & to public
Religious destination	2 site (Sl No 2, 6)	20.00	Places of Worship related to Social Custom / Rituals.
Eco tourisim / Recerational sites	4 sites (Sl No 3,5,7,8)	75.00	Recerational avenue for people / Public
	Total	120.00 ha	

22.3 General constitution of working circle:

There are areas in different blocks being use which requires Specific management practices which is different than normal Silvicultural Practices. The activities involve Development of Central Nursery for raising Quality Planting materials of 6 month, 8 month, 12 month and 18month old depending up requirements.

Clonal Propagation, Quality seed segregation & storage, Vermi compost production for use in nursery etc are being carried out in the present Nursery. These activities will be further augmented, Developed with a sound scientific process.

These are religious places where presiding deity being worshipped since time immemorial. This is being continued on social custom. At Hatimunda Comp -9, the presiding deity is Lord Hanuman and at Sulia Comp. No 8, the presiding deity is *Ralaba* (Incarnation of Goddess Pārbati)



There are sites of recreational value within the forests. People used to visit the sites mostly in winter / spring and enjoy the beauty of the nature, springs and spend some time. These places are to be maintained as such with attention to **“Keeping the Area Clean & Hygienic”** and with some publicity on Forest & environment.

22.4 General characteristics of vegetation:

- a) **Nursery:** The two sites earmarked for Nursery is under Permanent Central Nursery with facilities for Quality Seedling / Saplings Production.
- b) **Places of Religious Importance:** Hatimunda RF and Sulia RF are two places where people gather to worship the presiding deity. On festive occasions, local people also gather and enjoy the surrounding nature's beauty.

c) **Places of Recreational value:**

There are places of Recreational Value which needs to be maintaining under a hygienic useable condition. Thousands of local people / outsider's visit places during winter mostly.

22.5 Treatment series/ sections and JFM areas:

Considering the nature of importance and use, the area is sub divided in to three treatment series. These are as follows.(Table No 22.3)

h) **Nusery Development Series:**

Table No 22.3 Nusery Development Series: Nayagarh					
Sl No	Range	Forest Block	Comp. No	Area assigned in Ha	Total area of the Series
1	Khandapada	Pithakhai R.F		10.00	25.00
2	Mahipur	Hatimunda R.F	Hm 20	15.0	

ii) **Series for “Places of Worship:**

Table No 22.4 Series for “Places of Worship:					
Sl No	Range	Forest Block	Comp. No	Area assigned in Ha	Total area of the Series
1	Mahipur	Hatimunda R.F	Hm 9	15.00	20.00
2	Odogaon	Sulia R.F	Sl 8	5.00	



iii) Recreational / Eco tourism Series.

Table No 22.5 Recreational / Eco tourism Series:					
Sl No	Range	Forest Block	Comp. No	Area assigned in Ha	Total area of the Series
1	Nayagarh	Balaram RF		50.0	75.00
2	Odogaon	Gayalsingh R.F	Gs 3	5.00	
3	Panchirida	Gochha R.F	Gc 14	10.0	
4		Sulia R.F	SI 7	10.0	

22.5.1 Abstract of Treatment Series:

Table No 22.6 Abstract of Treatment series		
Sl No	Name of Series	Area assigned in ha
1	Nusery Development Series:	25.00
2	Series for "Places of Worship:	20.00
3	Recreational / Eco tourism Series	75.00
	Total 3 Series	120.00

22.5.2 Treatment Section

The series have been constituted basing of "Land Use Pattern" and each place has its unique features. Hence each unit is considered as one section. The nomenclature of sections is as follows.

Table No 22.7 Treatment section				
Name of Series	Name of section	Forest block	Comp	Area in ha
Nusery Development Series	Durgapur Permanent Nursery	Pithakhai R.F		10.0
	Sampada Mega Nursery	Hatimunda R.F	Hm 20	15.0
Series for "Places of Worship:	Rajgir	Hatimunda R.F	Hm 20	15.0
	Ralaba	Sulia R.F	SI 8	5.00
Recreational / Eco tourism Series	Balangi Bandha Park	Balaram RF		50.0
	Samuka Stream-1	Gayalsingh R.F	Gs 3	5.00
	Simili Stream	Gochha R.F	Gc 14	10.0
	Samuka Stream -2	Sulia R.F	SI 7	10.0
	Total			120.0



22.5.3 Blocks, compartments and JFM area:

No Block / Area assigned to this Working Circle has been assigned to any VSS for management

22.6 Special objectives of Management:

The objectives of Management are within the basic principle & objectives of the Working Plan. The specific objectives are different depending upon the land use pattern.

a) For Nursery:

- i. To have production of Quality Planting Materials (QPM) and made available to public throughout the year to meet any occasion / event.
- ii. To encourage clonal propagation facilities to retain genetically superiority and not to degrade the Genepool due to cross pollination with inferior species.
- iii. To provide Root trainer facilities, Mist Chamber etc.
- iv. To produce organic manure from Nursery waste / weeds for use in nursery.

b) For Places of Worship:

- i. To provide peace and tranquility of the area.
- ii. To maintain Cleanness / hygienic atmosphere compatible with the spiritual and environmental conditions.
- iii. To extend necessary help / assistance to the devotees on their visit to the place.
- iv. To propagate / spread message on Forest Conservation, Forest Diversity, Importance of wild animals etc through posters / signages.

c) For Recreational / Eco Tourism Sites.

- i. To provide an healthy / hygienic atmosphere to nature lovers.
- ii. To facilitate nature lovers on tracking inside the forests and make them familiar with the situation / forests and its importance.
- iii. To enhance children's concern towards forests & wildlife.
- iv. To educate people to have cohabitation with nature than in modern township.

22.6.1 Analysis of the crop:

The places included in this working circle are within Moist Deciduous Sal Forests. The vegetation observed in and around the identified patches are Sal and its associates, climbers. The Streams are flowing through out the year.



22.6.2 Silvicultural system:

The nature of management is not silvicultural. Hence no Silvicultural System has been prescribed.

22.6.3 Rotation period:

There is no Silvicultural System Hence no Rotation period is prescribed.

22.6.4 Harvestable diameters:

The area will strictly **“Maintain & Protected against all types of threats”**. No tree will be removed excepted wind fallen, uprooted or which is considered as threatened to life & properties.

22.6.5 Reducing factors and reduced areas:

There is no yield from this working circle. Hence no reducing factor / area is proposed/ considered.

22.6.6 Treatment Cycle:

The assigned area is proposed to be Maintain & Develop “As and when” required approach.

22.6.7 Method of executing the Treatment:

The area assigned to this working circle is required to be demarcated in the field. A development approach paper is to be prepared with due regard to the provisions of Forest (Conservation) Act, 1980

22.6.8 Associated Regulations and Measures:

The sites are being proposed for management for different requirements. All aspects of peoples’ sentiment is to be considered when formulating regulating measures.

22.7. Intermediate Revision:

No intermediate revision is anticipated. However, if so required, the Regional Chief Conservator of Forests in consultation with the Chief Conservation of Forests (Working Plans), will send a proposal for amendment of prescriptions to the competent authority for necessary approval.



CHAPTER-23

CAR TIMBER (OVERLAPPING) WORKING CIRCLE

23.1 Name of working circle:

The Car Festival (Ratha Yatra / Ghosha Yatra) at Puri is celebrated in the month of “Asadha” each year. Ceremonial construction of the Holy Chariots starts from the day of Saraswatipuja in the month of February and regular construction of the grand chariots for the deities starts on the day of Akshyaya Trutiya which is generally observed during the first week of May.

Traditionally the timbers for building of the grand Chariots / Cars at Puri were supplied by the King of Daspalla, which was an ex-princely state of Orissa. After merger of Daspalla in the state in 1948, the Govt. of Orissa continues to uphold the traditional commitment. Divisional Forest Officer, Nayagarh on the direction of the State Government supplies the annual requirement of timbers for the Car Festival at Puri, free of cost including delivery at Rathagada, Puri. Similarly for the Car Festival of Lord Lingaraj at Bhubaneswar, which is celebrated on the day of “Ashokastami” in the month of “Chaitra” on the day proceeding of “Rama Navami”, the Divisional Forest Officer Nayagarh also supplies timber for the Car Festival.

As per the Puri Rathayatra code, the Divisional Forest officer, Nayagarh Forest Division is to supply the required quantity of timbers of different species to the Temple Administrator, Shree Jagannath Temple, Puri and the Executive Officer, Lord Lingaraj Temple, Bhubaneswar for the purpose of the Annual Car Festival. The relevant extracts from Puri Rathyatra code, 1983 are quoted as under

- i.) It is the responsibility of Forest Department, Government of Orissa to supply the required timber for construction of the Chariots free of cost each year.
- ii.) As a matter of practice the Divisional Forest Officer, Nayagarh has been supplying the required timber and he should continue to do so.
- iii.) It shall be the responsibility of the Divisional Forest Officer, Nayagarh to supply seasoned timber of the following species and sizes for construction of the Chariots, so as to reach the temple Administration, Lord Jagannath temple, Puri by the end of December preceding the Car Festival.

For supply of Car Timber of specific nature (i.e. Species and Girth), this working circle is constituted namely **“Car Timber (Overlapping) Working Circle”**

**23.2 General Constitution:**

The requirement of specific (Species wise & Girth Class Wise) timber is annual and in a time bound manner, the availability of timber in this division has been reduced. The Species Asan, Dhaura and Phasi have been over exploited in past. It is becoming more and more difficult in identifying the required timber. Considering the heavy responsibility being shouldered by this division, the forest blocks included in Selection Working Circle, Rehabilitation Working Circle and Plantation working Circle have been included in this working circle. The Total area under this Working Circle is 100368.5105 ha which constitutes about 96.8% of the total area under management. The details are as follows. (Table No 23.1)

Table No 23.1 Area assigned to Car Timber (O) WC: Nayagarh Division.				
Sl No	Name of WC	Area assigned in ha	Ref Table No	Remark
1	Selection WC	28557.8841	14.1	The details of Forest Block assigned is in respective tables indicated and also at Table No 13.3
2	Rehabilitation WC	70241.8414	15.1	
3	Plantation WC(Except VF & PF)	1568.7850	16.1	
	Total area assigned	100368.5105		

23.3 General constitution of working circle:

Mostly all natural forests and man made forest have been included in this working circle..

23.4 General characteristics of vegetation:

The Vegetation observed & described under Chapter 2 Para 2.6.2 is applicable to this working circle. The same is reproduced for better appreciation. The forest types observed in this division as per **Revised Champian & Seth Classification** are as follows.

Table No 23.2 Forest Types of the assigned blocks.				
Group	Sub Group	Forest Type	Sub Type	Variety
2.Tropical Semi Evergreen Forests	2B.Northern Tropical Semi Evergreen Forests	2B/C ₃ Odisha Tropical Semi Evergreen Forest		
3.Tropical Moist Deciduous	3C. North Indian Moist Deciduous	3C/C ₁ Very Moist Sal Bearing	3C/C _{1d} Peninsular (Coastal) Sal Forest	



Forests	Forests	Forests		
		3C/C ₂ Moist Sal Bearing Forest	3C/C _{2e} Moist Peninsular Sal Forest	3C/C _{2e(ii)} Moist Peninsular low level Sal Forest
5.Tropical Dry Deciduous Foress	5B. Northern Tropical Dry Deciduous Forests	5B/C ₁ Dry Sal bearing Forest.	5B/C _{1c} Dry Peninsular Sal	
		5B/C ₂ Northern dry mixed forest		
				5B/E ₁ <i>Anogeissus latifolia</i> forest
				5B/E ₉ Dry Bamboo Break

23.4.1 Description of Forest Type & Composition:

The description of forest type is furnished below.

2B/C₃ Odisha Tropical Semi Evergreen Forest:

This forest types are noticed in lower moist pockets of Daspalla, Mahidharpur Range of the division. These forests are generally found at an elevation of 500 to 600 Mtrs. As per recent study by NRSA this sub type is found in part of Gochha RF , Central RF, Chadiapalli RF, Sulia RF and Hatimunda RF *Artocarpus lakoocha*, *Michelia champaka*, *Celtis tetradra*, *Bridelia tomentosa*, *Dillenia pentagyna*, *Mangifera indica* are observed. Cane is also seen near to nala / water course.

3C/C_{1d} Peninsular (Coastal) Sal Forest:

This sub type forests are found in Forests of Mahipur and Daspalla Range of the Division. Sal along with *Dillenia pentagyna*, *Terminalia tomentosa*, *Bridelia retusa* and *Haldina cordifolia* in top storey. In middle storey *Syzygium cumini*, *Pterocarpus serratum* with *Bambusa aurundinacea* and *Dentrocalamus strictus* are observed.

3C/C_{2e(ii)} Moist Peninsular low level Sal Forest:

This forest type is confined in few pockets in this Division on flat or nearly flat ground, valleys and lower slopes, where Sal is principal species. In favorable areas it is found in pure patches in part of Gochha, Chadiapalli, part of Pokharigochha, Araniganda, Panchupandav, part of Sulia, Ragadidmada, Dhundugadia PRF, Ratadei, Palva, Maichheli- Sampada and Bhagabati DPF Baisipalli Ext II & III PRF, Araniganda PRF, Panchupandav RF etc. The site quality of Sal varies from Q-III to Q-IV in major forest blocks. The top canopy is closed and



attaining a height of up to 30 Mtr. The principal associates of Sal are *Terminalia tomentosa*, *Haldina cordifolia*, *Schleichera oleosa*, etc. There are other species found in top canopy are *Dalbergia latifolia*, *Pterocarpus marsupium*, *Bridelia retusa*. The middle story consist of *Mangifera indica*, *Terminalia belerica*, *Terminalia chebula*, *Anogeissus latifolia*, *Cassia fistula*, *Mitragyna perviflora*, *Malotus sp.* The scrubby undergrowth is generally found observed. In some tract it is dense. Sal regeneration is moderate to fair.

5B/C_{1c} Dry Peninsular Sal:

This sub-type of forest found extensively throughout forests of this Division. It is seen in almost all the Blocks and regressing towards Dry Mixed Deciduous Forests. This sub type is found in Maichheli-Sampada, Sulia, Gochha, Bandra, Sikharpur, Pokharigochha, Araniganda, Nasaghar, Baliberena, Central, Palava, Pankalsahi, Baliberena, Makarprasad, Kerabadi, Bandra, Matia, Sikharpur, Patharaganda, Bahadajholla, Balisinsa-Badhulipur etc. The main species in the top canopy are Sal, Piasal, Asan, Dhaura, and Sisoo. The middle story comprises of Bahada, Kusum, Chara, Mai, Rai, Kumbhi, Kendu, Karada, Amla and Bela. Fire and grazing is the common phenomenon in the above areas. Sal regeneration is quite high. But it is adversely affected by biotic pressure. Though the regeneration of Sal is sufficient, its establishment became difficult due to annual ground fire and grazing.

5B/C₂ Northern dry mixed forest.

This subtype is found in degraded forest blocks and miscellaneous species are replacing the Sal due to heavy biotic pressure and fire. The canopy height is about 15 to 20 Mtrs of uneven canopy. Sal contributes to 10-15 percent of the crop available. *Dentrocalamus strictus* is observed extensively. The top canopy consists of *Anogeissus latifolia*, *Terminalia tomentosa*, *Madhuca indica*, *Buchanania lanzan*, *Diospyros melanoxylon*, *Bridelia retusa*, *Cleistanthus collinus*, *Phyllanthus emblica*, *Lagerstroemia sp.* *Combretum decadrum*, *Smilex macrophylla*, *Butea* climbers are encountered during field visit. This type occurs in portions of Bankamunda, central, Chadiapalli, Gayalsingh, Gochha, Hatimunda, Makarprasad, Nashghar, Matia, Nuagaon, Palva, Panchupandav, Poibari, Pokharigochha, Ragadimada, Ratadei Sapua, Sulia, Rukhi, Balaram, Hanumantia, Barkhola, Chadeibasa, Mainsibindha, Kural, Banijhari,, Ranga, Sikharpanga, Sirisbadi, Baisipali Extn- I and II, Pithakhai etc. Regeneration of useful species is generally inadequate and adversely affected. Grazing and fire is common phenomena in major forest blocks.



5B/E₁ *Anogeissus latifolia* forest.

Anogeissus latifolia is a species of small to medium-sized tree found in pockets of dry deciduous forests of most of the ranges of the range.

It is one of the most useful trees in India. Its leaves contain large amounts of gallotannins, and are used for tanning and firewood. The tree is the source of Indian gum, also known as ghatti gum, which is used for calico printing among other uses. The leaves are also fed on by the *Antheraea paphia* moth which produces the tassart silk (Tussar), a form of wild silk of commercial importance.

This tree is also annually required for construction of Chariots for “Ratha Yatra” of Lord Jagannath.

5B/E₉ Dry Bamboo Break

This division is famous for Bamboo forests. It occurs in both dry and moist forests of this division. Mainly bamboo occurs as a part of second story in Northern Tropical Dry Mixed deciduous forests and in Dry Peninsular Sal forests, but bamboo constitute main crop with a few scattered trees on some of the very dry hill slopes and hill tops. In some of the blocks bamboo is found in a degraded condition, “*Dendrocalamus Strictus*” (Salia Bamboo) forms dense brakes. Annual fire is common in these forests. These bamboo brakes occur in distributed patches in portions of Pokharigochha Central, & Chadiapalli Blocks. Salia Bamboo represents the lone species of this subtype. The ground flora is very dense with bamboo clumps and other tree species are usually absent in those patches. Along the bank of bigger nalas *Bambusa arundinaceae* is observed in a few patches.

23.5 Felling Series/ sections and JFM areas:

The entire area assigned to this working is considered as a unit⁶ and available trees are marked for car timber “As & Where Available”. Though the Series & Sections were constituted / prescribed in the last plan, the assigned area didn’t fulfill the requirement and timbers from Rehabilitation Working Circle, from Private holdings / villages / other revenue forest areas were also marked and supplied. “Necessity knows no Laws” principle was followed in excegency.



However this is not a scientific approach. Considering all aspects, the following Felling series are constituted. (Table No 23.3)

Table No 23.3 Car Timber Series: Nayagarh Division.

Name of series	Range	Forest block	Comps	Area in ha	Series Total
Cenral Car Timber Series	Daspalla	Ambalimba		554.419	11022.9919
		Central RF	1 to 13	8792.1259	
		Chhades RF		1676.447	
Chadiapali Car Timber Series	Daspalla	Chadiapali RF	1 to 10	5959.2328	13653.2322
		Nuagaon RF	1 & 2	1195.739	
		Nasaghar R.F	1 to 4	1627.1368	
		Poibari R.F		1459.844	
		Pokharigochha R.F	1 to 8	3411.2796	
	Daspalla	2 Series		24676.2241	24676.2241

Name of series	Range	Forest block	Comps	Area in ha	Series Total
Gania – Nayagarh Car Timber Series	Gania	Bankamunda R.F	1 to 4	1859.8002	9331.0369
		Gania R.F		342.8016	
		Matia R.F		643.61	
		Makarprasad R.F		1157.671	
		Manibhadra R.F		527.9488	
	Nayagarh	Balaram RF		289.5281	
		Hatimunda R.F	13 to 20	2522.0053	
		Rukhi R.F		220.8998	
		Sulia R.F	3	738.3452	
		Patharakata R.F		135.0238	
		Sapua R.F	1 & 2	893.4031	
Mahipur Car Timber Series	Mahipur range	Hatimunda R.F	1to 12	5219.0361	8329.1205
		Maicheli Sampada R.F		284.2927	
		Ratadei R.F	1 to 4	2084.0057	
		Panchupandav R.F	1 & 2	741.786	
Ragadimada Car Timber Series		Palva R.F	1 to 8	2856.7524	8162.8732
		Sulia R.F	1& 2	1049.8815	
		Ragadimada R.F	1 to 9	4256.2393	
Khandapara Car Timber series	Khandapara	Bandara R.F		216.6869	12719.7058
		Barakhola R.F		787.6532	
		Chadeibasa R.F		92.1845	



		Dengabhadra R.F		772.2526	
		Guriabari R.F	1 & 2	535.6389	
		Hanumantia R.F		329.61	
		Mainsibindha R.F		637.3768	
		Similibanka R.F		216.9048	
		Pathara R.F		49.01665	
		Pithakhai R.F		353.16	
		Sapua R.F	3 to 13	7144.764	
		Sikharpur R.F		1374.113	
		Patrabani Jamubani R.F		210.3444	
Odogaon Car Timber Series	Odogaon	Bahadajhola R.F		404.5449	9085.7183
		Balisinsa Badhulipur R.F	1 & 2	406.07943	
		Gayalsingh R.F	1 to 4	1394.5858	
		Gochha R.F	1 to 8a & 18	3699.0093	
		Sulia R.F	4,8 & 9	2057.1089	
		Makarapalli (PRF)		1124.39	
		Gochha R.F	9 to 17	5626.1041	9187.2470
Panchirida Car Timber Series	Panchirida	Khatia Damasahi R.F		268.235	
		Patharaganda R.F	1 to 4	1228.8805	
		Sulia R.F	6 & 7	2064.0274	
Sarankul Car Timber Series	Daspalla	Khamana (PRF)		116.8569	10430.817
		Boni (PRF)		79.3134	
		Gumurukhola (PRF)		270.9614	
		Pankalasahi (PRF)		68.1276	
		Baisipalli Extn-I (PRF)		73.272	
		Baisipalli Extn-II (PRF)		71.9664	
		Baisipalli Ext-III (PRF)		163.6354	
		Dhundugadia PRF		756.7991	
		Nephari (PRF)		253.7985	
		Gochhabari		522.014	
		Gambhariganda (PRF)		288.2498	
		Baliberena (PRF)		44.5776	
		Chadiapalli Extn (PRF)		378.0971	
		Aranignda (PRF)		102.1612	
	Gania	Phasi Extn-I (PRF)		23.4961	
		Phasi Extn-II (PRF)		112.0323	
		Phasi Extn-III (PRF)		58.8719	
		Matia (PRF)		54.8403	



		Bankamunda Extn-I (PRF)		205.6272	
		Baisipalli Ext-IV		489.1446	
		Palava (PRF)		59.8702	
		Ragadimada (PRF)		76.897	
	Panchirida	Banijhari (PRF)		2756.617	
		Sukarmala (PRF)		2525.895	
		Ambamundia (PRF)		297.7761	
	Nayagarh	Barabanka (PRF)		579.9189	

Raghnunath jew Car Timber Series	Daspalla	Kuradhinisa Ext		2615.416	8445.7677
		Kuradhinisha (DPF)		505.1108	
		Kerabari (DPF)		39.6854	
		Nandagadu (DPF)		54.477	
		Nuagaon (DPF)		49.45136	
		Sirisabadi (DPF)		934.9828	
		Sikharpanga (DPF)		87.61654	
		Ranga (DPF)		305.9649	
		Baijhari (DPF)		89.4322	
	Gania	Matia Extn (DPF)		546.1503	
		Bankamunda Extn-II (DPF)		546.6233	
		Arakhataila		253.3231	
		Ambaghati-I		1.165	
		Ambaghati-II		11.8504	
		Ambaghati-III		1.96	
		Ambaghati-IV		60.3667	
		Makarprasad		125.2948	
	Odogaon	Dhadi (DPF)		232.8733	
		Takarakhai (DPF)		78.8052	
		Kurala (DPF)		677.3515	
		Nariamba		774.0594	
	Mahipur	Bhagabati (DPF)		62.0763	
	Panchirida	Binjhagiri (DPF)		250.227	
		Netabandha (DPF)		141.5044	

**23.5.1 Abstract of Car Timber Series:**

Table No 23.4 Abstract of Car Timber Series		
Sl No	Name of series	Area in Ha
1	Cenral Car Timber Series	11022.9919
2	Chadiapali Car Timber Series	13653.2322
3	Gania – Nayagarh Car Timber Series	9331.0369
4	Mahipur Car Timber Series	8329.1205
5	Ragadimada Car Timber Series	8162.8732
6	Khandapara Car Timber series	12719.7058
7	Odogaon Car Timber Series	9085.7183
8	Panchirida Car Timber Series	9187.2470
9	Sarankul Car Timber Series	10430.817
10	Raghunath jew Car Timber Series	8445.7677
	Total	100368.5105

23.5.2 Treatment Section

Considering the availability of timber of specific species and size, one series is considered as one section and will be worked out in one year. The year wise assignment is furnished at table No 23.5

Table No 23.5 Abstract of Car Timber Series				
Sl No	Name of series	Year of working	Section	Area in Ha
1	Cenral Car Timber Series	2021-22	CTS-I	11022.9919
2	Chadiapali Car Timber Series	2022-23	CTS-II	13653.2322
3	Gania – Nayagarh Car Timber Series	2023-24	CTS-III	9331.0369
4	Mahipur Car Timber Series	2024-25	CTS-IV	8329.1205
5	Ragadimada Car Timber Series	2025-26	CTS-V	8162.8732
6	Khandapara Car Timber series	2026-27	CTS-VI	12719.7058
7	Odogaon Car Timber Series	2027-28	CTS-VII	9085.7183
8	Panchirida Car Timber Series	2028-29	CTS-VIII	9187.2470
9	Sarankul Car Timber Series	2029-30	CTS-IX	10430.817
10	Raghunath jew Car Timber Series	2030-31	CTS-X	8445.7677
	Total			100368.5105



23.5.3 Blocks, compartments and JFM area:

The details of area assigned to various blocks have been furnished at Table No 13.3 in Chapter 13. The forest class wise area assigned to this Working Circle and to VSS is furnished at Table No 23.6

Table No 23.6 Working Circle vis a vis VSS assigned area.			
Sl No	Category of Forest	Area assigned to this Working Circle	Area assigned to VSS
1	Reserved forests	80367.5358	29600.814
2	PRF	11555.2070	2011
3	DPF	8445.7675	639.560
	Total	100368.5103	32251.374

23.6 Special objectives of Management:

The special objectives of management set for this overlapping working circle are listed below

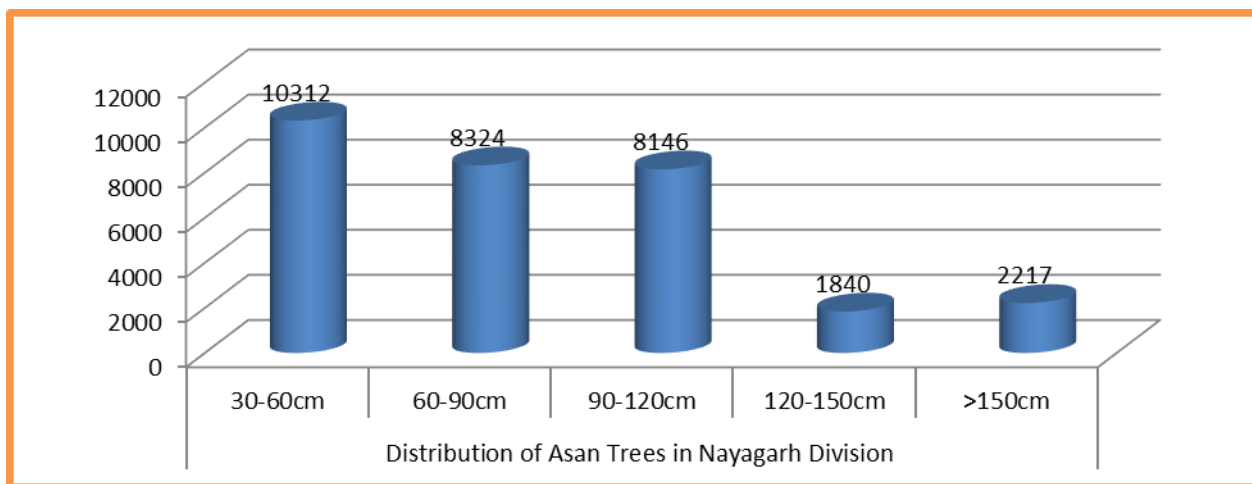
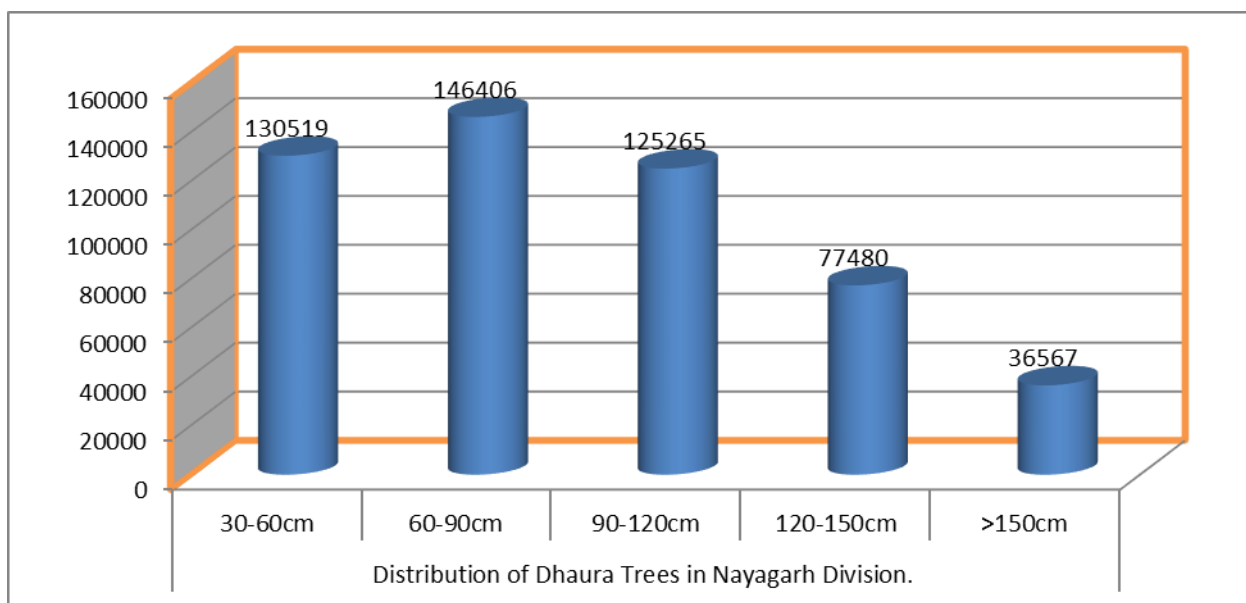
- i) To provide required timber to Puri Shree Jagannath Temple Trust for construction of Chariots annually.
- ii) To provide required timber to Lord Lingaraj Temple trust for construction of Rukuna Ratha as and when required.
- iii) To maintain and improve the available growing stock with a view to ensure sustained supply of timber for car festival annually.
- iv) To induce conditions that would promote regeneration of principal species specially for Asan, Dhaura and Sal in these Forests.
- v) To ensure conditions that would encourage bio-diversity, soil and moisture conservation, with canopy closure.
- vi) To restock barren areas through artificial regeneration with desirable indigenous species like Asan, Dhaura and Simili.
- vii) To increase heterogeneity in the forest crop by encouraging natural regeneration of principal species and to encourage ecological stability.



23.6.1 Analysis of the crop:

The main species for Chariot construction is Asan, Dhaura and Phasi. Total annual requirement is 862 pices. NRSC analysis data for SWC areas have been furnished for Asan and Dhaura. The same is produced for overall appreciation of crop condition

Table no 23.7 Stand table for Anogeisus Latifolia (Dhaura) in SWC area							
Range	Area	Girth Class					
		30-60cm	60-90cm	90-120cm	120-150cm	>150cm	Total
Daspalla	24514.12	66994	102516	91744	60671	26235	348160
Gania	1798.60	9421	9165	3586	2167	1061	25400
Khandapara	2438.11	11077	4064	1953	895	417	18406
Mahipur	3945.38	24285	10600	10759	4316	1149	51109
Nayagarh	117.17	568	305	267	128	50	1318
Odogaon	2985.39	11291	7925	6808	5098	1868	32990
Panchirida	4491.09	6883	11831	10148	4205	5787	38854
Total	40289.86	130519	146406	125265	77480	36567	516237
%		25.28	28.36	24.27	15.01	7.08	100.00
Stand table for Terminalia tomentosa (Asan) in SWC area							
Daspalla	24514.12	54159	66013	66960	29799	9205	226136
Gania	1798.60	11720	10603	3396	1400	792	27911
Khandapara	2438.11	14402	3269	1753	344	139	19907
Mahipur	3945.38	22576	11329	7082	2689	926	44602
Nayagarh	117.17	787	236	276	71	39	1409
Odogaon	2985.39	21653	13755	9189	1657	356	46610
Panchirida	4491.09	10312	8324	8146	1840	2217	30839
Total	40289.86	135609	113529	96802	37800	13674	397414



23.6.2 Silvicultural system:

The silvicultural system adopted is "Selection System". The improvement of crop is covered under Selection Working Circle, Rehabilitation and Plantation Working circles.

23.6.3 Rotation period:

Rotation period for various species has been discussed at Para 14.6.3 of this plan. The same is applicable to this working circle. For Asan, Dhaura and Phasi is fixed at 120 years. As the requirement of timber is considered from its girth only, the species can only be considered for removal when attain the requisite girth only. For Lord Lingaraj Temple species required are Sal, Simili, Mai and Kumbhi.



23.6.4 Harvestable diameters:

The Girth of various species required are The Girth of various species required as mentioned in the Chariot construction Manual. The same is furnished below for reference. The girth mentioned is the mid girth of the timber i.e. about 2-3 meters above the ground. The GBH is about 4' and above i.e. 135cm and above. For Phasi which is required for Wheel's component (Pahi and Tumba) is above 180cm

23.6.5 Reducing factors and reduced areas:

The yield required is a fixed quantum i.e.

Table No 23.8 Timber requirement for Chariot for Car Festival(Ratha Yatra)			
Species	Purpose	Dimension (L x G in feet)	Qty. In nos.
Phasi	Tumba	9 x 6	22 Nos.
Phasi	Pahi	12 x 6	50 Nos.
Dhaura	Danda and Akha	40 x 3	50 Nos.
Dhaura	Aramundi	12 x 3.17	428 Nos.
Asan	Gayala	40 x 3	312 Nos.
		TOTAL	862 Nos.

Table No 23.9 Timber requirement for car festival (Lord Lingaraj) Bhubaneswar.			
Species	Dimensions (ft.)	Quantity (Nos.)	Remarks
Mai	15 x 5	5	The quantity and sizes of required timbers have been differs from year to year.
Semul	15 x 5	5	
Sal (Poles)	18 x 2.5	3	
Sal	15 x 14	2	
Sal	10 x 5	8	
Kumbhi	15x5	5	
	TOTAL	28 Nos.	

It is required to be spplied from the division. No reduced factor / area has been calculated.

23.6.6 Cutting Cycle:

A ten year cutting cycle co terminous with the plan period is suggested and taken for all purpose.

**23.6.7 Division into Sections.**

The assigned forest area has been divided into 10 Car Timber Felling Series. Each felling series is considered as a section for working.

23.6.8 Calculation of the yield:

The harvesting of desired species per annum is of fixed quantity. No deviation is accepted. Hence it is proposed to harvest the required timber from the assigned area.

The annual removed tree is to be recorded and the harvested trees are required to be adjusted against the designated coupe under Selection Working Circle.

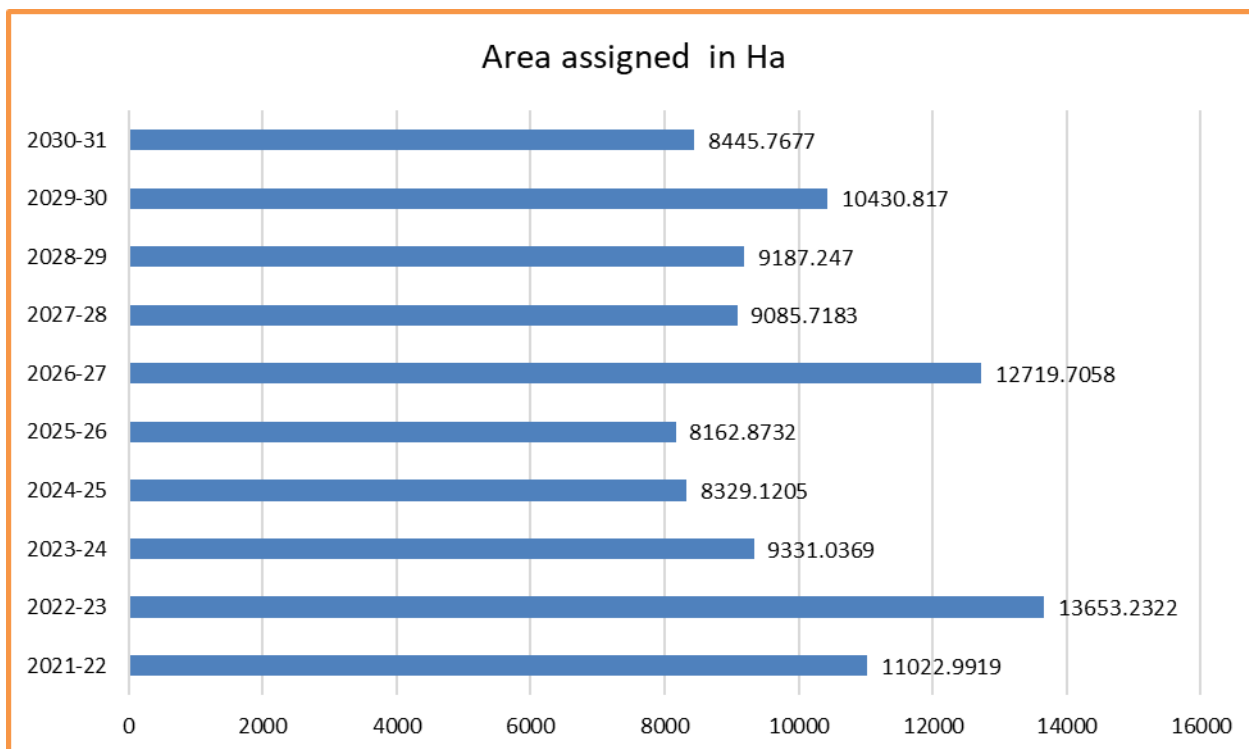
The species / timber removed from areas allotted to Rehabilitation Working Circle, Plantation working Circle will be recorded as Salvage / additional timber harvested.

23.6.9 Table of Annual Felling .

The annual working area has been furnished at above.

The year wise area assigned for working is furnished below. (Table No 23.10)

Table No 23.10 Table of Annual Felling Car Timber Series				
Sl No	Name of series	Year of working	Section	Area in Ha
1	Cenral Car Timber Series	2021-22	CTS-I	11022.9919
2	Chadiapali Car Timber Series	2022-23	CTS-II	13653.2322
3	Gania – Nayagarh Car Timber Series	2023-24	CTS-III	9331.0369
4	Mahipur Car Timber Series	2024-25	CTS-IV	8329.1205
5	Ragadimada Car Timber Series	2025-26	CTS-V	8162.8732
6	Khandapara Car Timber series	2026-27	CTS-VI	12719.7058
7	Odogaon Car Timber Series	2027-28	CTS-VII	9085.7183
8	Panchirida Car Timber Series	2028-29	CTS-VIII	9187.2470
9	Sarankul Car Timber Series	2029-30	CTS-IX	10430.817
10	Raghunath jew Car Timber Series	2030-31	CTS-X	8445.7677
	Total			100368.5105



23.6.10 Method of executing the Felling:

i) Enlisting of Area for felling:

The area assigned for working in a year is a vast tract and forest block is taken as whole for a particular year for working. Hence the blocks are only to be enlisted one year prior to working. The area is to be visited and potential trees for Car timber are to be enlisted. The list of probable suitable trees to be made available by 30th November of the previous year.

23.6.10.1 Marking Rules:

The following principles are to be followed for marking of Car timbers.

- The potential suitable trees of required species are to be examined and verified in the field by the Section Forester / Range Officer.
- The probable Sound Trees of required species are to be short listed and only sound trees are to be selected for marking.



- During shortlisting of identified trees, those are standing on high slopes, near to nala bank, isolated trees and which may create permanent gap in the crown system may be dropped.
- Such trees can only be selected in very hard cases and unavoidable circumstances.
- The final list is to be submitted to Divisional Forest Officer, Nayagarh for approval by 31st December
- If required the list of trees identified for marking may be cross checked by the Asst. Conservator of Forests and finally accepted.
- About 10% of required trees are to be kept as reserve for approval in 2nd stage if trees identified / marked for removal are found to be unsound during felling.
- The unsound trees if felled to be adjusted towards future yield in case of SWC working Circle and towards salvage timbers in case of RWC/ Plantation WC.

23.6.10.2 Removal & transporting To Ratha Khala / Saw Mill;

Cutting of trees for Chariot Construction is related to Customary Rituals like Receiving Angyamala, Worship of Trees and then felling, tree felling and transportation can only be executed after completion of rituals by Puri Temple administration.

23.6.10.3 Subsidiary silvicultural operations:

After removal of trees from the site, the debris, lops & tops and branches are required to be cleared from the site may be in form of firewood or debris. In case of removal of trees which will make a permanent gap on the crown system, it is advised take steps to regenerate the area through seed showing of car timber species or planting

23.6.11 Regeneration:

From the past experience it is felt that the availability of Car timber is in a declined stage. It is becoming difficult year after year to full fill the obligation of supplying the required quality & quantity of Car Timber. A continuous and long term steps are required to be taken. The following measures are suggested to regenerate the designated area with required species. The steps are

- In case of SWC area, the blank areas may be regenerated through seed showing. Species like Asan, Dhaura, Phasi can be easily grown in thalies in month of May



every year in the previous year coupes.. At least 200 thalies may be developed every year in each coupe.

- In case of RWC area Gap planting is being practiced. Planting @ 200 plants per ha has been provided in the Cost norm of ANR. It is suggested to include 20% of plants those are required for Car timber purpose.
- The available seedlings of desired species, if available in the field, necessary silvicultural attention like Soil working, Fertilizing the plan may be taken up on priority.

23.6.10 Associated Regulations and Measures:

As it is experienced, it is now difficult to identify the required Car Timber from Nayagarh Division. Timbers from neighbour Division are also being procured. Neighbour divisions like Khurdha, Boudh and Kandhamal may be included for Car Timber potential areas and provisions may be made accordingly.

23.7. Intermideate Revision:

No intermediate revision is not anticipated. However, if so required, the Regional Chief Conservator of Forests in consultation with the Chief Conservation of Forests (Working Plans), will send a proposal for amendment of prescriptions to the competent authority for necessary approval.





CHAPTER-24

TOF Working Circle

24.1 Name of working circle:

The Forest area in Nayagarh Division is about 54.29% of Geographical area. Out of the forest area recorded around 32.44% area is of DLC Land / Revenue Forest. Besides the forests, under administrative control of Forest department about 540.0Sq.KM of Revenue forests (32.44% of the Geographical area) remain outside the management purview. Plantations are being raised under various schemes like Forest Development Agency, Mahatma Gandhi National Rural Employment Guarantee Act (MANREGA), CAMPA, Farm Forestry, Avenue Plantations etc. Hence its management is of equal importance. In order to provide a management strategy for these plantations / natural forests, it is proposed to constitute “**ToF Working Circle**”. Total area allotted is 2015.00 ha and 1042.90 RKM Avenue Plantation.

24.2 General Constitution:

The TOF are integrated contribution of Plantations Raised outside the conventional Forest area by Forest Department, Horticultural plantation and other department, Plantations raised by private individuals in their fellow land and back yard, Agro Forestry practices, Avenue Plantations and Institutional Plantations.

The plantations raised during last plan period outside the Forest area are included in this Working Circle. The total area planted is 2015.00 ha and 1042.90 RKM Avenue Plantation.

Under Farm Forestry program 79.957 lakh seedlings have been distributed and it is estimated that 4997.313 ha area might have been planted up out of these seedlings distributed.

These three categories of Plantations i.e. Plantations outside the forest area under Misc. Plantation, Jaggath Van Prakalpa and Avenue Plantation will be considered for ToF management. The revenue forests though contribute to TOF to a greater extent, a general guideline will be prescribed for its management.

**24.2.1 Plantations outside the Forest area.**

The plantations raised outside the forest area comes to 2015.00ha (Misc- 2015.00). The year wise Plantation raised and assigned to this Working Circle for management are at Table No 24.1

Table No 24.1 List of Plantations Raised Outside the Forest Area.

Sl No.	Range	Name of the Planting site	Year of Plantation	Scheme	Area in Ha
1	Nayagarh	Ranipada Water shed	2010-11	CAMPA-APO-2009-10	20.0
2	Nayagarh	Patharkata Water shed	2010-11	CAMPA-APO-2009-10	20.0
3	Nayagarh	Khuntubandha Water shed	2010-11	CAMPA-APO-2009-10	25.0
4	Nayagarh	Bhatasahi Watershed	2010-11	CAMPA-APO-2009-10	10.0
5	Khandapada	Analapata Watershed	2010-11	CAMPA-APO-2009-10	13.5
6	Khandapada	Golapokhari Watershed	2010-11	CAMPA-APO-2009-10	5.0
7	Khandapada	Mituani Watershed	2010-11	CAMPA-APO-2009-10	40.0
8	Khandapada	Kanasingh Watershed	2010-11	CAMPA-APO-2009-10	19.5
9	Khandapada	Kumbharapada Watershed	2010-11	CAMPA-APO-2009-10	17.0
10	Khandapada	Baraput Watershed	2010-11	CAMPA-APO-2009-10	15.0
11	Mahipur	Dimiripadar Watershed	2010-11	CAMPA-APO-2009-10	20.0
12	Mahipur	Naitaila Watershed	2010-11	CAMPA-APO-2009-10	20.0
13	Mahipur	Kosalanga Watershed	2010-11	CAMPA-APO-2009-10	50.0
14	Mahipur	Maniakot Watershed	2010-11	CAMPA-APO-2009-10	20.0
15	Mahipur	Achupada Watershed	2010-11	CAMPA-APO-2009-10	30.0
16	Mahipur	Sikhargochha Watershed	2010-11	CAMPA-APO-2009-10	60.0
17	Gania	Subarnapur Watershed	2010-11	CAMPA-APO-2009-10	65.0
18	Gania	Suankhala Watershed	2010-11	CAMPA-APO-2009-10	75.0
19	Daspalla	Mahulia Watershed	2010-11	CAMPA-APO-2009-10	40.0
20	Daspalla	Karadamada Watershed	2010-11	CAMPA-APO-2009-10	50.0
21	Daspalla	Bulunda Watershed	2010-11	CAMPA-APO-2009-10	30.0
22	Daspalla	Khajuribania Watershed	2010-11	CAMPA-APO-2009-10	20.0
23	Odagaon	Nariamba Watershed	2010-11	CAMPA-APO-2009-10	90.0
24	Odagaon	Balisinsa Watershed	2010-11	CAMPA-APO-2009-10	25.0
25	Odagaon	Ambapada Watershed	2010-11	CAMPA-APO-2009-10	40.0



26	Odagaon	Tulubi Watershed	2010-11	CAMPA-APO-2009-10	25.0
27	Odagaon	KarsingWatershed	2010-11	CAMPA-APO-2009-10	30.0
28	Panchirida	Punipada Watershed	2010-11	CAMPA-APO-2009-10	35.0
29	Panchirida	Kurumuduli Watershed	2010-11	CAMPA-APO-2009-10	40.0
30	Panchirida	Jamusahi Watershed	2010-11	CAMPA-APO-2009-10	115.0
31	Panchirida	Nachipur Watershed	2010-11	CAMPA-APO-2009-10	145.0
32	Panchirida	Dengajgari Watershed	2010-11	CAMPA-APO-2009-10	30.0
33	Panchirida	Jakeda Watershed	2010-11	CAMPA-APO-2009-10	30.0
34	Panchirida	Tulubi Watershed	2010-11	CAMPA-APO-2009-10	25.0
35	Panchirida	Kakalama Watershed	2010-11	CAMPA-APO-2009-10	20.0
36	Nayagarh	Jaada RL	2011-12	OWP Plantation	20.0
37	Mahipur	Chandijhari RL	2011-12	OWP Plantation	20.0
38	Nayagarh	Brundabanapur RL	2012-13	OWP Plantation	20.0
39	Odagaon	Beladwara RL	2012-13	OWP Plantation	20.0
40	Gania	Lembugochha RL	2013-14	OWP Plantation	10.0
41	Gania	Alapanga RL	2013-14	OWP Plantation	10.0
42	Panchirida	Lunisahi RL	2013-14	OWP Plantation	20.0
43	Khandapada	Sikharapur RL & Barapalli RL	2013-14	OWP Plantation	10.0
44	Khandapada	Jaharkot & Kismat Kendupalli RL	2013-14	OWP Plantation	10.0
45	Daspalla	Arasahi RL	2013-14	OWP Plantation	20.0
46	Nayagarh	Jaada R.L	2014-15	OWP Plantation	10.0
47	Khandapara	Mainsibindha R.L	2014-15	OWP Plantation	10.0
48	Khandapara	Kandhamirigi R.L	2014-15	OWP Plantation	10.0
49	Daspalla	Jatiapally R.L	2014-15	OWP Plantation	10.0
50	Gania	Gopiballavpur R.L	2014-15	OWP Plantation	17.0
51	Gania	Gholahandi R.L	2014-15	OWP Plantation	23.0
52	Odagaon	Sundhijhola R.L	2014-15	OWP Plantation	20.0
53	Khandapara	Laxmiprasad R.L	2014-15	Bald Hill Plantation	11.0
54	Panchirida	Solapata R.L	2014-15	Bald Hill Plantation	15.0
55	Panchirida	Kespania R.L	2014-15	Bald Hill Plantation	10.0
56	Khandapada	Patharachakada RL	2015-16	Bald Hill Plantation	10.0
57	Mahipur	Sudungi RL	2015-16	OWP Plantation	20.0
58	Daspalla	Nidhikiari RL	2015-16	OWP Plantation	25.0
59	Daspalla	Jatiapalli RL	2015-16	OWP Plantation	25.0
60	Gania	Nuapada RL	2015-16	OWP Plantation	40.0
61	Gania	Jhuntamara RL	2015-16	OWP Plantation	20.0



62	Odagaon	Chemedi RL	2015-16	OWP Plantation	40.0
63	Odagaon	Kaliamba RL	2015-16	OWP Plantation	15.0
64	Odagaon	Beladwara RL	2015-16	OWP Plantation	15.0
65	Gania	Kendubida RL	2015-16	JBP	10.0
66	Panchirida	Gochha RL	2015-16	JBP	10.0
67	Gania	Chadakamara RL	2016-17	Bald Hill Plantation	13.0
68	Gania	Khairapankalasahi RL	2016-17	Bald Hill Plantation	12.0
69	Gania	Gohirimada RL	2016-17	OWP Plantation	25.0
70	Gania	Kakudikhola RL	2016-17	OWP Plantation	25.0
71	Panchirida	Gochha RL	2016-17	JBP	25.0
72	Mahipur	Sorada RL	2017-18	Bald Hill Plantation	20.0
73	Khandapada	Talarada RL near Hanumantia RF	2018-19	Green Mahanadi mission	44.0
74	Khandapada	Madhupur RL	2018-19	Green Mahanadi mission	10.0
		Total			2015.00

24.2.2 Avenue Plantation (TOF)

Table No 24.2 List of Avenue Plantations Raised during last plan period(Nayagarh Division)				
Sl No	Year	Name of the Road / Site	Length in RKM	No. of seedling planted
1	2009-10	Kaibalyapur - Sakeri	6	1500
2	2009-10	Damasahi - Badabhuin	4	1000
3	2009-10	Godipada - Dimisar	3	750
4	2010-11	Lekhanapur - Jagannath Temple	2.5	625
5	2010-11	Mini stadium	1	250
6	2010-11	Pankua - Nuagaon	8	2000
7	2010-11	NH 224 - Tumandi	3	750
8	2010-11	Dengakuruma - Daspalla	13	3250
9	2010-11	Adakata - Mahitama	2	500
10	2010-11	Gania - Rasanga	4	1000
11	2010-11	Barasahi - Asuridhipa	4	1000
12	2010-11	Panibhandara - Kajalaipalli	3	750
13	2010-11	Mandalabani Chaka - Adabandha	6	1500
14	2010-11	Kotaranga - Bayapalli	4	1000



15	2010-11	Odagaon PWD road - Godipalli	4	1000
16	2011-12	Bapujipalli Gunduribari	4	1000
17	2011-12	Goudaputa - Dhabalei	5	1250
18	2011-12	Golagaon - Bhaliadihi	4	1000
19	2011-12	Ladukesh Mahesh Temple	2	500
20	2011-12	D.N.Pur - Kendupalli	4	1000
21	2011-12	Badaput - Arada	3	750
22	2011-12	Baigunia - Khuntupada	4	1000
23	2011-12	Sidhamula - Rajakiari	4	1000
24	2011-12	Chandibasta - DRDA Office	12	3000
25	2011-12	Bijipur - Nayagarh NH 224	16	4000
26	2011-12	Andharakote - Guriabari	10	2500
27	2011-12	Karadapada - Goudatumandi	4	1000
28	2011-12	Barapurikia - Nuapada	8	2000
29	2011-12	Dengakuruma - Daspalla (Extn.)	2	500
30	2011-12	Maicheli - Dengakuruma	25	6250
31	2011-12	Sikrida - Krushnaprasad	4	1000
32	2012-13	Chahali - Dhulipaunsa	2	500
33	2012-13	Mugupatana - Angisingi	4	1000
34	2012-13	Khuntupada - badabhuin	5	1250
35	2012-13	Rasanga - Dankarisahi	4	1000
36	2012-13	Barabati - Haripur	2	500
37	2012-13	Deulapalli - Ratanpur	2	500
38	2012-13	Umadevi Chaka - Gunthuni	6	1500
39	2012-13	Khuntupada - Olasa	6	1500
40	2012-13	Jagannathprasad - Krushnapalli	2	500
41	2012-13	Maicheli - Dengakuruma Extn.	5	1250
42	2012-13	Jamujhola - Kantabari	5	1250
43	2012-13	Kajalaipalli - Bhaliadihi	8	2000
44	2012-13	Shymaghanapur - Khairapati	10	2500
45	2013-14	Itamati - Dengeragodi	4	1000
46	2013-14	Baunsiapada - Ekantabasi Temple	2	500
47	2013-14	Nuagaon - Bahadajhola	8	2000
48	2013-14	Durgapur - Elopada	4	1000
49	2013-14	Gohiriapada - Kendupalli	12	3000
50	2013-14	Badabhuin - Golapokhari	8	2000
51	2013-14	Bahadajhola - Gumi	4	1000
52	2013-14	Godipalli - Kurala	7	1750



53	2013-14	Sunadei - Gochha	10	2500
54	2013-14	PWD road - Belapada	2.4	600
55	2013-14	Kendupalli - Brutanga	4	1000
56	2013-14	D.N.Pur - Godimada	10	2500
57	2013-14	Majhiakhanda - Dayanajhari	8	2000
58	2013-14	Itamati - Sanapandusar	5	1250
59	2013-14	Pilipaju - Pokharigochha	3	750
60	2013-14	Mardarajpur - Bodasa	3.2	800
61	2013-14	Madhapur - Mahulaberana	3.4	850
62	2013-14	Durgapur - Marichia	3.4	850
63	2013-14	Ragadisahi - Kukudakhani dam	4.6	1150
64	2013-14	Krushnapalli - Jagannathprasad	1.4	350
65	2013-14	Bapujipalli - Gunduribari	6	1500
66	2014-15	Kaudia to Andharakhani	6	1500
67	2014-15	Jiginipada to Muduranga	8	2000
68	2014-15	Kuanria to Bhogabadi	16	4000
69	2014-15	Khamarisahi - Bhimara	4	1000
70	2014-15	Jagannathprasad to Gholahandi	4	1000
71	2014-15	Dankarisahi - Mahukhan	4	1000
72	2014-15	Jagannathprasad to Siarinal	2	500
73	2014-15	Mahukhana to Butubari	8	2000
74	2014-15	Mahulaberana to Kalatangi	8	2000
75	2014-15	Kuanria Bridge-Nrasinghaprasad	9	2250
76	2014-15	Nayagarh-Beguniapatna	12	3000
77	2014-15	Marichia-Kaligiri river	2	500
78	2014-15	Caubanga-Dholamara	5	1250
79	2014-15	Madhupur-Khairapankalsahi	5	1250
80	2014-15	Patulisahi-Beguniapatna	6	1500
81	2015-16	Gochha – Nuagaon PMGSY road	20	5000
82	2015-16	Kaithapalli PMGSY Road	3	750
83	2015-16	Nugadiahahi to patharakhanda PMGSY road	3	750
84	2015-16	Kunjabiharipursasan to Bandhadwara PMGSY road	5	1250
85	2015-16	Kalikaprasad to Badasahara PMGSY road	5	1250
86	2015-16	Durgapur - Marichia via Parbatipur	4	1000



87	2015-16	Lunisahi - Gopinathpur	14	3500
88	2015-16	Shyamaghanapur - Kautara	8	2000
89	2016-17	Katrajhari to Sabideipur	5	1250
90	2016-17	Dasipur to Routpada	5	1250
91	2016-17	Panderisahi to Paturia	3	750
92	2016-17	Janisahi Chaka to Canal Road	7	1750
93	2016-17	Jamusahi-Golapokhari RD road	10	2500
94	2016-17	Kendupalli-Gohiriapada PMGSY road	7	1750
95	2016-17	Pathapur-Karadapalli PMGSY road	4	1000
96	2016-17	Laxmiprasad-Bhogada PMGSY Road	6	1500
97	2016-17	Gohiriapada-kalatangi RD road	5	1250
98	2016-17	Godipada to Jakeda	12	3000
99	2016-17	Raghunathpur to Padmadeipur	10	2500
100	2016-17	Salajhari to Arada	14	3500
101	2016-17	Balugaon - Mahipur	16	4000
102	2016-17	Arasahi - Sajanapada - Palagunthuni	8	2000
103	2016-17	Itamati-Champatipur	6	1500
104	2016-17	Machipada-Raghunathpur	4	1000
105	2016-17	Machipada-Pallisasan	2	500
106	2016-17	Madanmohanpur - Godipatana	6	1500
107	2016-17	Sunamuih- Balisinsa	4	1000
108	2016-17	Bahadajhola-Hatiasila	6	1500
109	2016-17	Krushnapallichaka to Kenduabida	8	2000
110	2016-17	Adakatasitulisahi to Dhuamunda	6	1500
111	2016-17	Tangiapalli to Gobardhanpur	6	1500
112	2016-17	Mahitama to Sikrida	10	2500
113	2016-17	Chadeimara to Naitaila	8	2000
114	2017-18	Ghugudipada to Makarprasad	13	3250
115	2017-18	Madhyakhanda to Munda	7	1750
116	2017-18	Viruda to Khuntubandha	5	1250
117	2017-18	Sampada - Kanigiri	12	3000
118	2017-18	Mega Nursery	4	1000
119	2017-18	RD road to Bam	3	750
120	2017-18	Hanadiha to Kutrasingh	24	6000
121	2017-18	NH-57 to Jatiapalli	2	500



122	2017-18	NH-57 to Saliagochha	8	2000
123	2017-18	Jakela to Balabhadraprasad	7	1750
124	2017-18	Bhapur to Baraput	8	2000
125	2017-18	Ramachandrapur to Analapata	3	750
126	2017-18	Gunduribari to Vorder	4	1000
127	2017-18	Magarabandha to Kendupalli	4	1000
128	2017-18	Magarabandha to Kusapanderi	6	1500
129	2017-18	Todibari to Jamusahi	6	1500
130	2017-18	Godimada to Dhakamara (Previous year approved)	10	2500
131	2017-18	Naukhala to Baghua Dam	6	1500
132	2017-18	Bhuinani to Magarabandha	6	1500
133	2017-18	Kurala to Hanumantia	4	1000
134	2017-18	Giridipalli to Kurala	4	1000
135	2018-19	Padmabati - Marada	16	4000
136	2018-19	Bhapur - Maliberana	4	1000
137	2018-19	PWD Road to Ambapada	6	1500
138	2018-19	Giridipalli- Sunamuhin	6	1500
139	2018-19	Khangrapalli- Giridipalli	6	1500
140	2018-19	Korapitha to Ghuntasahi	6	1500
141	2018-19	Kushadhipi- Baunsagadia	6	1500
142	2018-19	Jatrabarapatana- Petapalli	3	750
143	2018-19	Baunsia- Gotisahi	10	2500
144	2018-19	PWD road to Jogijogiani	3	750
145	2018-19	Kandhamirigi - Mainsibindha	12	3000
146	2018-19	Sanapada - Ghagarabandha	4	1000
147	2019-20	Hari Omm Matha to Kachapalli	8	2000
148	2019-20	SH -21 to Bhagabatiprasad	8	2000
149	2019-20	Sunamuhin to Luni	6	1500
150	2019-20	Kaptapalli to Koragadu	10	2500
151	2019-20	Gadiahahi to Kadua	4	1000
152	2019-20	Gadia Sahi to Natabarpursasan	3	750
153	2019-20	Gap between Kandhamiri to Mainsibindha	2	500
154	2019-20	Sarapokhari to Koduanpalli	18	4500
155	2019-20	Badakutuni to Simili	10	2500
156	2019-20	Godipalli to Hariharpur	4	1000
157	2019-20	Khatia to Jagannathprasad	8	2000



		(Podasahi)		
158	2019-20	Bahadajhola PWD road to Madanpur	6	1500
159	2019-20	Koragadu to Makarapalli	6	1500
160	2019-20	Nilamadhaha Temple at Kantilo	20	5000
161	2019-20	Narayani Temple at Patharachakada	10	2500
		Total	1042.90	260725

24.3 General constitution of working circle:

The area allotted to this Working circle consists of two types of Plantation i.e. Misc. Plantation and Avenue Plantation. In case of miscellaneous Plantation all long term rotation species like Teak, Phasi, Sisoo, Asan are planted. The survival in case of Teak is about 85% and in other cases survival is around 75%. The growth Status varies depending upon age of plantation. Plantations raised during 2010-11 to 2018-19 are considered as established. Rest of plantations are expected to be established within the plan period.

24.4 General characteristics of vegetation:

The plantations included for management under this working Circle are timber species, fruit bearing species with an expectation to create a man made forest to provide green cover to barren land and to provide Car Timber for chariot construction in a long run. Avenue plantations have been taken up to have a aesthetic value and to provide shed to passerby. No yield is expected from these plantations during this plan period.

24.5 Treatment series/ sections and JFM areas:

For management convinieny three Treatment Series are constituted i.e. Nayagarh TOF Series, and Nayagarh Avenue Series. The area assigned to each series is as follows (Table no 24.3)

Table No 24.3 TOF Series Constitution – Nayagarh Division			
Sl No	Name of Treatment Series	No of Sites	Area in ha / RKM
1	Nayagarh TOF (TOFS)	74	2015.0
2	Nayagarh Avenue Series (NAS)	161	1042.90 RKM
	Total		2015 ha +1042.90 RKM



24.5.1 Treatment Section

For execution conveniency each series is divided to 10 sections assigned to be worked in each year.

1. Nayagarh TOF Series (TOFS):

Table No 24.4 Sections of nayagarh TOF Series						
Name of Series	Year of Operation	Section No	Range	Location	Area in ha	Section Total
Nayagarh TOF Series (TOFS)	2021-22	TOFS-I	Nayagarh	Ranipada Water shed	20.0	203.50
			Nayagarh	Patharkata Water shed	20.0	
			Khandapada	Analapata Watershed	13.5	
			Khandapada	Golapokhari Watershed	5.0	
			Khandapada	Mituani Watershed	40.0	
			Mahipur	Dimiripadar Watershed	20.0	
			Mahipur	Naitaila Watershed	20.0	
			Gania	Subarnapur Watershed	65.0	
	2022-23	TOFS-II	Daspalla	Mahulia Watershed	40.0	209.50
			Odagaon	Nariamba Watershed	90.0	
			Panchirida	Punipada Watershed	35.0	
			Nayagarh	Khuntubandha Water shed	25.0	
			Khandapada	Kanasingh Watershed	19.5	
Nayagarh TOF Series (TOFS)	2023-24	TOFS-III	Daspalla	Karadamada Watershed	50.0	230.0
			Odagaon	Balisinsa Watershed	25.0	
			Odagaon	Ambapada Watershed	40.0	
			Panchirida	Jamusahi Watershed	115.0	
	2024-25	TOFS-IV	Nayagarh	Bhatasahi Watershed	10.0	232.0
			Khandapada	Kumbharapada Watershed	17.0	
			Khandapada	Baraput Watershed	15.0	
			Mahipur	Kosalanga Watershed	50.0	
			Gania	Suankhala	75.0	



	2025-26	TOFS-V		Watershed		215
			Panchirida	Kurumuduli Watershed	40.0	
			Odagaon	Tulubi Watershed	25.0	
			Mahipur	Maniakot Watershed	20.0	
			Mahipur	Achupada Watershed	30.0	
			Daspalla	Bulunda Watershed	30.0	
			Daspalla	Khajuribania Watershed	20.0	
			Panchirida	Dengajhari Watershed	30.0	
			Panchirida	Jakeda Watershed	30.0	
			Panchirida	Tulubi Watershed	25.0	
			Odagaon	Karsing Watershed	30.0	
	2026-27	TOFS-VI	Mahipur	Sikhargochha Watershed	60.0	205.0
			Panchirida	Nachipur Watershed	145.0	

Nayagarh TOF Series (TOFS)	2027-28	TOFS-VII	Panchirida	Kakalama Watershed	20.0	210.0
			Nayagarh	Jaada RL	20.0	
			Mahipur	Chandijhari RL	20.0	
			Odagaon	Beladwara RL	20.0	
			Gania	Lembugochha RL	10.0	
			Gania	Alapanga RL	10.0	
			Nayagarh	Brundabanapur RL	20.0	
			Panchirida	Lunisahi RL	20.0	
			Khandapada	Sikharapur RL & Barapalli RL	10.0	
			Khandapada	Jaharkot & Kismat Kendupalli RL	10.0	
			Daspalla	Arasahi RL	20.0	
			Nayagarh	Jaada R.L	10.0	
			Khandapara	Mainsibindha R.L	10.0	
			Khandapara	Kandhamirigi R.L	10.0	
	2028-29	TOFS-VIII	Daspalla	Jatiapally R.L	10.0	201.0
			Gania	Gopiballavpur R.L	17.0	
			Gania	Gholahandi R.L	23.0	



			Odagaon	Sundhijhola R.L	20.0	
			Khandapara	Laxmiprasad R.L	11.0	
			Panchirida	Solapata R.L	15.0	
			Panchirida	Kespania R.L	10.0	
			Khandapada	Patharachakada RL	10.0	
			Mahipur	Sudungi RL	20.0	
			Daspalla	Jatiapalli RL	25.0	
			Gania	Nuapada RL	40.0	
	2029-30	TOFS-IX	Gania	Jhuntamara RL	20.0	173.0
			Daspalla	Nidhikiari RL	25.0	
			Odagaon	Chemedi RL	40.0	
			Odagaon	Kaliamba RL	15.0	
			Odagaon	Beladwara RL	15.0	
			Gania	Kendubida RL	10.0	
			Panchirida	Gochha RL	10.0	
			Gania	Chadakamara RL	13.0	
			Gania	Gohirimada RL	25.0	
	2030-31	TOFS-X	Gania	Kakudikhola RL	25.0	136.00
			Gania	Khairapankalasahi RL	12.0	
			Panchirida	Gochha RL	25.0	
			Mahipur	Sorada RL	20.0	
			Khandapada	Talararada RL near Hanumantia RF	44.0	
			Khandapada	Madhupur RL	10.0	
	Total				2015.0	2015.0

2. Nayagarh Avenue Series (NAS)

Table No 24.5 Sections of Nayagarh Avenue Series					
Name of Series	Year of Operation	Section	Name of Avenue Plantation	Length in RKM	Section Total in RKM
Nayagarh Avenue Series (NAS)	2021-22	NAS-I	Kaibalyapur - Sakeri	6	109.5
			Damasahi - Badabhuin	4	
			Godipada - Dimisar	3	
			Lekhanapur - Jagannath Temple	2.5	
			Mini stadium	1	
			Pankua - Nuagaon	8	



			NH 224 - Tumandi	3	
			Dengakuruma - Daspalla	13	
			Adakata - Mahitama	2	
			Gania - Rasanga	4	
			Barasahi - Asuridhipa	4	
			Panibhandara - Kajalaipalli	3	
			Mandalabani Chaka - Adabandha	6	
			Kotaranga - Bayapalli	4	
			Odagaon PWD road - Godipalli	4	
			Bapujipalli Gunduribari	4	
			Goudaputa - Dhabalei	5	
			Golagaon - Bhaliadihi	4	
			Ladukesh Mahesh Temple	2	
			D.N.Pur - Kendupalli	4	
			Badaput - Arada	3	
			Baigunia - Khuntupada	4	
			Sidhamula - Rajakiari	4	
			Chandibasta - DRDA Office	12	

Nayagarh Avenue Series (NAS)	2022-23	NAS-II	Bijipur - Nayagarh NH 224	16	107.00
			Andharakote - Guriabari	10	
			Karadapada - Goudatumandi	4	
			Barapurikia - Nuapada	8	
			Dengakuruma - Daspalla (Extn.)	2	
			Maicheli - Dengakuruma	25	
			Sikrida - Krushnaprasad	4	
			Chahali - Dhulipaunsa	2	
			Mugupatana - Angisingi	4	
			Khuntupada - badabhuin	5	
			Rasanga - Dankarisahi	4	
			Barabati - Haripur	2	
			Deulapalli - Ratanpur	2	
			Umadevi Chaka - Gunthuni	6	
			Khuntupada - Olsa	6	
			Jagannathprasad - Krushnapalli	2	
			Maicheli - Dengakuruma Extn.	5	



Nayagarh Avenue Series (NAS)	2023-24	NAS-III	Jamujhola - Kantabari	5	98.40
			Kajalaipalli - Bhaliadihi	8	
			Shymaghanapur - Khairapati	10	
			Itamati - Dengeragodi	4	
			Baunsiapada - Ekantabasi Temple	2	
			Nuagaon - Bahadajhola	8	
			Durgapur - Elopada	4	
			Gohiriapada - Kendupalli	12	
			Badabhuin - Golapokhari	8	
			Bahadajhola - Gumi	4	
			Godipalli - Kurala	7	
			Sunadei - Gochha	10	
			PWD road - Belapada	2.4	
			Kendupalli - Brutanga	4	
			D.N.Pur - Godimada	10	
	2024-25	NAS-IV	Majhiakhanda - Dayanajhari	8	107.00
			Itamati - Sanapandusar	5	
			Pilipaju - Pokharigochha	3	
			Mardarajpur - Bodasa	3.2	
			Madhapur - Mahulaberana	3.4	
			Durgapur - Marichia	3.4	
			Ragadisahi - Kukudakhani dam	4.6	
			Krushnapalli - Jagannathprasad	1.4	
			Bapujipalli - Gunduribari	6	
			Kaudia to Andharakhani	6	
			Jiginipada to Muduranga	8	
			Kuanria to Bhogabadi	16	
			Khamarisahi - Bhimara	4	
			Jagannathprasad to Gholahandi	4	
			Dankarisahi - Mahukhan	4	
			Jagannathprasad to Siarinal	2	
			Mahukhana to Butubari	8	
			Mahulaberana to Kalatangi	8	
			Kuanria Bridge-Nrusinghaprasad	9	

Nayagarh Avenue Series (NAS)	2025-26	NAS-V	Nayagarh-Beguniapatna	12	97.00
			Marichia-Kaligiri river	2	
			Caubanga-Dholamara	5	
			Madhupur-Khairapankalsahi	5	



			Patulisahi-Beguniapatna	6	
			Gochha – Nuagaon PMGSY road	20	
			Kaithapalli PMGSY Road	3	
			Nugadiasahi to patharakhanda PMGSY road	3	
			Kunjabiharipursasan to Bandhadwara PMGSY road	5	
			Kalikaprasad to Badasahara PMGSY road	5	
			Durgapur - Marichia via Parbatipur	4	
			Lunisahi - Gopinathpur	14	
			Shyamaghanapur - Kautara	8	
			Katrajhari to Sabideipur	5	
Nayagarh Avenue Series (NAS)	2026-27	NAS-VI	Dasipur to Routpada	5	107.00
			Panderisahi to Paturia	3	
			Janisahi Chaka to Canal Road	7	
			Jamusahi-Golapokhari RD road	10	
			Kendupalli-Gohiriapada PMGSY road	7	
			Pathapur-Karadapalli PMGSY road	4	
			Laxmiprasad-Bhogada PMGSY Road	6	
			Gohiriapada-kalatangi RD road	5	
			Godipada to Jakeda	12	
			Raghunathpur to Padmadeipur	10	
			Saliajhari to Arada	14	
			Balugaon - Mahipur	16	
			Arasahi - Sajanapada - Palagunthuni	8	

Nayagarh Avenue Series (NAS)	2027-28	NAS-VII	Itamati-Champatipur	6	103.00
			Machipada-Raghunathpur	4	
			Machipada-Pallisasan	2	
			Madanmohanpur - Godipatana	6	
			Sunamuhi- Balisinsa	4	
			Bahadajhola-Hatiasila	6	
			Krushnapallichaka to Kenduabida	8	



			Adakatasitulisahi to Dhuamunda	6	
			Tangiapalli to Gobardhanpur	6	
			Mahitama to Sikrida	10	
			Chadeimara to Naitaila	8	
			Ghugudipada to Makarprasad	13	
			Madhyakhanda to Munda	7	
			Viruda to Khuntubandha	5	
			Sampada - Kanigiri	12	
Nayagarh Avenue Series (NAS)	2028-29	NAS-VIII	Mega Nursery	4	101.0
			RD road to Bam	3	
			Hanadiha to Kutrasingh	24	
			NH-57 to Jatiapalli	2	
			NH-57 to Saliagochha	8	
			Jakela to Balabhadraprasad	7	
			Bhapur to Baraput	8	
			Ramachandrapur to Analapata	3	
			Gunduribari to Vorder	4	
			Magarabandha to Kendupalli	4	
			Magarabandha to Kusapanderi	6	
			Todibari to Jamusahi	6	
			Godimada to Dhakamara (Previous year approved)	10	
			Naukhala to Baghua Dam	6	
			Bhuinani to Magarabandha	6	
Nayagarh Avenue Series (NAS)	2029-30	NAS-IX	Kurala to Hanumantia	4	106.00
			Giridipalli to Kurala	4	
			Padmabati - Marada	16	
			Bhapur - Maliberana	4	
			PWD Road to Ambapada	6	
			Giridipalli- Sunamuhin	6	
			Khangarapalli- Giridipalli	6	
			Korapitha to Ghuntasahi	6	
			Kushadhipi- Baunsagadia	6	
			Jatrabarapatana- Petapalli	3	
			Baunsia- Gotisahi	10	
			PWD road to Jogijogiani	3	
			Kandhamirigi - Mainsibindha	12	
			Sanapada - Ghagarabandha	4	
			Hari Omm Matha to Kachapalli	8	

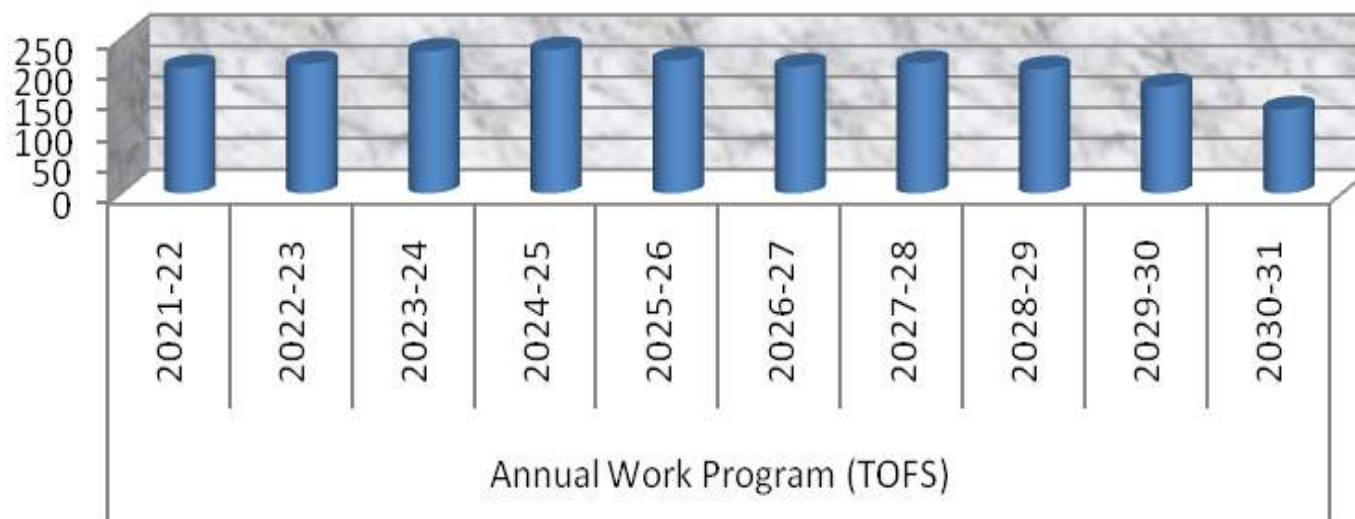


			SH -21 to Bhagabatiprasad	8	
Nayagarh Avenue Series (NAS)	2030-31	NAS-X	Sunamuhin to Luni	6	107.00
			Kaptapalli to Koragadu	10	
			Gadiahahi to Kadua	4	
			Gadia Sahi to Natabarpursasan	3	
			Gap between Kandhamiri to Mainsibindha	2	
			Sarapokhari to Koduanpalli	18	
			Badakutuni to Simili	10	
			Godipalli to Hariharpur	4	
			Khatia to Jagannathprasad (Podasahi)	8	
			Bahadajhola PWD road to Madanpur	6	
			Koragadu to Makarapalli	6	
			Nilamadhaha Temple at Kantilo	20	
			Narayani Temple at Patharachakada	10	
Total				1042.90	1042.90

24.5.2 Abstract of TOF Series:

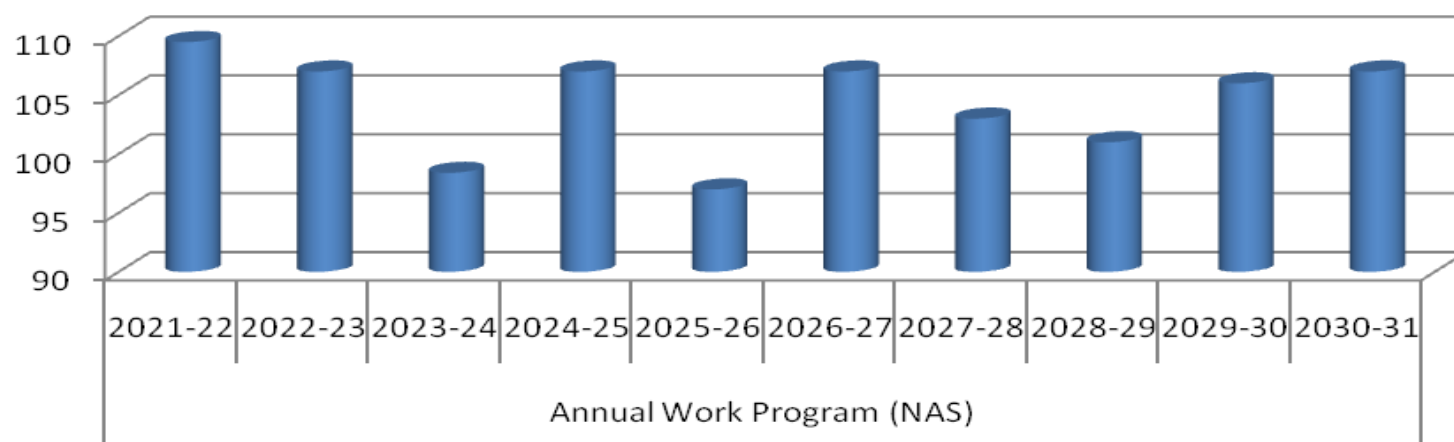
Table No 24.6 Abstract of TOF Series:

Name of Series	Year of Operation											Unit
	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	Total	
TOFS	203.5	209.5	230	232	215	205	210	201	173	136	2015	In Ha
NAS	109.5	107	98.4	107	97	107	103	101	106	107	1042.9	In RKM





Revised Working Plan for the period 2021-2031 Nayagarh Division



24.5.2 Blocks, compartments and JFM area:

The area assigned to this TOF Working Circle involves two components i.e. plantation and avenue Plantations. The plantations and Avenue plantations though not assigned to any VSS, the plantations have been raised on consultation with villagers as it is outside the Forest area.

24.6 Special objectives of Management:

The objectives of management are varied and depending upon category of plantations the special objectives TOF management & specific objectives are furnished as follows.

a) General Objectives:

- i. To increase tree cover of the district / division through planting outside the forest land.
- ii. To increase bio mass production by planting quick growing species.
- iii. To stabilize the loose soil through planting & protect catchment area of Kolab River / Reservoir.
- iv. To improve the aesthetic value along the road net work.
- v. To encourage Farm forestry to meet the demand of Raw materials of papermill.
- vi. To enhance the Economic Condition of People.

b) Of Teak Plantation.

- To enhance timber productivity of Forests,
- To enrich existing vegetation outside the forest area and meet the demand of timber especially timber required for furniture.

c) Of Avenue Plantations:

- To improve the aesthetic value of the landscape,
- To ameliorate the climate,
- To provide shade to passer-by,
- To provide habitat to birds / reptiles/ rodents.
- To add tree cover to bring the area within the standard norm i.e. 33% tree cover of the total geographical area.

d) Of Farm Forestry:

- To encourage public to have their own backyard plantation to meet their household requirement on firewood, fodder.
- To bring private land under tree planting.
- To supplement raw material availability for industries/ furniture woods.
- To make public less dependent on forests.



24.6.1 Analysis of the crop:

The assigned plantations are of following characters.

a) Mixed Plantations:

The crop planted within 2015-16 are considered as successful plantations & established with a survival rate of 75%. The average growth is of 5m height with GBH 10-30cm. The first growing species are contributing to Top Canopy. About 10-15% of planted species are considered as suppressed. Natural growth of Sal and its associates like Asan, Kendu, Bahada, Harida, Amla, karada and grasses in open spaces. Plantations taken up in between 2016-17 to 2020-21 are in sapling stage.

b) Avenue Plantations:

The avenue plantations raised along the road side are mostly surviving (80%). Due to adequate protection by Tree Guard the average height has reached above 4m in general. Neem, Karanja, Sisoo, kadamba, are showing prominent growth. Jamun, Mango, Jack Fruit are of middle order growth less than 3m. Flowering species survival is in between 50-60%.

c) Farm Forestry:

The farm forestry adopted by Forest Department involves distribution of species other than Eucalyptus. It has enriched the back yard tree cover but not getting so popularity as eucalyptus. Under Green Mahanadi Mission seedlings have been distributed to enhance tree cover along the Mahanadi Catchment area / River bank. This is aimed to reduce siltation in River Mahanadi and enhance water flow.

24.6.2 Silvicultural system:

Silvicultural System to be adopted is ***“Improvement of Stand by Silvicultural tending”***. Under this system all plantations will be treated for improving the quality of stands i.e. both height & Girth to bring the stand to more useful stage. Activities will be Thinning of appropriate Grade along with Soil & Moisture Conservation.

24.6.3 Rotation period:

The area assigned to this working Circle bears Teak and other Species. For Teak a rotation period of 100 years has been fixed. For other species found in TOF areas the rotation period fixed under Para 16.6.3 will be applicable. The same is reproduced at Table no 24.7 below



Table No 24.7 Rotation Period for various species in Plantation			
Sl No	Species	Rotation Period in Year	Remark
1	Teak	100	In case of SFP Plantations Clear felling with Standard is being followed. Rotation period is applicable for Standards only.
2	Sisoo, Gambhari	100	
3	Eucalyptus, Other Soft wood, Acacia, Cassia etc	25	
4	Fruit bearing	As long as fruiting continues	
5	Timber species for Chariot construction	As per standard requirement of Temple management (Shree Jagannath Temple / Lingaraj Temple)	

24.6.4 Harvestable diameters:

There is no prescription for final harvest of any plantation. Harvestable diameter prescribed under para 16.4 of this plan will be applicable for all other purpose if so required. The same is produced below for reference. **(Table No 24.8)**

Table No 24.8 Harvestable Girth / Diameter of planted species.				
Sl no	Species	Girth in cm	Diameter in cm	Remark
1	<i>Acacia auriculiformis</i> (Sunajhari)	90	29	
2	<i>Anacardium occidentale</i> (Cashew)			As long as Fruiting continues.
3	<i>Anogeissus acuminata</i> (Phashi)	150	48	
4	<i>Anthocephalus cadamba</i> (Kadamba)	150	48	
5	<i>Azadirachta indica</i> (Neem)	180	57	
6	<i>Bomax ceiba</i> (Simili)	150	48	
7	<i>Erythrina variegata</i> (Paladhua)	120	38	
8	<i>Gmelina arborea</i> (gambhari)	120	38	
9	<i>Melia azedarach</i> (Mahaneema)	120	38	
10	Fruit bearing species			As long as Fruiting continues.
11	Teak, Sisoo	120	38	
12	Car Timber			As per specification

24.6.5 Reducing factors and reduced areas:

There is no yield expected from this working circle except interim harvest in shape of “**Thinning materials**”. No reduction factor / reduced area have been prescribed in this working circle.



24.6.6 Treatment Cycle:

The plan period is ten years. Hence a treatment Cycle of ten year is adopted for this working Circle.

26.6.7 Division into Sections.

Each plantation / block has been assigned to one Series and each series has been divided in to ten sections as described under Para- 24.5.

26.6.8 Calculation of the yield:

No final harvest is prescribed for any plantations included in this working circle. From teak plantation some poles of utility may be obtained. From other plantations no utilizable produce is expected. There is Teak plantation as a mixed species. During light grade thinning i.e. C Grade thinning 20 numbers of poles may be expected to be removed per hector for better enhancement of retained stems. From other plantated species no utilizable yield is expected.

26.6.9 Table of Treatment.

Each series constituted under Para 24.5 are sub divided to ten sections. Each section will be worked in the assigned year. The sectios are given under Para 24.5.1. The abstract is produce at Table No 24.6 above for ready reference.

24.6.10 Method of executing the Treatment:

24.6.10.1 For Plantation (TOFS) Series:

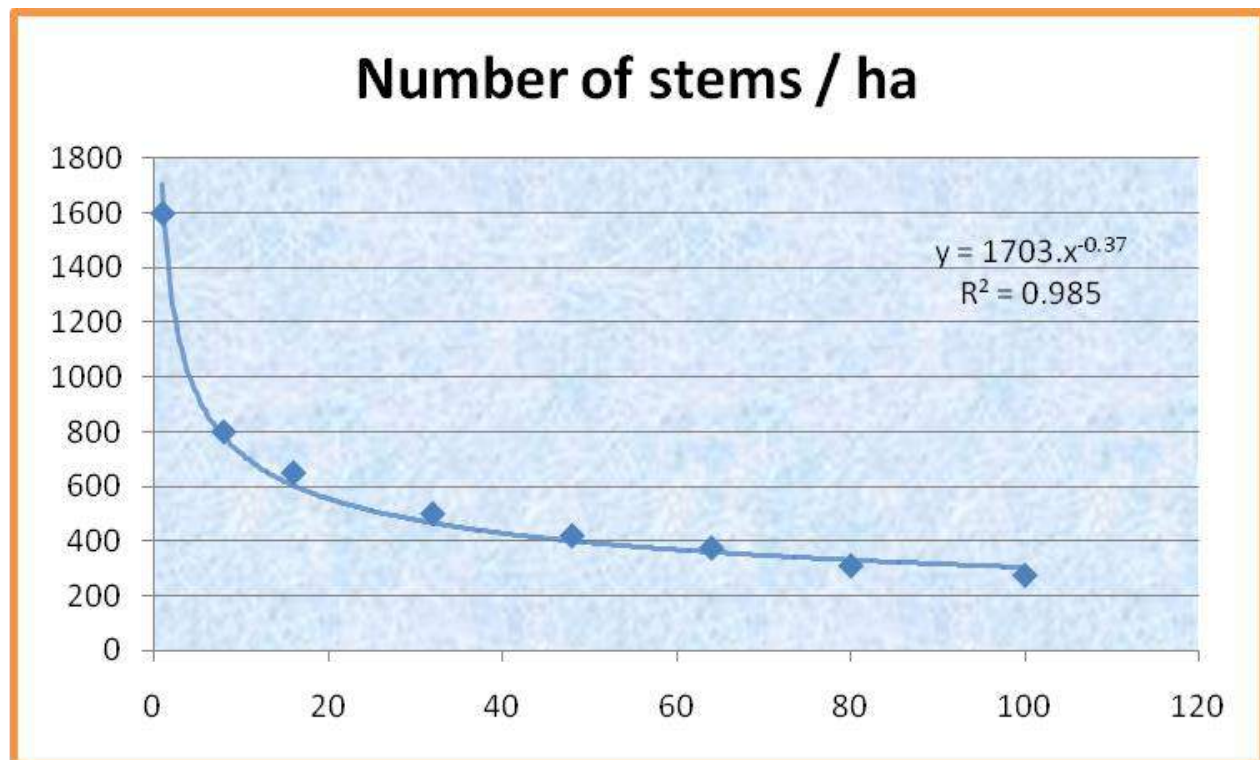
The following treatment is prescribed for plantations included under Plantation (TOFS) Series.

- The plantation area assigned to a particular year is to be re demarcated as per map available in Plantation Journal.
- Basing on Latitude / Longitude of cardinal points the map to be shown on Topo map (1:50000 Scale) and a copy in Plantation Journal.
- The growth Status like Average Height, Girth at Breast Height (GBH), Survival Percentage i.e. number of stems per hectare available may be recoded.
- The number of Stems per ha (Standard as per Age of the Plantation) is to be ascertained from this graph below or equation.



Table No 24.9 Stand Table for Plantation – Nayagarh Division

Age	Number of Planted trees	Age	Number of Planted trees	Remark
01	1600	48	420	Rotation age = 100 year
08	800	64	375	
16	650	80	310	
32	500	100	275	



$$y = 1703x^{-0.37}$$

Where y is the no of stem per ha and x is the age of plantation.

- C to D grade thinning is always recommended. In case the plantation is very congested then light thinning may be preferred over other thinning. Various thinning and principle is furnished for general guidance.



24.6.10.2.1 Thinning Practices

The objectives of taking of thinning are

- i. To improve the hygienic condition.
- ii. To create best conditions of growth & obtain diameter growth of remaining trees.
- iii. Salvage the anticipated losses of the merchantable volume.
- iv. To obtain a desirable composition of crops.
- v. Retaining seed bearers.
- vi. Improvement in wood quality.
- vii. To obtain intermediate yield and increase net yield and financial out-turn.
- viii. Decomposition of raw hummus.
- ix. To reduce the risk of diseases and pests.

After thinning, the **results** expected are

- Reduced competition in root and crown,
- Reduced weed growth,
- Improved quality of wood,
- Regulation of rate of growth,
- Increase seed production,
- Reduction in the net cost of growing,
- Reducing the risk of fire and diseases,
- Encouraging the advanced growth,
- Fulfilling the market demands.

For undertaking thinning the following aspects are to be kept in mind.

- i) Before planning the nature and intensity of thinning preference between the intensity of thinning and quality of thinning should be decided.
- ii) The trees remaining after the thinning should be able to compensate for the loss in increment by trees removed in thinning.
- iii) There will be an optimum stocking for a given site and species.
- iv) For this individual trees are classified by height and size of crown and thinning is decided on the basis of which classes of trees are fit to be removed for maintaining the desired qualitative and quantitative nature of the thinning.



- v) The main purpose of the thinning is to release more space for future development of trees; the freedom of crown is the guiding factor for thinning purpose.
- vi) The retention of trees per unit should be decided first and then the number of trees to be removed should be marked accordingly.
- vii) The development of crown and stem are the deciding factor for sub-classification of the dominance classes of trees for the given site and species.
- viii) Tree classification in regular forests are done as under

24.6.10.2.2 Tree Classification based on height:

I) Dominant trees (D or D1)

It includes the trees that form the uppermost leaf canopy. They are the tallest trees that determine the top level of canopy they are also called pre-dominant trees.

II) Co-dominant trees (CD or D2)

These are shorter than dominant. About $5/6^{\text{th}}$ of the height of the dominant.

III) Sub-dominant trees (SD or D3)

They do not form part of the uppermost leaf canopy. Their height is about $3/4^{\text{th}}$ that of the tallest trees. They are also called dominated trees.

IV) Suppressed trees (S)

The height of the suppressed trees is about $1/2$ to $5/8^{\text{th}}$ of the height of the best trees. Suppressed trees grown below the crowns of the other trees in the stand. The leading shoots are over-topped by their neighboring trees or at least shaded on all sides by them.

V) Wolf trees (W)

The wolf trees are large, coarse and misshapen trees.

VI) Whips (Wh)

This class comprises bent over and badly leaning trees. Whips have tall, thin stems which are unstable and may cause damage to other trees when they sway.

VII) Dead, dying and moribund trees (m)

This category consists of trees that are dead or at the point of death.



VIII) Disease trees (k)

It includes trees that are infected with parasites and their growth is seriously affected due to infection.

IX) Reproduction or Regeneration (r)

It consists of recruits or regeneration.

X) Over mature or veterans.

24.6.10.2.3 Classification on the Basis of Crown

The crown spread may be taken as better indication than canopy position to understand growth potentialities of a tree. For this tree may be classification on the basis of the crown with average stem spacing as shown below:-

a) Spaced

Trees with free crown spreading having less than or equal to $3/4^{\text{th}}$ that of spacing.

b) Co-spaced

Trees with a free crown spread having $3/4^{\text{th}}$ to $1/2$ (50-75%) that of the available spacing.

c) Sub-spaced

Trees with the spread of free crown less than half but more than one-fourth $1/4^{\text{th}}$ of the spaced.

d) Mal-spaced

Trees with a very small spread of trees crown which is less than a quarter of the spaced.

e) De-spaced

Trees will no free crown with little vigor.

f) Dead, dying and low yielding trees

In the present situation, it is recommended to follow an ordinary thinning as described below.

This is known as “THINNING FROM THE BLOW” and consists of the removal of inferior individuals starting from the suppressed class, then taking the dominated class and ultimately some of the dominant class.

It is a very common form of selective thinning in regular crops. It has been devised to be in line with nature because only those trees which have been unsuccessful in the struggle for growth are removed first.



24.6.10.2.4 Grade of Ordinary Thinning

The thinning grades are defined by the spacing class removed so that a check may be made by comparing yield table numbers for the mean diameter in question. There are various grades of thinning e.g. A, B, C, D, E, grades.

i) A-Grade

Light thinning- removal of dead, dying, diseased and suppressed trees.

ii) B-Grade:

Moderate thinning - In addition to trees in A-grade further removal of defective dominated stems and whips. Advance growth which cannot be pruned or lopped may also be removed.

iii) C- Grade (Heavy thinning):

This includes trees in grade A and B and all remaining dominated defective, co-dominants that may be removed without making lasting gaps in canopy. The C grade thinning is the standard grade in vogue for yield table compilation.

iv) D-Grade (Very Heavy Thinning):

This includes trees of all above grades and some good dominants so that no lasting or permanent gap develops in canopy. The left over trees are with good boles and crowns, well spaced and evenly distributed over the site for future development.

v) E-Grade (Extremely Heavy Thinning):

This type of thinning is adopted mainly for research purposes. This is the heaviest thinning that can be made in the crop without creating permanent gaps in the canopy. Many dominant stems are also removed.

It is always better to make C-grade or D-grade thinning in a dense crop in which thinning has been unduly delayed. The removal of trees should be Economic or Hygienic value. In addition to above classes the intermediate grades of thinning such as C/D may be carried out.

24.6.10.2.5 Precautions in First Thinning

The first thinning is very important for any crop. The following factors should be considered at the time of first thinning.



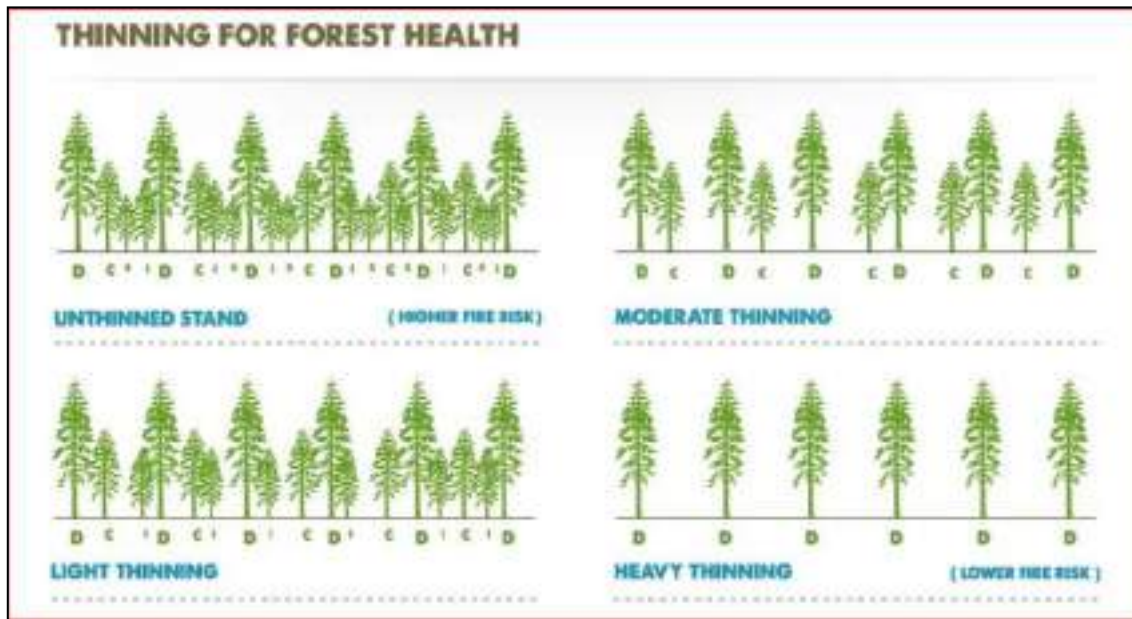
- The thinning should take place before adjoining trees check one another's growth.
- The thinning should not be postponed on the ground that the poles obtained will be non-saleable or uneconomic.
- The age of first thinning should be taken on the basis of height or size attained.
- The heavy thinning should not be carried on poorer sites, drier areas and steeper slopes, because the gaps may not fill up due to poor growth of trees.
- All thinning should be done on the silvicultural lines.
- The light demander species may require heavier thinning as compared to the shade bearer species.
- It is best to carry out silvicultural thinning. Some admixture of secondary species may be retained where this is desired on silvicultural or protection grounds.

24.6.10.2.6 Thinning In Irregular Crops:

It is difficult to classify tree in an irregular crop. The general classifications which are used for the research purposes are THREE crown positions. It is suggested that in regular crops the degree of crown freedom and their further classification into large, medium and small crown sizes, should be taken in account

Crown Freedom	Free	Restricted	Confine
Crown development or crown size	Well developed or large	Average or medium	Poor or small

- The crown freedom is judged irrespective of the size of the tree and its position in the stratification.
- The thinning in an irregular crop is done by selection method.
- The trees to be cut are that which restrict the growth of their neighbours on all sides and should be more valuable than their neighbours.
- The aim should be to maintain a crop of all diameter classes in a sufficient number of maximum sustained yield.
- The valuable species are retained whereas inferior trees of all diameter classes are removed.
- The removal of trees is carried out in diameter classes.
- It aims at continuous improvement by repeated removal of inferior stems in all diameter classes so that basal area or standing volume becomes more or less equal to theoretical ideal value.



24.6.10.2.7 Factors Affecting Thinning Practice:

The following factors may be considered before the thinning practice:

1. Site Factors
2. Nature of species
3. Age

1. Site Factors

The site quality influence on thinning practice is that a relatively close canopy on the poorer sites should be maintained. On low quality sites heavy openings should not be made. The spacing out widely in earlier stages should not be carried out on hot, dry, slopes, on poor soils and on all sites where grass and other weed invasion is likely to occur. A poor site will usually support less stems per hectare than a good one.

2. Nature of Species

The shade-bearers are more tolerant of crown than the light demanders therefore more frequent thinning is needed for light demander species. Light demanders usually show good response to ordinary thinning where as shade-bearers to crown thinning. Sal, Sisoo, Asan, Teak, being light demanders require heavier grades of ordinary thinning.



3. Age

The crown formation depends on age and in young ages when the crown formation is not completed mechanical thinning or sticks thinning may be done with succession. The light demander species require heavier grade of thinning at frequent intervals in younger crops. On the other hand some species in middle age or maturity require crown thinning.

- After thinning, intensive Soil & Moisture Conservation practices are to be adopted so as to increase moisture regime of the plantation to induce growth.
- Protection against Grazing and fire is to be taken up with rigidity.

24.6.10.3 Avenue Plantation (NAS) Series:

Lot of Avenue plantations have been raised in the past plan period. After planting operation, no specific management practices have been set up. It is warranted to have a set of guiding principle for avenue plantation (TOF).

The avenue plantations included in this treatment series are at young stage. Considering the present condition, the following prescriptions are recommended.

- ✚ The avenue plantation site is to be visited and existing plants are to be recorded in the following form

Name of the Treatment Section	Name of the Road & Distance / Chainage in Km	Name of Species	Height in Meter	BGH in cm	Present Condition.	Remark / Suggestion.

- ✚ If any plant / tree is badly damaged and above 30cm GBH it is recommended to remove the plant and a new plant with promising growth is to be planted.
- ✚ Any old / hollow diseased tree likely to be fallen down in moderate wind is to be marked and enlisted. Such trees are to be jointly visited by Range Officer and any representative of PWD / NH Authority and record their suggestion on removal or retention. In case of suggestion for removal DFO is to intimate the district authority and take steps for its removal followed by planting in the assigned year.
- ✚ All retained plants above 30cm GBH are to be checked for hanging branches if found to be removed.
- ✚ The PWD / NH authority may be requested to put Radiant paints on trees at Breast Height for visibility during night.



- Similar exercise is recommended for other avenue plantations not included in this series.

24.6.10.4 Species suggested for Road Side Plantation.

Considering the soil characteristics, proximity to tourist spots, prone to cyclonic effect the following species are recommended for avenue plantations. It is also suggested for planting one species on both the sides over a length of 2 km to add to the beauty / aesthetic value of the road. Species suggested are

- a) *Lagerstomia flusregin* (Patuli),
- b) *Cassia fistula* (Sunari),
- c) *Dalbergia sisoo* (Sisoo),
- d) *Syzigium cumini* (Jamu)
- e) *Mangifera indica* (Aam)
- f) *Samania saman* (Bada Chakunda)
- g) *Peltoferm pheroginium* (Radha Chuda)
- h) *Pathodia campanulata* (Mysore Queen)
- i) *Mimosps elongi* (Baula)
- j) *Azadirecta indica* (Meem)
- k) *Alstonia scholaris* (Chatiana)
- l) *Pongamia pinnata* (Karanja)

Planting of one year old promising seedlings in a block mixture than intimate mixture form is recommended.

24.6.11 Modalities for Farm Forestry:

Free seedlings are distributed for planting on private lands / back yard etc. It remained without follow of action. It is suggested to take up following action to evaluate the result.

- After distribution is completed by end of August, the distribution registers are to be examined to find out person those have taken more than 150 seedlings for planting.
- 10% of such cases, the person are to be located and his planting place is to be inspected by forester and technical suggestion for soil working, application of fertilizer and required suggestion is to be tendered.
- Its survival at end of December of same year is to be recorded.
- Some photographs are to be taken and album for every year is to be prepared and kept as record and for future reference.



- Farm Forestry involving Eucalyptus to meet raw material demand of local paper mills, a data base is to be prepared and a yield table is required to be prepared.
- The economic benefits that flow to farmer are also required to be assessed for guidance.

24.6.12 Associated Regulations and Measures:

All out efforts is required to be made to plant outside the forest area to increase the forest cover of the district.

24.6.12.1 Plantations / Natural Forests TOF

Besides plantations included in this working circle, there are plantations raised before the outgoing plan. Both Teak, Miscellaneous plantations have been raised. The prescriptions of this chapter may be extended to similar conditions / plantations.

Table No 24.10 List of Urban Plantations Raised Outside the Forest Area.

Sl No.	Range	Name of the Planting site	Year of Plantation	Scheme	Seedlings Planted (in No.)
1	Nayagarh	Nayagarh NAC area	2013-14	Urban Tree Plantation	5000
2	Khandapada	Khandapada NAC area	2013-14	Urban Tree Plantation	5000
3	Nayagarh	Nayagarh NAC area	2014-15	Urban Tree Plantation	10000
4	Khandapada	Khandapada NAC area	2014-15	Urban Tree Plantation	10000
5	Nayagarh	Nayagarh NAC area	2015-16	Urban Tree Plantation	5000
6	Daspalla	Daspalla NAC area	2015-16	Urban Tree Plantation	5000
7	Nayagarh	Nayagarh NAC area	2016-17	Urban Tree Plantation	5000
8	Daspalla	Daspalla NAC area	2016-17	Urban Tree Plantation	5000
9	Nayagarh	Nayagarh NAC area	2017-18	OEMF	900
10	Daspalla	Daspalla NAC area	2017-18	OEMF	900
11	Khandapada	Khandapada NAC area	2017-18	OEMF	900
12	Nayagarh	Nayagarh Municipal Area	2019-20	Programme Exp. IGC	5600
		Total			58300



24.6.12.2 Farm Forestry:

Farm Forestry by individuals for growing Car Timber is to be encouraged. It will not only help in establishing tree cover but also assured supply of Car Timber. Similarly Teak has also potential to be popularised among individuals. Rules pertaining Timber Transit requires to be revisited for this aspect. Some incentives for Car Timber planting by individuals may be considered and modalities may be adopted for future management.





CHAPTER-25

REDUCE EMISSIONS FROM DEFORESTATION AND FOREST DEGRADATION (REDD+)

25.1. Introduction:

REDD+ stands for countries' efforts to "Reduce Emissions from Deforestation and forest Degradation", and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks. Deforestation and forest degradation are the second leading cause of global warming, responsible for about 15% of global greenhouse gas emissions, which makes the loss and depletion of forests a major issue for climate change. In some countries, such as Brazil and Indonesia, deforestation and forest degradation together are by far the main source of national greenhouse gas emissions.

Eighty percent of the Earth's above-ground terrestrial carbon and forty percent of below-ground terrestrial carbon is in forests. In addition to the large contribution of deforestation and forest degradation to global emissions, combating both has been identified as one of the most cost-effective ways to lower emissions.

Deforestation and forest degradation are responsible for about 15% of global greenhouse gas emissions.

Currently, there appears to be a consensus that the issue of deforestation and forest degradation must be effectively tackled as it would otherwise limit the options available to reduce greenhouse gas emissions, greenhouse gas concentrations and increases in temperature to acceptable levels. Any reduction in the rate of deforestation and forest degradation has the benefit of avoiding a significant source of carbon emissions and reducing other environmental and social problems associated with deforestation.

Unlike afforestation and reforestation activities, which generally cause small annual changes in carbon stocks over long periods of time, stemming deforestation causes large changes in carbon stocks over a short period of time. Most emissions from deforestation take place rapidly, whereas carbon removal from the atmosphere through afforestation and reforestation activities is a slow process.

In addition to mitigating climate change, stopping deforestation and forest degradation and supporting sustainable forest management conserves water resources and prevents



flooding, reduces run-off, controls soil erosion, reduces river siltation, protects fisheries and investments in hydropower facilities, preserves biodiversity and preserves cultures and traditions. With all that at stake it is clear what has to happen. With all the services that forests provide both to humanity and the natural world, there is now widespread understanding of a simple yet profound fact that forests are more important left standing, than cut. Out of that understanding, the Forest Carbon Partnership Facility have come up.

Country commitments to mitigate and adapt to climate change are an integral part of the 2030 Agenda for Sustainable Development with its 17 global goals that countries have adopted to guide development efforts. The REDD+ mechanism contributes directly to achieving Sustainable Development Goals (SDGs) 13 and 15. Those address climate change, reducing deforestation and sustainable use of ecosystems. REDD+ can also contribute to achieving other SDGs – including those which address poverty reduction, health and well-being, hunger alleviation, and improving institutions.

25.2 FAO's support to countries' Nationally Determined Contributions (NDCs):

With FAO's technical support, countries can use REDD+ actions as catalysts to deliver on their Nationally Determined Contributions (NDCs) towards climate change mitigation and adaptation. in Agriculture, Forestry and Other Land Use (AFOLU) are among the climate actions that most countries have included their NDCs, which underscores the important role these sectors play in climate change mitigation and adaption. Many NDCs have also made specific reference to REDD+ plans, offering an opportunity to mainstream REDD+ and climate efforts into countries' national planning processes and ultimately, actions on the ground.

25.3 REDD+ Implementation:

FAO's support to countries is based on technical expertise in assessing the drivers of deforestation and forest degradation and finding opportunities for forest carbon conservation, management and enhancement. FAO also helps countries design and implement REDD+ mitigation actions, which offer both carbon and non-carbon benefits, taking advantage of cross-sectoral expertise and building on existing experience. FAO works to strengthen collaboration with other initiatives and helps to promote public-private partnerships to scale up investments on REDD+ implementation.



25.3.1 Country highlights:

Equatorial Guinea highlights the transformational role of women in climate action. Aiming to address gender inequalities and strengthen women's contributions to the planning of national climate action, Equatorial Guinea organized a national workshop with the participation of 53 women representing various sectors and social groups. The workshop complemented an ongoing participatory process to develop the country programme for the Green Climate Fund (GCF), which defines the national priorities to contribute to the global fight against climate change, and ways to translate these priorities into projects to be submitted to the GCF.

The 21st session of the Conference of the Parties (COP21) of the United Nations Framework Convention on Climate Change (UNFCCC) was held in Paris in November and December 2015. 195 participating countries negotiated and adopted the Paris Agreement, which includes objectives to peak greenhouse gas emissions as soon as possible, to limit the global average temperature increase above pre-industrial levels to well below 2°C, and to pursue efforts to limit the increase to 1.5°C.

The Paris Agreement, which entered into force on 4 November 2016, requires Parties to put forward their best efforts through “nationally determined contributions” (NDCs). These NDCs represent targets and actions for the post-2020 period. India ratified its' contribution the 2 of October 2016.

25.3.2 India's first NDC includes commitments:

Our country's commitment for “**Nationally Determined Contributions**” (NDCs) are

- To reduce the emissions intensity of its GDP by 33-35% from 2005 levels by 2030.
- To achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030 with the help of transfer of technology and low cost international finance including from Green Climate Fund (GCF).
- To create an additional carbon sink of 2.5 to 3 billion tonnes of CO₂ equivalent through additional forest and tree cover by 2030.
- To better adapt to climate change by enhancing investments in development programmes in sectors vulnerable to climate change, particularly agriculture, water resources, Himalayan region, coastal regions, health and disaster management.



India announces its INDC, pledges to cut emission intensity of its GDP by 33-35 per cent by 2030

All countries are required to submit voluntary climate action plans as contribution. These will form part of the outcome of Paris climate summit.

India's INDC is fair, and its renewable energy and forestry targets are ambitious, says CSE

Ahead of the UN Conference of Parties on Climate Change, scheduled in December 2015 in Paris, India on Sunday submitted its Intended Nationally Determined Contribution (INDC) to the secretariat of the United Nations Framework Convention on Climate Change (UNFCCC). Delhi-based non-profit Centre for Science and Environment (CSE) has called the Indian INDC "fair" and its renewable and forestry targets "ambitious".

In its INDC, India has pledged to improve the emissions intensity of its GDP by 33 to 35 per cent by 2030 below 2005 levels. It has also pledged to increase the share of non-fossil fuels-based electricity to 40 per cent by 2030. It has agreed **to enhance its forest cover which will absorb 2.5 to 3 billion tonnes of carbon dioxide (CO₂, the main gas responsible for global warming) by 2030.**

India has accepted the huge impact that climate change is exerting and will exert on different sectors of its economy and has agreed to enhance investments to adapt in vulnerable sectors like agriculture, water resources, coastal regions, health and disaster management.

India has also reiterated its need for international finance and technology support to meet its climate goals. In this regard, it has said it would require at least US \$ 2.5 trillion (at 2014-15 prices) to meet its climate change actions between now and 2030.

India's forestry target is also very ambitious. It intends to create an additional carbon sink of 2.5 to 3 billion tonnes of CO₂ through additional forests by 2030.

Talking about the efforts already in the pipeline, the government highlights

- India's National Solar Mission,
- Green Energy Corridor projects,
- Swatchh Bharat,
- National Air Quality Index,



- Smart Cities,
- Paramparagat Krishi Vikas Yojana,
- Soil Health Card Scheme,
- Pradhan Mantri Krishi Sinchayee Yojana,
- National Mission for Clean Ganga etc among others.

25.3.3 Indicative Work plan to combat 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, coastal regions, and health and disaster management.
- To tackle climate change by adopting healthy and sustainable lifestyle, which were “inherent in traditions and values of conservation & moderation.
- To reduce consumerism in our lifestyle & reduce to reduce per capita consumption by not wasting food and limiting the number of durables / cars per household.
- To have ambitious focus on energy efficiency and dramatic increase in renewable energy.
- To enhance dependency on non-fossil fuel-based energy.

25.3.4 Suggestive measures on Forestry Sector.

In forestry sector to combat climate change the following activities are suggested.

- a) To reduce felling of trees in all sphere and enhance creation of renewable energy.
 - b) To reduce dependency on fossil fuel including that of firewood.
 - c) To enhance use of solar energy / wind energy where ever possible.
 - d) To motivate people to reduce consumerism & reduce generation of solid waste.
 - e) Conserve water body and enhance efficient use of water.
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CHAPTER-26

Water resource Management & Climate Change

26.1 Introduction:

The forests are also sources of water (surface, sub-surface and ground water). Over exploitation of the ground water resources results in declining ground water levels; there is an urgent need to augment the ground water resources through suitable management interventions. It is desirable to have forest management practices dovetailed with the principles of watershed based development approach especially in the source areas of water.

The total annual dynamic ground water resource of Nayagarh district is assessed to be 42,682 hectare metre. The annual utilizable ground water resource earmarked for domestic and industrial use is 2,017 hectare metre which is based on the projection of requirement by the year 2025.

The major reservoir type water body in the district are Budhabudhiani Irrigation Project and Kuanria Irrigation Project and Kusumi Smart Irrigation Project on river Kusumi at Sunalati. Brutanga Irrigation project is on the card and in process of construction.

The Main River is Mahanadi flowing on the Northern side of the district. Kuanria, Brutanga and Kusumi are the tributaries of River Mahanadi.

26.2 Water Resource Management:

The Major water resources of the State / District are being managed by Water Resource Department of the Government of Odisha. Forest is the place of origin of all rivers / springs and perennial water sources. It is important to manage the water / runoff within the forest blocks.

26.3 Importance of Water management from Forests:

The availability and quality of water in many regions of the world are more and more threatened by overuse, misuse and pollution, and it is increasingly recognized that both are strongly influenced by forests. Moreover, climate change is altering forest's role in regulating water flows and influencing the availability of water resources. Therefore, the



relationship between forests and water is a critical issue that must be accorded high priority.

Forested catchments supply a high proportion of the water for domestic, agricultural, industrial and ecological needs in both upstream and downstream areas. A key challenge faced by land, forest and water managers is to maximize the wide range of multisectoral forest benefits without detriment to water resources and ecosystem function. To address this challenge, there is an urgent need for a better understanding of the interactions between forests/trees and water, for awareness raising and capacity building in forest hydrology, and for embedding this knowledge and the research findings in policies. Similarly, there is a need to develop institutional mechanisms to enhance synergies in dealing with issues related to forests and water as well as to implement and enforce action programmes at the national and regional levels.

In the past, forest and water policies were often based on the assumption that under any hydrological and ecological circumstance, forest is the best land cover to maximize water yield, regulate seasonal flows and ensure high water quality. Following this assumption, conserving (or extending) forest cover in upstream watersheds was deemed the most effective measure to enhance water availability for agriculture, industrial and domestic uses, as well as for preventing floods in downstream areas.

Forest hydrology research conducted during the 1980s and 1990s suggests a rather different picture. Although the important role of upstream forest cover in ensuring the delivery of high-quality water has been confirmed, earlier generalizations about the benefits of upstream forest cover on downstream annual and seasonal flows were generally fallacious and misleading. Studies have shown instead that, especially in arid or semi-arid ecosystems, forests are not the best land cover to increase downstream water yield. Moreover, solid evidence has shown that in tropical ecosystems the protective role of upstream forest cover against seasonal downstream floods has often been overestimated. This is especially true in connection with major events affecting large-scale watersheds or river basins.

The International Year of Freshwater 2003 and the third World Water Forum (Kyoto, Japan, 2003) helped drive the incorporation of this understanding of biophysical interactions between forests and water into policies. The International Expert Meeting on Forests and



Water, held in Shiga, Japan in November 2002 in preparation for these events, highlighted the need for more holistic consideration of interactions between water, forest, other land uses and socio-economic factors in complex watershed ecosystems. During the past five years, the Shiga Declaration has become a key reference for the development of a new generation of forest and water policies. This article summarizes the state of current knowledge about forest and water interactions in watershed ecosystems. It summarizes some key issues that have emerged from discussion among forest hydrologists, other water-sector experts and policy-makers in the years since the Shiga Declaration, the third World Water Forum and the International Year of Freshwater.

26.3.1 The Present Practices:

The present practices for water resources management involves protection of catchment area of major rivers, Reservoirs and origin of springs. Important forest blocks coming within critical catchment area are managed under Protection working Circle.

The degraded forest which constitutes about 70% is proposed to be managed under Rehabilitation Working Circle. No tree felling except as required under car timber (O) Working Circle is recommended. Extensive Soil & Moisture conservation and tree planting in blank areas prescribed.

In case of Plantation working Circle, Planting has been prescribed. It is aimed for creation of good tree cover in blank areas including outside the forest area.

In case of Selection Working circle, the crop density is above 40% and soil & water regim is in a good state. To minimize the effect of tree felling subsidiary silvicultural operation along with soil & moisture conservation has been prescribed.

26.3.2 Green Mahanadi Mission (GMM):

In order to enhance the flow of water in River Mahanadi, The Chief Minister of Odisha launched the mission by planting a sapling on the bank of river Mahanadi during his visit to Boudh and Subarnapur districts in western Odisha. Speaking on the occasion, the Chief Minister called upon people to go for plantation drive during monsoon on 24 July,2018.

The 'Green Mahanadi Mission' is a plantation drive under which 2 crore saplings will be planted along the Mahanadi river and its tributaries.



26.3.2.1 Objectives of GMM:

- The main objective of the mission is to stop soil erosion on river banks and recharge the groundwater reserve.
- The mission aims to protect the Mahanadi River and keep it alive.

Key Highlights

- Under the mission, more than five crore saplings will be planted over an area of 41,000 hectares.
- The massive plantation drive will be undertaken along the banks of Mahanadi, Ib and Tel rivers.
- Over two crore trees will be planted along the rivers in the state.
- The volunteers will plant fruit-bearing trees like mango, jackfruit and jamun within one km radius of the river bank.
- The plantation will be done on either side of major rivers of Odisha as well along the roadside length of about 5,000 km over a period of five years at an expenditure of around Rs 5,000 crore.
- The plantation drive will be carried out in 16,500 hectare and 500 km.
- It will be implemented jointly by the departments of Forest, Horticulture and Watershed Development.

26.4 Constitution of Management Unit:

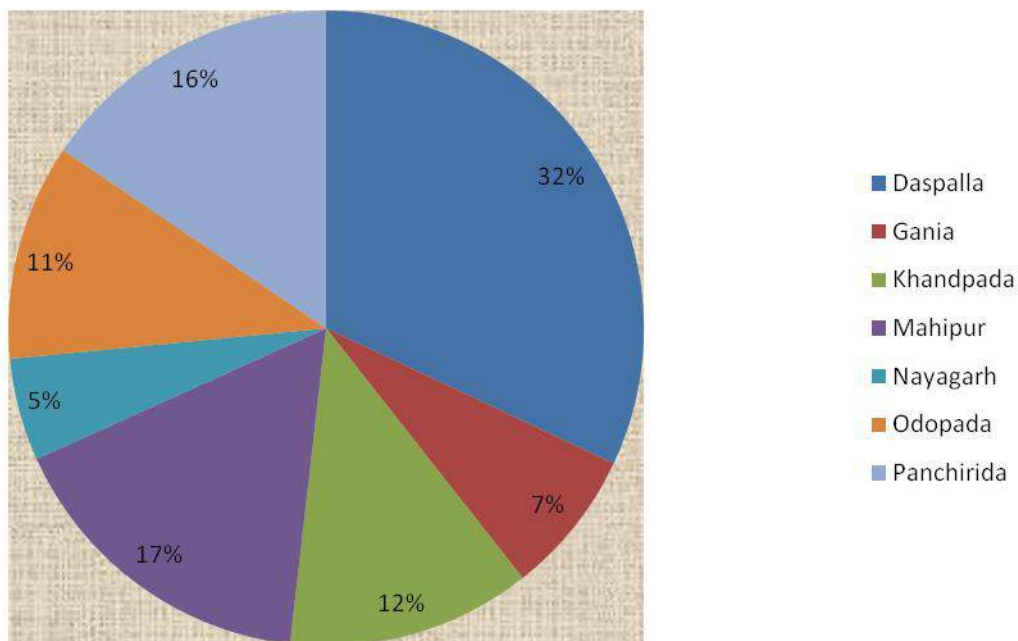
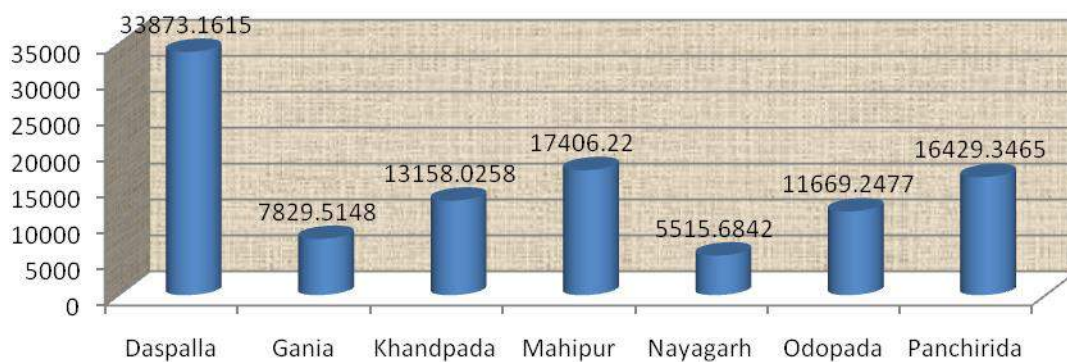
For management purposes each range will be taken as a unit. All forest blocks coming within the range jurisdiction will be the specific site for interventions.

Table No 26.1 Area under Management in Ha

Range	RF	PRF	DPF	PF	VF	Total
Daspalla	25930.2241	3189.8304	4682.137	0	70.97	33873.1615
Gania	4531.8316	1200.7796	1546.7336	443.62	106.55	7829.5148
Khandpada	12729.7058	0	0	321.98	106.34	13158.0258
Mahipur	17058.9937	0	62.0763	278.85	6.3	17406.22
Nayagarh	4864.2053	579.9189	0		71.56	5515.6842
Odopada	8657.3283	1124.39	1763.0894	62.24	62.2	11669.2477
Panchirida	9873.247	5580.2881	391.7314	428.55	155.53	16429.3465
Total	83645.5358	11675.207	8445.7677	1535.24	579.45	105881.2005



Area in ha

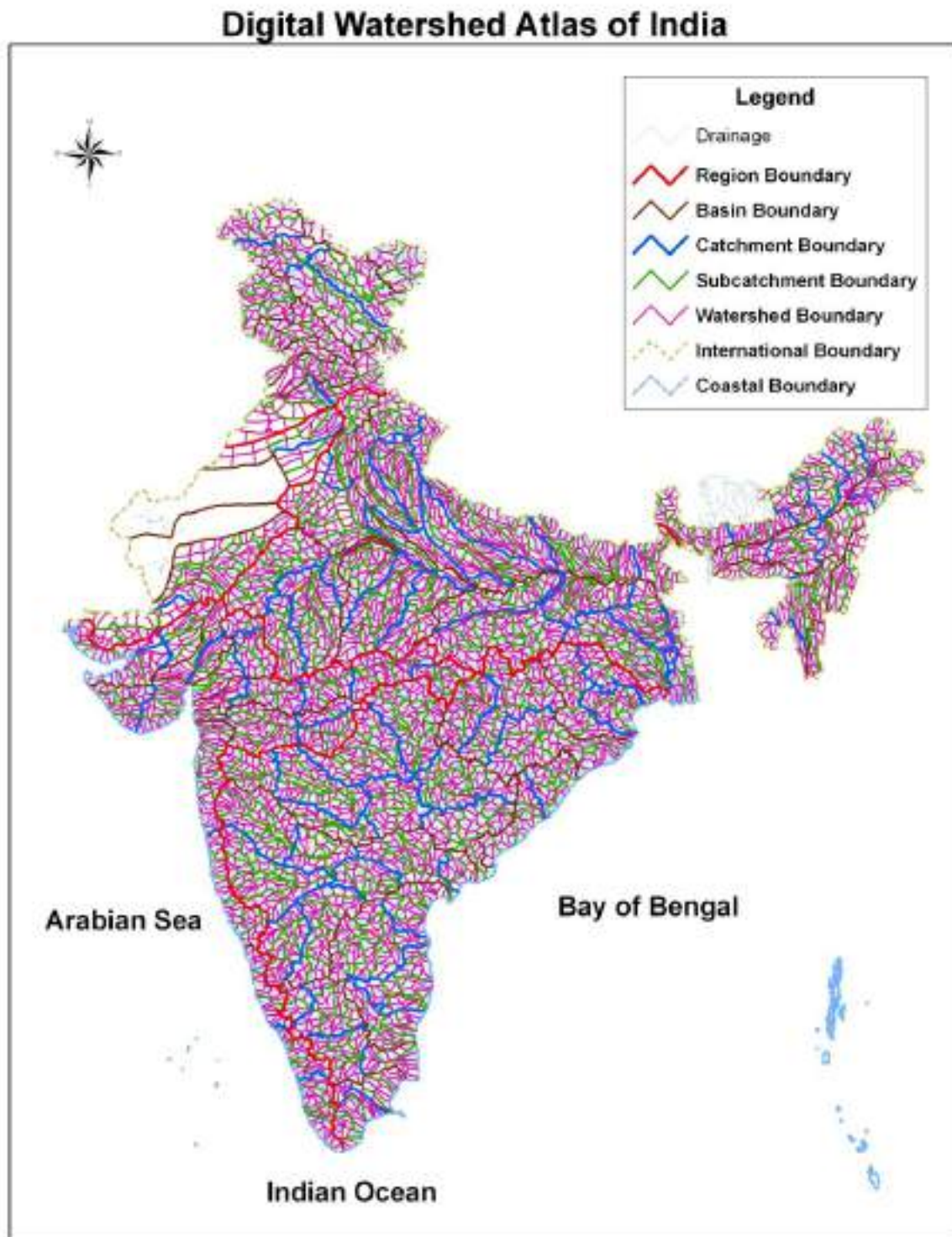




26.4.1 Sections / Sub Sections.

The Nayagarh district mainly drains to River Mahanadi and a small portion to River Rushikullya. The Section sub unit of management for water resource is the water shed. The map of the watershed of Nayagarh district / division is furnished below.







26.5 Method of treatment:

The method of treatment is mainly focused on

- a) Intensive Soil & Moisture Conservation.
- b) Judicious use of Ground Water
- c) Creation of Inland water body
- d) Rain water harvesting
- e) Awareness program on “Importance of Water & its management”

26.5.1 Soil & Moisture conservation:

In any forest development program, Soil & Moisture Conservation will be taken up as an **“Integralpart of all interventions”**. Under SMC activities, Loose Boulder Check dams, Staggered trenches, Percolation Pits, Vegetative Check dams and Masonary structure will be executed in a forest block on an integral manner. Standared Procedure for SMC as found in standard text book on “Soil & Moisture Conservation” will be followed.

26.5.2 Judicious use of Ground water:

The third National Groundwater Conference, which concluded on the Centre for Water Resources Development and Management (CWRDM) campus came up with an eleven-point recommendation urging stakeholders in the sector to explore emerging techniques in managing groundwater resources.

The three-day sessions, which stressed the judicious use of groundwater resources, observed that water security could be achieved by adopting appropriate groundwater recharge practices. It called for the use of advanced tools such as geophysical techniques, remote sensing and GIS for groundwater exploration, assessment and management.

Effective measure

The use of groundwater modelling was highlighted as an effective measure in water resource assessment for sustainable groundwater development projects. Delegates during their presentations on water conservation models said drip irrigation and fertigation systems should be popularised among farmers. In areas where groundwater development was more than 70%, steps should be taken to ensure conservation of groundwater by adopting sprinkler and drip irrigation systems, they said.

The panellists also pointed out that coastal and urban hydrology were becoming increasingly important due to population pressure that exerted excessive stress on limited



groundwater resources in such regions. The future water demand in these areas should be considered and groundwater resources should be judiciously used and protected, they said.

One of the major recommendations at the conference was the need to conduct more studies on seawater intrusion and submarine groundwater discharge using numerical modelling, geophysical and hydro-chemical techniques. Scientists who made the recommendation explained that such studies would highlight the importance of quantum of nutrient and freshwater discharge to the ocean which has larger societal implications.

Data base

Creating a data base system for integrated water resources management from basin scale to watershed scale was another suggestion made at the conference. Scientists said this should be backed up by legal framework so that the data base could be freely accessed by all stakeholders in the country.

Participatory Approach

Participatory hydrological monitoring improves the users' understanding of local groundwater resource characteristics and helps local communities to form a community opinion to support appropriate measures for managing the available resources equitably.

The objectives of participatory hydrological monitoring can be summarized as follows:

- Creating awareness on groundwater resource availability,
- Establishing the local micro catchment level rainfall-recharge relationship,
- Develop appropriate water use plans matching with the utilizable groundwater reserves, and
- Establish need for conservation of groundwater and need for increased recharge.

The project argued that farmers needed to develop their knowledge on local hydrological conditions before they could make sound decisions on groundwater management. It is also assumed that better awareness of the local hydrological balance would help motivate communities to optimally manage the available groundwater. In order to improve knowledge and create awareness, APWELL project trained groundwater users as barefoot technologists with the task of collecting hydrological data.



26.5.3 Creation of Inland Water body:

It is proposed to create more water body (Inland water body) for retention of more surface water. It will ameliorate the local climate and reduce pressure on Ground water use.

26.5.4 Rain water harvesting:

Rainwater harvesting systems consist of the following components:

- Catchment- Used to collect and store the captured Rainwater.
- Conveyance system – It is used to transport the harvested water from the catchment to the recharge zone.
- Flush- It is used to flush out the first spell of rain.
- Filter – Used for filtering the collected Rainwater and remove pollutants.
- Tanks and the recharge structures: Used to store the filtered water which is ready to use.

The process of rainwater harvesting involves the collection and the storage of rainwater with the help of artificially designed systems that run off naturally or man-made catchment areas like- the rooftop, compounds, rock surface, hill slopes, artificially repaired impervious or semi-pervious land surface.

Several factors play a vital role in the amount of water harvested. Some of these factors are:

- The quantum of runoff
- Features of the catchments
- Impact on the environment
- Availability of the technology
- The capacity of the storage tanks
- Types of the roof, its slope and its materials
- The frequency, quantity and the quality of the rainfall
- The speed and ease with which the Rainwater penetrates through the subsoil to recharge the groundwater.

The rainwater harvesting system is one of the best methods practised and followed to support the conservation of water. Today, scarcity of good quality water has become a significant cause of concern. However, Rainwater, which is pure and of good quality, can be



used for irrigation, washing, cleaning, bathing, cooking and also for other livestock requirements.

Advantages of Rainwater Harvesting

The benefits of rainwater harvesting system are listed below.

- Less cost.
- Helps in reducing the water bill.
- Decreases the demand for water.
- Reduces the need for imported water.
- Promotes both water and energy conservation.
- Improves the quality and quantity of groundwater.
- Does not require a filtration system for landscape irrigation.
- This technology is relatively simple, easy to install and operate.
- It reduces soil erosion, stormwater runoff, flooding, and pollution of surface water with fertilizers, pesticides, metals and other sediments.
- It is an excellent source of water for landscape irrigation with no chemicals and dissolved salts and free from all minerals.

26.5.5 Awareness program on “Importance of Water & its management”

Regular awareness camp is required to be conducted at Range / Section and Beat level to drive the concept of Water resource management.

26.6. Climate Change:

26.6.1 Climate Change and the future of forestry & forest research:

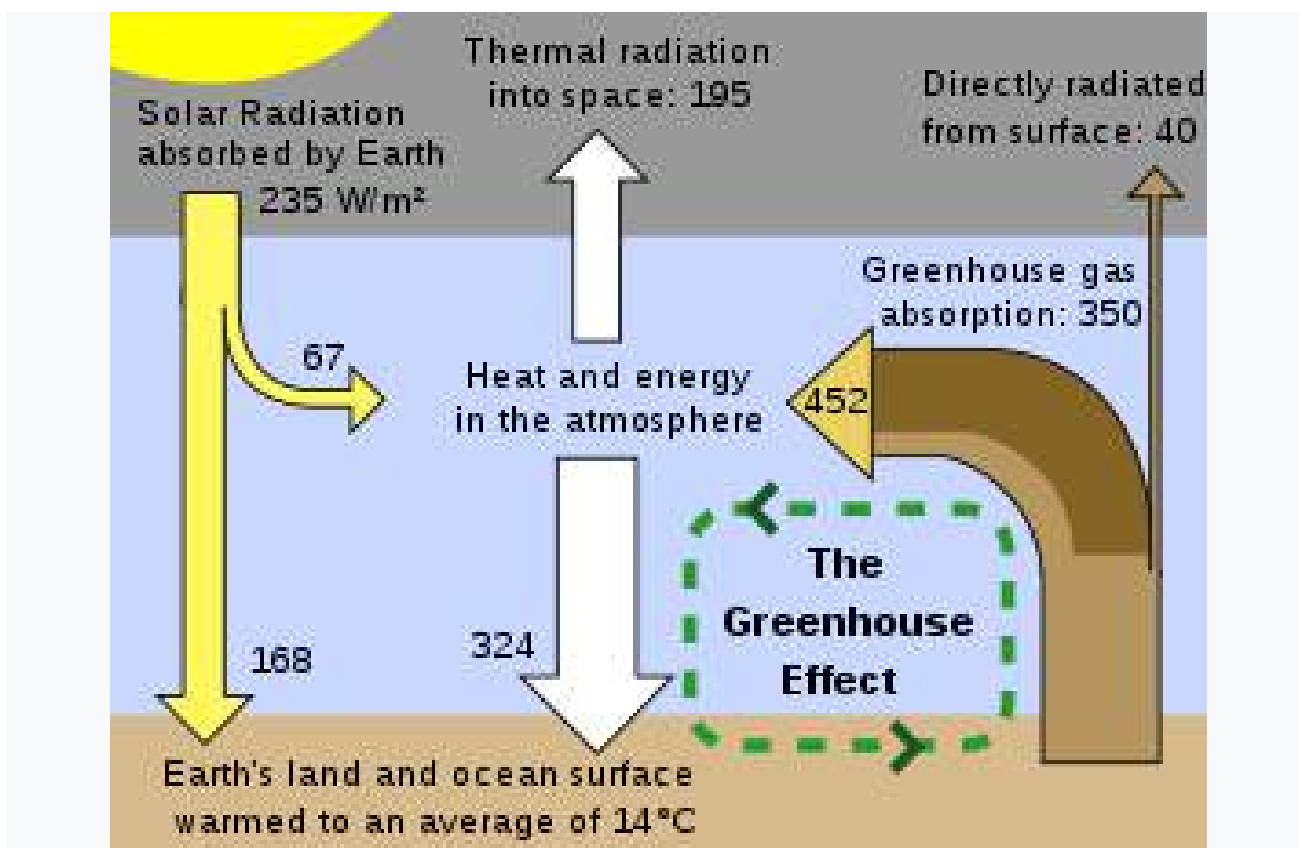
Climate change includes both **global warming** driven by human-induced emissions of greenhouse gases and the resulting large-scale shifts in weather patterns. Though there have been previous periods of climatic change, since the mid-20th century humans have had an unprecedented impact on Earth's climate system and caused change on a global scale.

The largest driver of warming is the emission of gases that create a greenhouse effect, of which more than 90% are carbon dioxide (CO₂) and methane. Fossil fuel burning (coal, oil, and natural gas) for energy consumption is the main source of these emissions, with additional contributions from agriculture, deforestation, and manufacturing. The human



cause of climate change is not disputed by any scientific body of national or international standing. Temperature rise is accelerated or tempered by climate feedbacks, such as loss of sunlight-reflecting snow and ice cover, increased water vapour (a greenhouse gas itself), and changes to land and ocean carbon sinks.

Temperature rise on land is about twice the global average increase, leading to desert expansion and more common heat waves and wildfires. Temperature rise is also amplified in the Arctic, where it has contributed to melting permafrost, glacial retreat and sea ice loss. Warmer temperatures are increasing rates of evaporation, causing more intense storms and weather extremes. Impacts on ecosystems include the relocation or extinction of many species as their environment changes, most immediately in coral reefs, mountains, and the Arctic.¹ Climate change threatens people with food insecurity, water scarcity, flooding, infectious diseases, extreme heat, economic losses, and displacement. These human impacts have led the World Health Organization to call climate change the greatest threat to global health in the 21st century. Even if efforts to minimise future warming are successful, some effects will continue for centuries, including rising sea levels, rising ocean temperatures, and ocean acidification.





Energy flows between space, the atmosphere, and Earth's surface. Rising greenhouse gas levels in the atmosphere are causing a net warming effect to act on Earth's climate system.

Many of these impacts are already felt at the current level of warming, which is about 1.2 °C (2.2 °F). The Intergovernmental Panel on Climate Change (IPCC) has issued a series of reports that project significant increases in these impacts as warming continues to 1.5 °C (2.7 °F) and beyond. Additional warming also increases the risk of triggering critical thresholds called tipping points. Responding to these impacts involves both mitigation and adaptation.

26.6.2 Mitigation:

Limiting climate change – consists of reducing greenhouse gas emissions and removing them from the atmosphere. Methods to achieve this include

- a) The development and deployment of low-carbon energy sources such as wind and solar,
- b) A phase-out of coal, enhanced energy efficiency, and forest preservation.

26.6.3 Adaptation:

Adaptation consists of adjusting to actual or expected climate, such as through improved coastline protection, better disaster management, assisted colonisation, and the development of more resistant crops. Adaptation alone cannot avert the risk of "severe, widespread and irreversible" impacts.

26.6.4 Paris Agreement:

Under the 2015 Paris Agreement, nations collectively agreed to keep warming "well under 2.0 °C (3.6 °F)" through mitigation efforts. However, with pledges made under the Agreement, global warming would still reach about 2.8 °C (5.0 °F) by the end of the century. Limiting warming to 1.5 °C (2.7 °F) would require halving emissions by 2030 and achieving near-zero emissions by 2050.

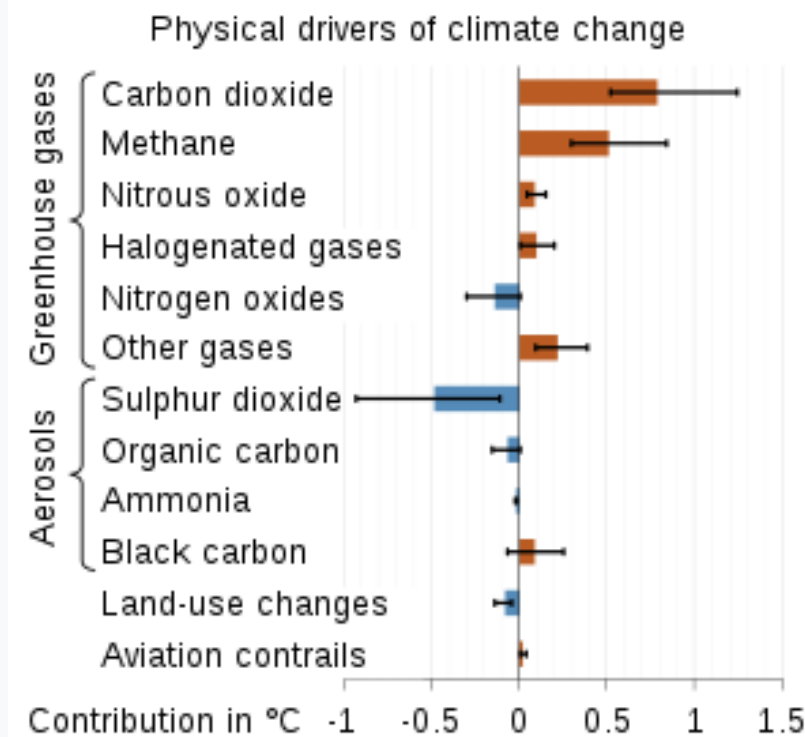
26.6.5 Drivers of Temperature Rise:

Contributors to climate change from the time period of 1850-1900 to the average from 2010-2019, as reported in the sixth IPCC assessment report. All drivers listed are human caused, as the IPCC found no significant contribution from internal variability or solar and volcanic drivers. The climate system experiences various cycles on its own which can last for



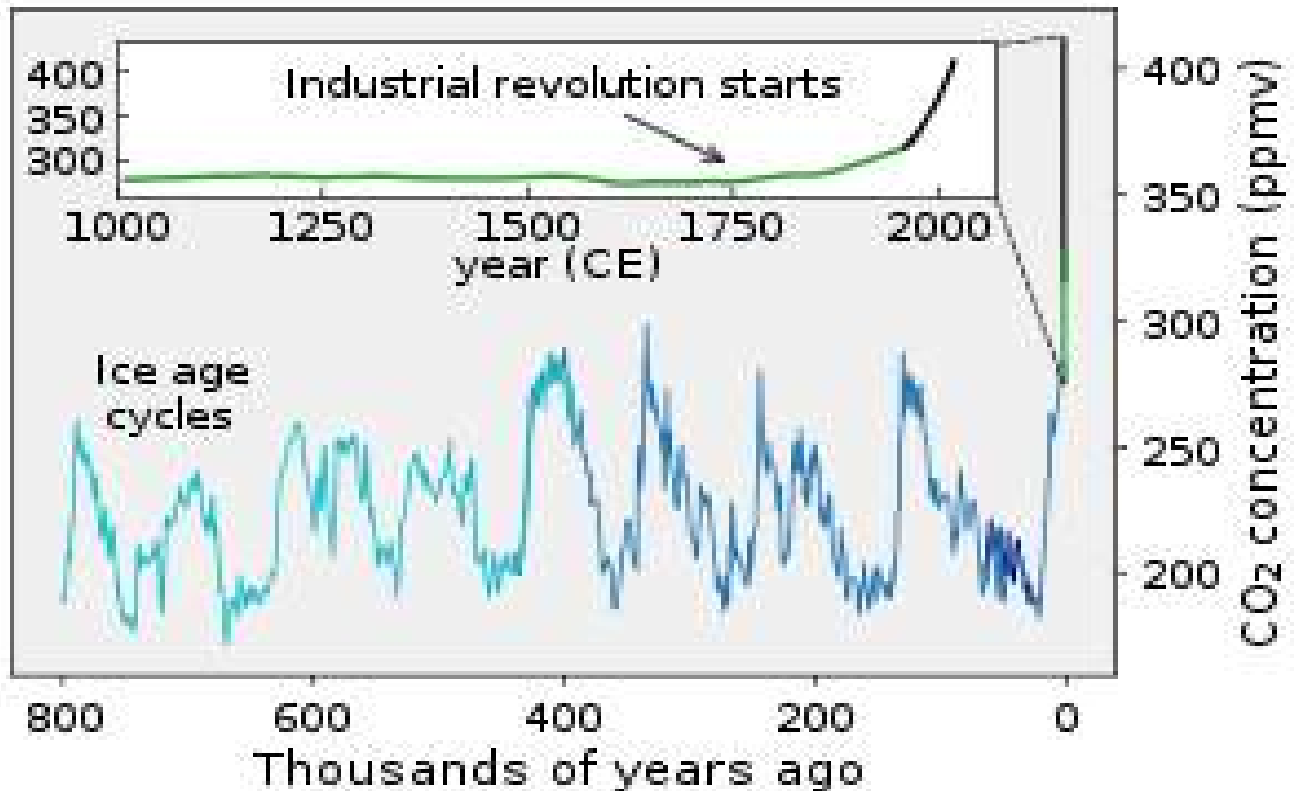
years (such as the El Niño–Southern Oscillation), decades or even centuries. Other changes are caused by an imbalance of energy that is "external" to the climate system, but not always external to the Earth. Examples of external forcings include changes in the composition of the atmosphere (e.g. increased concentrations of green house gases), solar luminosity, volcanic eruptions, and variations in the Earth's orbit around the Sun.

To determine the human contribution to climate change, known internal climate variability and natural external forcings need to be ruled out. A key approach is to determine unique "fingerprints" for all potential causes, then compare these fingerprints with observed patterns of climate change. For example, solar forcing can be ruled out as a major cause because its fingerprint is warming in the entire atmosphere, and only the lower atmosphere has warmed, as expected from greenhouse gases (which trap heat energy radiating from the surface). Attribution of recent climate change shows that the primary driver is elevated greenhouse gases, but that aerosols also have a strong effect.





A) Green house gases



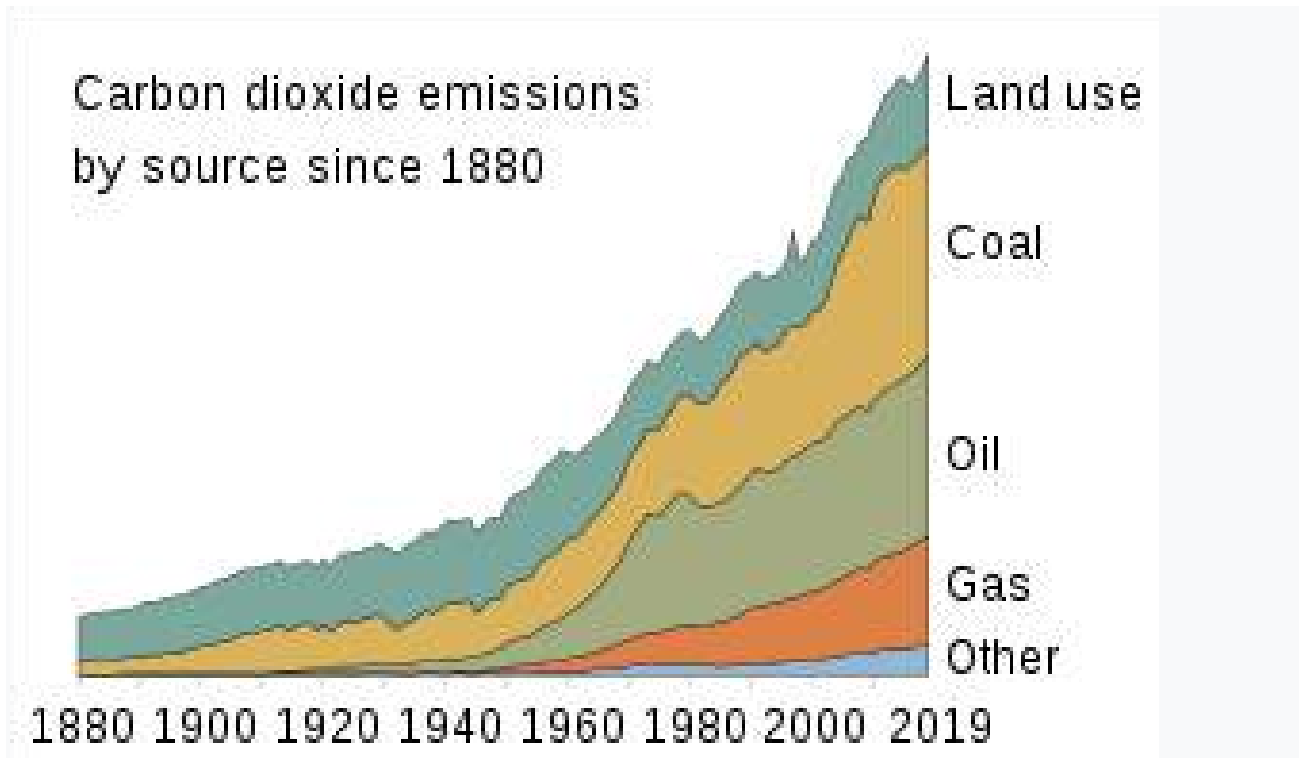
CO₂ concentrations over the last 800,000 years as measured from ice cores (blue/green) and directly (black)

The Earth absorbs sunlight, then radiates it as heat. Greenhouse gases in the atmosphere absorb and reemit infrared radiation, slowing the rate at which it can pass through the atmosphere and escape into space. Before the Industrial Revolution, naturally-occurring amounts of greenhouse gases caused the air near the surface to be about 33 °C (59 °F) warmer than it would have been in their absence. While water vapour (~50%) and clouds (~25%) are the biggest contributors to the greenhouse effect, they increase as a function of temperature and are therefore considered feedbacks. On the other hand, concentrations of gases such as CO₂ (~20%), tropospheric ozone, CFCs and nitrous oxide are not temperature-dependent, and are therefore considered external forcings.

Human activity since the Industrial Revolution, mainly extracting and burning fossil fuels (coal, oil, and natural gas), has increased the amount of green house gases in the atmosphere, resulting in a radiative imbalance. In 2019, the concentrations of CO₂ and



methane had increased by about 48% and 160%, respectively, since 1750. These CO₂ levels are higher than they have been at any time during the last 2 million years. Concentrations of methane are far higher than they were over the last 800,000 years.



The Global Carbon Project shows how additions to CO₂ since 1880 have been caused by different sources ramping up one after another. Global anthropogenic greenhouse gas emissions in 2018, excluding those from land use change, were equivalent to 52 billion tonnes of CO₂. Of these emissions, 72% was actual CO₂, 19% was methane, 6% was nitrous oxide, and 3% was fluorinated gases. CO₂ emissions primarily come from burning fossil fuels to provide energy for transport, manufacturing, heating, and electricity. Additional CO₂ emissions come from deforestation and industrial processes, which include the CO₂ released by the chemical reactions for making cement, steel, aluminum, and fertiliser. Methane emissions come from livestock, manure, rice cultivation, landfills, wastewater, coal mining, as well as oil and gas extraction. Nitrous oxide emissions largely come from the microbial decomposition of inorganic and organic fertiliser. From a production standpoint, the primary sources of global greenhouse gas emissions are estimated as: electricity and heat (25%), agriculture and forestry (24%), industry and manufacturing (21%), transport (14%), and buildings (6%).



Despite the contribution of deforestation to greenhouse gas emissions, the Earth's land surface, particularly its forests, remain a significant carbon sink for CO₂. Natural processes, such as carbon fixation in the soil and photosynthesis, more than offset the greenhouse gas contributions from deforestation. The land-surface sink is estimated to remove about 29% of annual global CO₂ emissions. The ocean also serves as a significant carbon sink via a two-step process. First, CO₂ dissolves in the surface water. Afterwards, the ocean's overturning circulation distributes it deep into the ocean's interior, where it accumulates over time as part of the carbon cycle. Over the last two decades, the world's oceans have absorbed 20 to 30% of emitted CO₂.

b) Aerosols and clouds

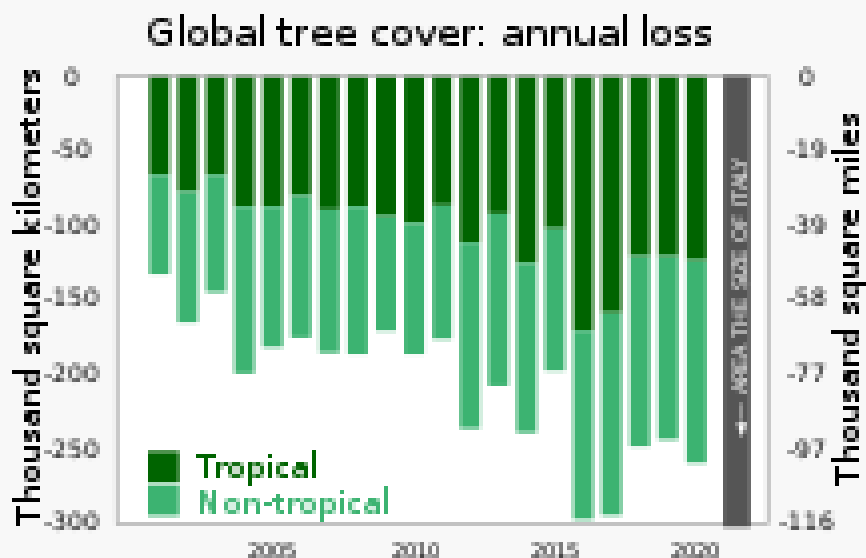
Air pollution, in the form of aerosols, not only puts a large burden on human health, but also affects the climate on a large scale. From 1961 to 1990, a gradual reduction in the amount of sunlight reaching the Earth's surface was observed, a phenomenon popularly known as *global dimming*, typically attributed to aerosols from biofuel and fossil fuel burning. Aerosol removal by precipitation gives tropospheric aerosols an atmospheric lifetime of only about a week, while stratospheric aerosols can remain in the atmosphere for a few years. Globally, aerosols have been declining since 1990, meaning that they no longer mask greenhouse gas warming as much.

In addition to their direct effects (scattering and absorbing solar radiation), aerosols have indirect effects on the Earth's radiation budget. Sulfate aerosols act as cloud condensation nuclei and thus lead to clouds that have more and smaller cloud droplets. These clouds reflect solar radiation more efficiently than clouds with fewer and larger droplets. This effect also causes droplets to be more uniform in size, which reduces the growth of raindrops and makes clouds more reflective to incoming sunlight. Indirect effects of aerosols are the largest uncertainty in radiative forcing.

While aerosols typically limit global warming by reflecting sunlight, black carbon in soot that falls on snow or ice can contribute to global warming. Not only does this increase the absorption of sunlight, it also increases melting and sea-level rise. Limiting new black carbon deposits in the Arctic could reduce global warming by 0.2 °C (0.36 °F) by 2050.



c) Changes of the land surface



The rate of global tree cover loss has approximately doubled since 2001, to an annual loss approaching an area the size of Italy.

Humans change the Earth's surface mainly to create more agricultural land. Today, agriculture takes up 34% of Earth's land area, while 26% is forests, and 30% is uninhabitable (glaciers, deserts, etc.). The amount of forested land continues to decrease, largely due to conversion to cropland in the tropics. This deforestation is the most significant aspect of land surface change affecting global warming. The main causes of deforestation are: permanent land-use change from forest to agricultural land producing products such as beef and palm oil (27%), logging to produce forestry/forest products (26%), short term shifting cultivation (24%), and wildfires (23%).

In addition to affecting greenhouse gas concentrations, land-use changes affect global warming through a variety of other chemical and physical mechanisms. Changing the type of vegetation in a region affects the local temperature, by changing how much of the sunlight gets reflected back into space (albedo), and how much heat is lost by evaporation. For instance, the change from a dark forest to grassland makes the surface lighter, causing it to reflect more sunlight. Deforestation can also contribute to changing temperatures by affecting the release of aerosols and other chemical compounds that influence clouds, and by changing wind patterns. In tropic and temperate areas the net effect is to produce significant warming, while at latitudes closer to the poles a gain of albedo (as forest is



replaced by snow cover) leads to an overall cooling effect. Globally, these effects are estimated to have led to a slight cooling, dominated by an increase in surface albedo.

D) Solar and volcanic activity

Physical climate models are unable to reproduce the rapid warming observed in recent decades when taking into account only variations in solar output and volcanic activity. As the Sun is the Earth's primary energy source, changes in incoming sunlight directly affect the climate system. Solar irradiance has been measured directly by satellites, and indirect measurements are available from the early 1600s. There has been no upward trend in the amount of the Sun's energy reaching the Earth. Further evidence for greenhouse gases being the cause of recent climate change come from measurements showing the warming of the lower atmosphere (the troposphere), coupled with the cooling of the upper atmosphere (the stratosphere). If solar variations were responsible for the observed warming, warming of both the troposphere and the stratosphere would be expected, but that has not been the case.

Explosive volcanic eruptions represent the largest natural forcing over the industrial era. When the eruption is sufficiently strong (with sulfur dioxide reaching the stratosphere) sunlight can be partially blocked for a couple of years, with a temperature signal lasting about twice as long. In the industrial era, volcanic activity has had negligible impacts on global temperature trends. Present-day volcanic CO₂ emissions are equivalent to less than 1% of current anthropogenic CO₂ emissions.

26.6.6 Climate change feedback





Sea ice reflects 50% to 70% of incoming solar radiation while the dark ocean surface only reflects 6%, so melting sea ice is a self-reinforcing feedback.

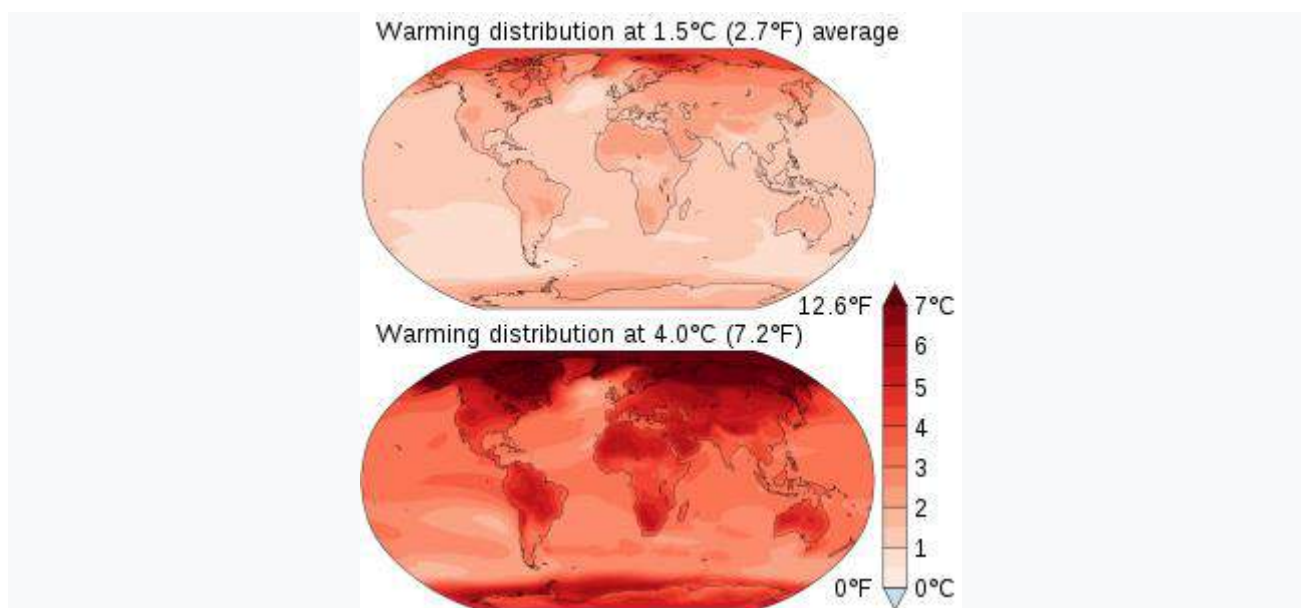
The response of the climate system to an initial forcing is modified by feedbacks: increased by self-reinforcing feedbacks and reduced by balancing feedbacks. The main reinforcing feedbacks are the water-vapour feedback, the ice–albedo feedback, and probably the net effect of clouds. The primary balancing feedback to global temperature change is radiative cooling to space as infrared radiation in response to rising surface temperature. In addition to temperature feedbacks, there are feedbacks in the carbon cycle, such as the fertilizing effect of CO₂ on plant growth. Uncertainty over feedbacks is the major reason why different climate models project different magnitudes of warming for a given amount of emissions.

As air gets warmer, it can hold more moisture. After initial warming due to emissions of greenhouse gases, the atmosphere will hold more water. As water vapour is a potent greenhouse gas, this further heats the atmosphere. If cloud cover increases, more sunlight will be reflected back into space, cooling the planet. If clouds become more high and thin, they act as an insulator, reflecting heat from below back downwards and warming the planet. Overall, the net cloud feedback over the industrial era has probably exacerbated temperature rise. The reduction of snow cover and sea ice in the Arctic reduces the albedo of the Earth's surface. More of the Sun's energy is now absorbed in these regions, contributing to amplification of Arctic temperature changes. Arctic amplification is also melting permafrost, which releases methane and CO₂ into the atmosphere.

Around half of human-caused CO₂ emissions have been absorbed by land plants and by the oceans. On land, elevated CO₂ and an extended growing season have stimulated plant growth. Climate change increases droughts and heat waves that inhibit plant growth, which makes it uncertain whether this carbon sink will continue to grow in the future. Soils contain large quantities of carbon and may release some when they heat up. As more CO₂ and heat are absorbed by the ocean, it acidifies, its circulation changes and phytoplankton takes up less carbon, decreasing the rate at which the ocean absorbs atmospheric carbon. Climate change can increase methane emissions from wetlands, marine and freshwater systems, and permafrost.



26.7 Future Warming & Carbon Budgeting:



Projected global surface temperature changes relative to 1850–1900, based on CMIP6 multi-model mean changes.

Future warming depends on the strengths of climate feedbacks and on emissions of greenhouse gases. The former are often estimated using various climate models, developed by multiple scientific institutions. A climate model is a representation of the physical, chemical, and biological processes that affect the climate system. Models include changes in the Earth's orbit, historical changes in the Sun's activity, and volcanic forcing. Computer models attempt to reproduce and predict the circulation of the oceans, the annual cycle of the seasons, and the flows of carbon between the land surface and the atmosphere. Models project different future temperature rises for given emissions of greenhouse gases; they also do not fully agree on the strength of different feedbacks on climate sensitivity and magnitude of inertia of the climate system.

The physical realism of models is tested by examining their ability to simulate contemporary or past climates. Past models have underestimated the rate of Arctic shrinkage and underestimated the rate of precipitation increase. Sea level rise since 1990 was underestimated in older models, but more recent models agree well with observations. The



2017 United States-published National Climate Assessment notes that "climate models may still be underestimating or missing relevant feedback processes".

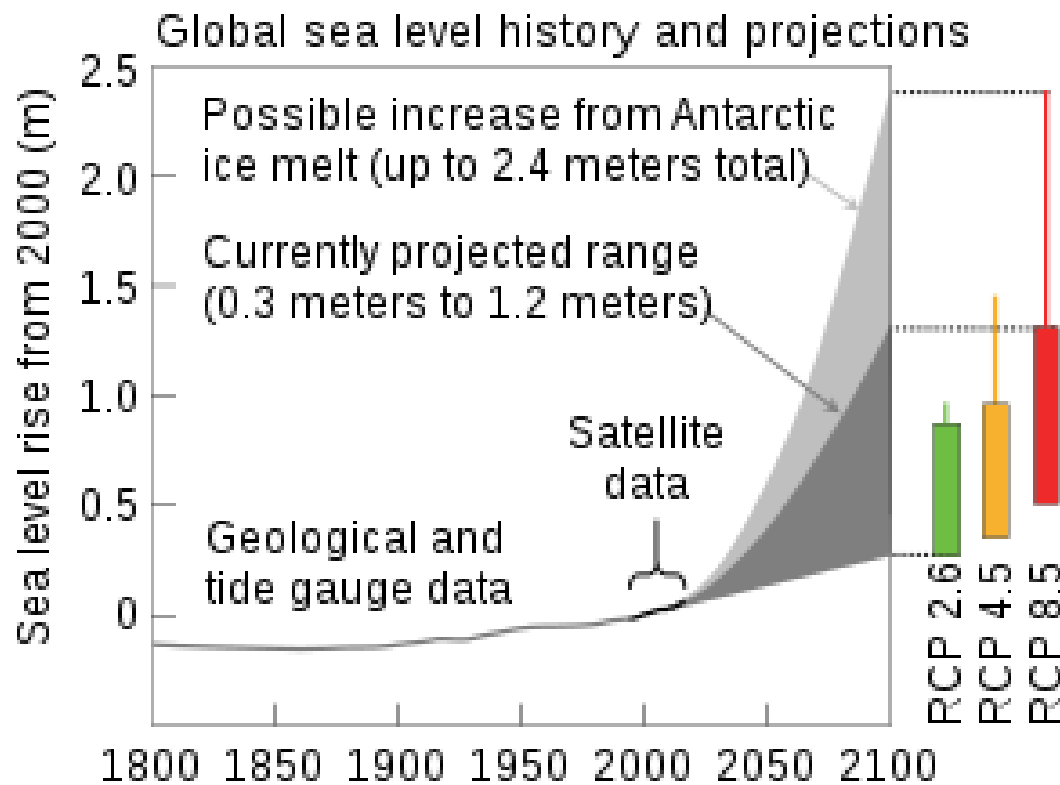
A subset of climate models add societal factors to a simple physical climate model. These models simulate how population, economic growth, and energy use affect – and interact with – the physical climate. With this information, these models can produce scenarios of how greenhouse gas emissions may vary in the future. This output is then used as input for physical climate models to generate climate change projections. In some scenarios emissions continue to rise over the century, while others have reduced emissions. Fossil fuel resources are too abundant for shortages to be relied on to limit carbon emissions in the 21st century. Emissions scenarios can be combined with modelling of the carbon cycle to predict how atmospheric concentrations of greenhouse gases might change in the future. According to these combined models, by 2100 the atmospheric concentration of CO₂ could be as low as 380 or as high as 1400 ppm, depending on the socioeconomic scenario and the mitigation scenario.

The remaining carbon emissions budget is determined by modelling the carbon cycle and the climate sensitivity to greenhouse gases. According to the IPCC, global warming can be kept below 1.5 °C (2.7 °F) with a two-thirds chance if emissions after 2018 do not exceed 420 or 570 gigatonnes of CO₂, depending on exactly how the global temperature is defined. This amount corresponds to 10 to 13 years of current emissions. There are high uncertainties about the budget; for instance, it may be 100 gigatonnes of CO₂ smaller due to methane release from permafrost and wetlands.

26.8 Impact of Climate Change:

26.8.1 Physical environment

The environmental effects of climate change are broad and far-reaching, affecting oceans, ice, and weather. Changes may occur gradually or rapidly. Evidence for these effects comes from studying climate change in the past, from modelling, and from modern observations. Since the 1950s, droughts and heat waves have appeared simultaneously with increasing frequency. Extremely wet or dry events within the monsoon period have increased in India and East Asia. The rainfall rate and intensity of hurricanes and typhoons is likely increasing. Frequency of tropical cyclones has not increased as a result of climate change.



Historical sea level reconstruction and projections up to 2100 published in 2017 by the U.S. Global Change Research Program

Global sea level is rising as a consequence of glacial melt, melt of the ice sheets in Greenland and Antarctica, and thermal expansion. Between 1993 and 2020, the rise increased over time, averaging 3.3 ± 0.3 mm per year. Over the 21st century, the IPCC projects that in a very high emissions scenario the sea level could rise by 61–110 cm. Increased ocean warmth is undermining and threatening to unplug Antarctic glacier outlets, risking a large melt of the ice sheet and the possibility of a 2-meter sea level rise by 2100 under high emissions.

Climate change has led to decades of shrinking and thinning of the Arctic sea ice, making it vulnerable to atmospheric anomalies. While ice-free summers are expected to be rare at 1.5°C (2.7°F) degrees of warming, they are set to occur once every three to ten years at a warming level of 2.0°C (3.6°F).^[141] Higher atmospheric CO_2 concentrations have led to changes in ocean chemistry. An increase in dissolved CO_2 is causing oceans to acidify. In addition, oxygen levels are decreasing as oxygen is less soluble in warmer water,



with hypoxic dead zones expanding as a result of algal blooms stimulated by higher temperatures, higher CO₂ levels, ocean deoxygenation, and eutrophication.

26.8.2 Tipping points and long-term impacts

The greater the amount of global warming, the greater the risk of passing through ‘tipping points’, thresholds beyond which certain impacts can no longer be avoided even if temperatures are reduced. An example is the collapse of West Antarctic and Greenland ice sheets, where a temperature rise of 1.5 to 2.0 °C (2.7 to 3.6 °F) may commit the ice sheets to melt, although the time scale of melt is uncertain and depends on future warming. Some large-scale changes could occur over a short time period, such as a collapse of the Atlantic Meridional Overturning Circulation, which would trigger major climate changes in the North Atlantic, Europe, and North America.

The long-term effects of climate change include further ice melt, ocean warming, sea level rise, and ocean acidification. On the timescale of centuries to millennia, the magnitude of climate change will be determined primarily by anthropogenic CO₂ emissions. This is due to CO₂'s long atmospheric lifetime. Oceanic CO₂ uptake is slow enough that ocean acidification will continue for hundreds to thousands of years. These emissions are estimated to have prolonged the current interglacial period by at least 100,000 years. Sea level rise will continue over many centuries, with an estimated rise of 2.3 metres per degree Celsius (4.2 ft/°F) after 2000 years.

26.8.3 Effect on Nature and wildlife:

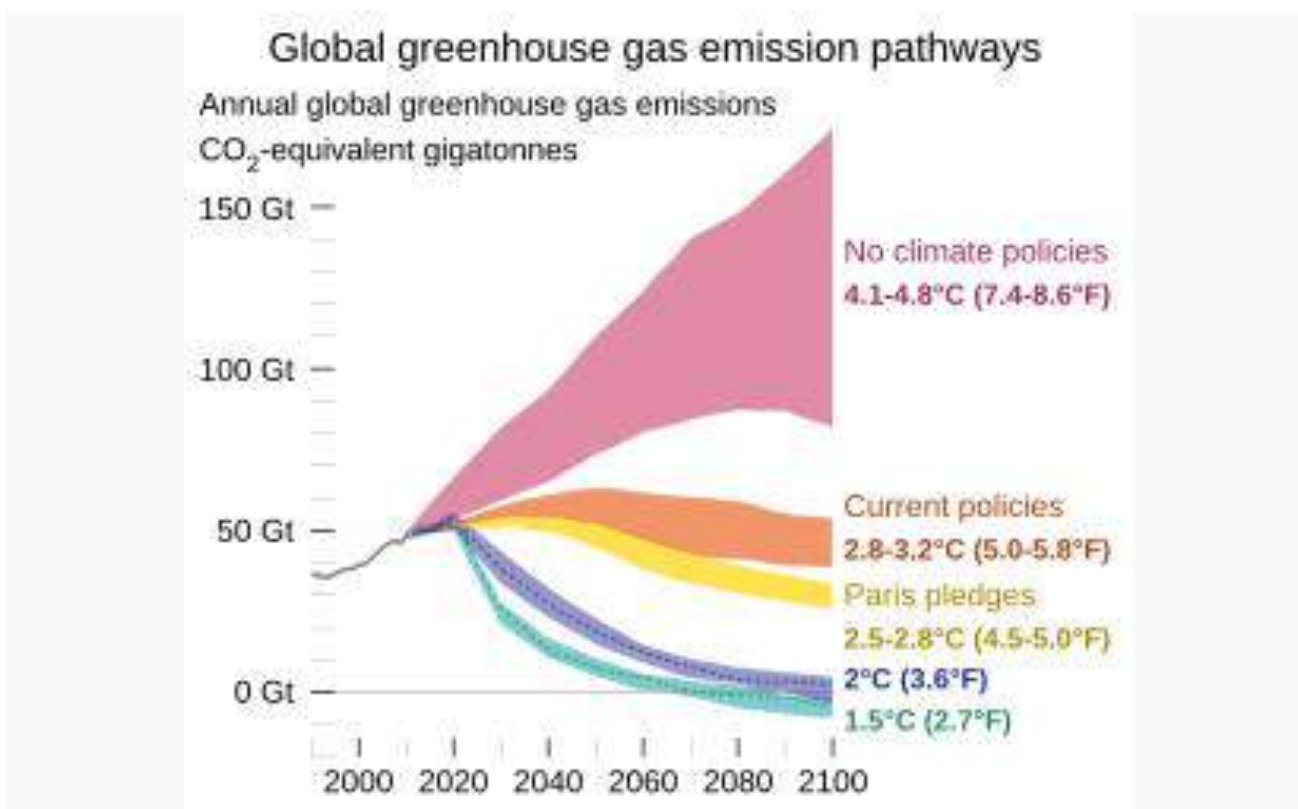
Recent warming has driven many terrestrial and freshwater species poleward and towards higher altitudes. Higher atmospheric CO₂ levels and an extended growing season have resulted in global greening, whereas heatwaves and drought have reduced ecosystem productivity in some regions. The future balance of these opposing effects is unclear. Climate change has contributed to the expansion of drier climate zones, such as the expansion of deserts in the subtropics. The size and speed of global warming is making abrupt changes in ecosystems more likely. Overall, it is expected that climate change will result in the extinction of many species.

The oceans have heated more slowly than the land, but plants and animals in the ocean have migrated towards the colder poles faster than species on land. Just as on land, heat waves in the ocean occur more frequently due to climate change, with harmful effects found on a wide range of organisms such as corals, kelp, and seabirds. Ocean acidification is



impacting organisms who produce shells and skeletons, such as mussels and barnacles, and coral reefs; coral reefs have seen extensive bleaching after heat waves. Harmful algae bloom enhanced by climate change and eutrophication cause anoxia, disruption of food webs and massive large-scale mortality of marine life. Coastal ecosystems are under particular stress, with almost half of wetlands having disappeared as a consequence of climate change and other human impacts.

26.9 Mitigation



Scenarios of global greenhouse gas emissions. If all countries achieve their current Paris Agreement pledges, average warming by 2100 would still significantly exceed the maximum 2°C target set by the Agreement.

Climate change impacts can be mitigated by reducing greenhouse gas emissions and by enhancing sinks that absorb greenhouse gases from the atmosphere. In order to limit global warming to less than 1.5 °C with a high likelihood of success, global greenhouse gas



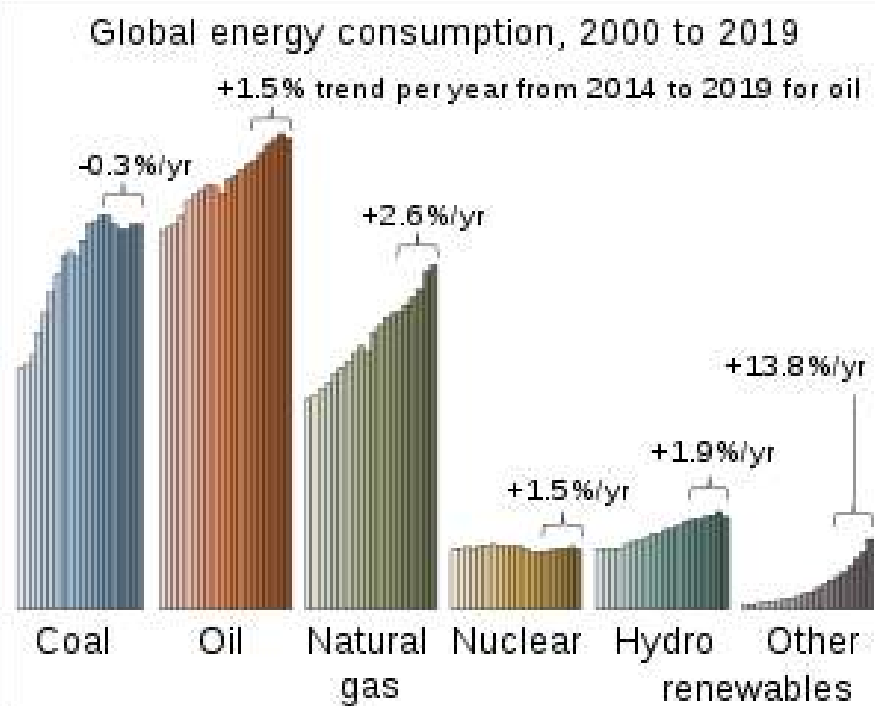
emissions needs to be net-zero by 2050, or by 2070 with a 2 °C target. This requires far-reaching, systemic changes on an unprecedented scale in energy, land, cities, transport, buildings, and industry. Scenarios that limit global warming to 1.5 °C often describe reaching net negative emissions at some point. To make progress towards a goal of limiting warming to 2 °C, the United Nations Environment Programme estimates that, within the next decade, countries need to triple the amount of reductions they have committed to in their current Paris Agreements; an even greater level of reduction is required to meet the 1.5 °C goal.

Although there is no single pathway to limit global warming to 1.5 or 2.0 °C (2.7 or 3.6 °F), most scenarios and strategies see a major increase in the use of renewable energy in combination with increased energy efficiency measures to generate the needed greenhouse gas reductions. To reduce pressures on ecosystems and enhance their carbon sequestration capabilities, changes would also be necessary in agriculture and forestry, such as restoring natural ecosystems by reforestation.

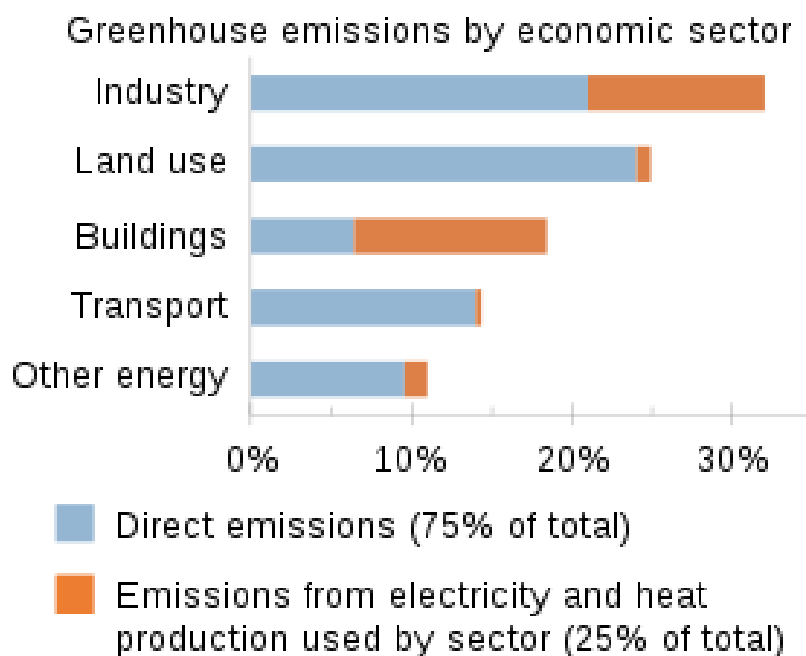
Other approaches to mitigating climate change entail a higher level of risk. Scenarios that limit global warming to 1.5 °C typically project the large-scale use of carbon dioxide removal methods over the 21st century. There are concerns, though, about over-reliance on these technologies, as well as possible environmental impacts. Solar radiation management (SRM) methods have also been explored as a possible supplement to deep reductions in emissions. However, SRM would raise significant ethical and legal issues, and the risks are poorly understood.



26.9.1 Clean energy



Coal, oil, and natural gas remain the primary global energy sources even as [renewables](#) have begun rapidly increasing. ^[214]



Economic sectors with more greenhouse gas contributions have a greater stake in climate change policies.

Long-term decarbonisation scenarios point to rapid and significant investment in renewable energy, which includes solar and wind power, bioenergy, geothermal energy, and hydropower. Fossil fuels accounted for 80% of the world's energy in 2018, while the remaining share was split between nuclear power and renewables; that mix is projected to change significantly over the next 30 years. Solar and wind have seen substantial growth and progress over the last few years; photovoltaic solar and onshore wind are the cheapest forms of adding new power generation capacity in most countries.^[218] Renewables represented 75% of all new electricity generation installed in 2019, with solar and wind constituting nearly all of that amount. Meanwhile, nuclear power costs are increasing amidst stagnant power share, so that nuclear power generation is now several times more expensive per megawatt-hour than wind and solar.

To achieve carbon neutrality by 2050, renewable energy would become the dominant form of electricity generation, rising to 85% or more by 2050 in some scenarios. The use of electricity for other needs, such as heating, would rise to the point where electricity becomes the largest form of overall energy supply. Investment in coal would be eliminated and coal use nearly phased out by 2050.



In transport, scenarios envision sharp increases in the market share of electric vehicles, and low carbon fuel substitution for other transportation modes like shipping. Building heating would be increasingly decarbonized with the use of technologies like heat pumps.

There are obstacles to the continued rapid development of renewables. For solar and wind power, a key challenge is their intermittency and seasonal variability. Traditionally, hydro dams with reservoirs and conventional power plants have been used when variable energy production is low. Intermittency can further be countered by demand flexibility, and by expanding battery storage and long-distance transmission to smooth variability of renewable output across wider geographic areas. Some environmental and land use concerns have been associated with large solar and wind projects, while bioenergy is often not carbon neutral and may have negative consequences for food security. Hydropower growth has been slowing and is set to decline further due to concerns about social and environmental impacts.

Low-carbon energy improves human health by minimizing climate change and has the near-term benefit of reducing air pollution deaths, which were estimated at 7 million annually in 2016. Meeting the Paris Agreement goals that limit warming to a 2 °C increase could save about a million of those lives per year by 2050, whereas limiting global warming to 1.5 °C could save millions and simultaneously increase energy security and reduce poverty.

26.9.2 Energy efficiency

Reducing energy demand is another major feature of decarbonisation scenarios and plans. In addition to directly reducing emissions, energy demand reduction measures provide more flexibility for low carbon energy development, aid in the management of the electricity grid, and minimise carbon-intensive infrastructure development. Over the next few decades, major increases in energy efficiency investment will be required to achieve these reductions, comparable to the expected level of investment in renewable energy. However, several COVID-19 related changes in energy use patterns, energy efficiency investments, and funding have made forecasts for this decade more difficult and uncertain.

Efficiency strategies to reduce energy demand vary by sector. In transport, gains can be made by switching passengers and freight to more efficient travel modes, such as buses and trains, and increasing the use of electric vehicles. Industrial strategies to reduce energy demand include increasing the energy efficiency of heating systems and motors, designing less energy-intensive products, and increasing product lifetimes. In the building sector the



focus is on better design of new buildings, and incorporating higher levels of energy efficiency in retrofitting techniques for existing structures.^[237] In addition to decarbonizing energy use, the use of technologies like heat pumps can also increase building energy efficiency.

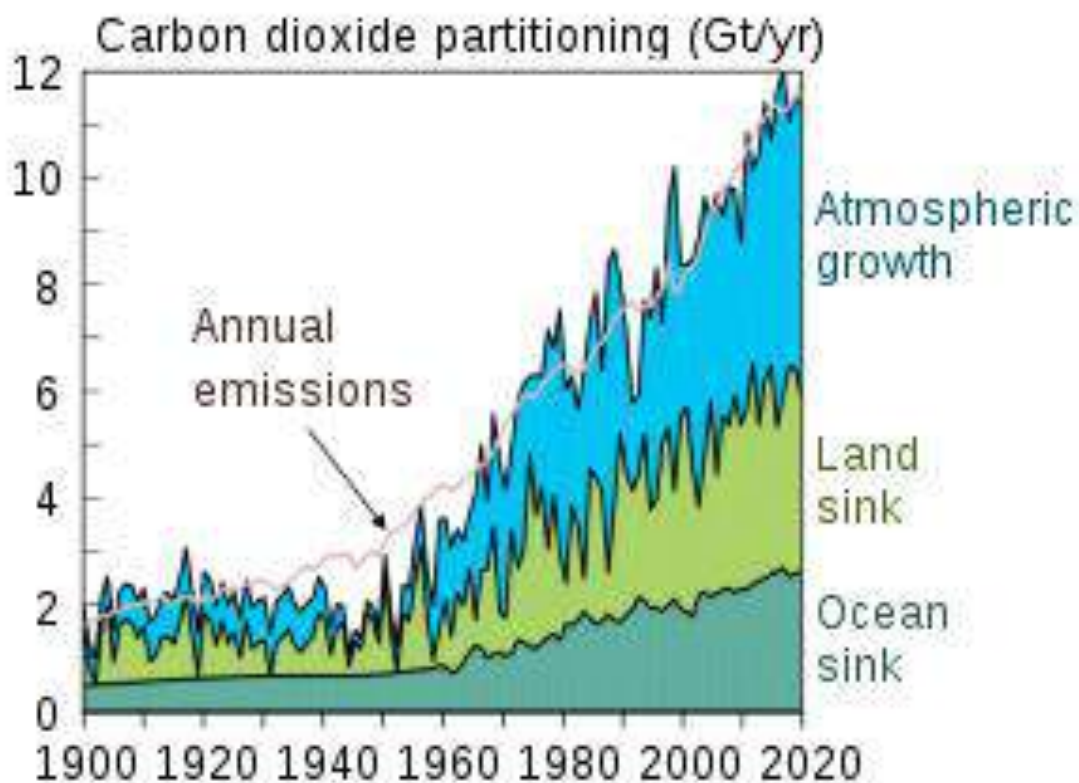
26.9.3 Agriculture and industry

Agriculture and forestry face a triple challenge of limiting greenhouse gas emissions, preventing the further conversion of forests to agricultural land, and meeting increases in world food demand. A suite of actions could reduce agriculture and forestry-based greenhouse gas emissions by two thirds from 2010 levels by reducing growth in demand for food and other agricultural products, increasing land productivity, protecting and restoring forests, and reducing greenhouse gas emissions from agricultural production.^[240]

In addition to the industrial demand reduction measures mentioned earlier, steel and cement production, which together are responsible for about 13% of industrial CO₂ emissions, present particular challenges. In these industries, carbon-intensive materials such as coke and lime play an integral role in the production process, so that reducing CO₂ emissions requires research-driven efforts aimed at decarbonising the chemistry of these processes.



26.9.4 Carbon sequestration



Most CO₂ emissions have been absorbed by carbon sinks, including plant growth, soil uptake, and ocean uptake (2020 Global Carbon Budget).

Natural carbon sinks can be enhanced to sequester significantly larger amounts of CO₂ beyond naturally occurring levels. Reforestation and tree planting on non-forest lands are among the most mature sequestration techniques, although the latter raises food security concerns. Soil carbon sequestration and coastal carbon sequestration are less understood options. The feasibility of land-based negative emissions methods for mitigation are uncertain in models; the IPCC has described mitigation strategies based on them as risky.

Where energy production or CO₂-intensive heavy industries continue to produce waste CO₂, the gas can be captured and stored instead of being released to the atmosphere. Although its current use is limited in scale and expensive, carbon capture and storage (CCS) may be able to play a significant role in limiting CO₂ emissions by mid-century. This technique, in



combination with bio-energy production (BECCS) can result in net-negative emissions, where the amount of greenhouse gases that are released into the atmosphere are less than the sequestered, or stored, amount in the bio-energy fuel being grown. It remains highly uncertain whether carbon dioxide removal techniques, such as BECCS, will be able to play a large role in limiting warming to 1.5 °C, and policy decisions based on reliance on carbon dioxide removal increases the risk of global warming increasing beyond international goals.

26.9.5 Adaptation:

Adaptation is "the process of adjustment to current or expected changes in climate and its effects". Without additional mitigation, adaptation cannot avert the risk of "severe, widespread and irreversible" impacts. More severe climate change requires more transformative adaptation, which can be prohibitively expensive. The capacity and potential for humans to adapt, called *adaptive capacity*, is unevenly distributed across different regions and populations, and developing countries generally have less. The first two decades of the 21st century saw an increase in adaptive capacity in most low- and middle-income countries with improved access to basic sanitation and electricity, but progress is slow. Many countries have implemented adaptation policies. However, there is a considerable gap between necessary and available finance.

Adaptation to sea level rise consists of avoiding at-risk areas, learning to live with increased flooding, protection and, if needed, the more transformative option of managed retreat. There are economic barriers for moderation of dangerous heat impact: avoiding strenuous work or employing private air conditioning is not possible for everybody. In agriculture, adaptation options include a switch to more sustainable diets, diversification, erosion control and genetic improvements for increased tolerance to a changing climate. Insurance allows for risk-sharing, but is often difficult to obtain for people on lower incomes. Education, migration and early warning systems can reduce climate vulnerability.

Ecosystems adapt to climate change, a process that can be supported by human intervention. Possible responses include increasing connectivity between ecosystems, allowing species to migrate to more favourable climate conditions and species relocation. Protection and restoration of natural and semi-natural areas helps build resilience, making it easier for ecosystems to adapt. Many of the actions that promote adaptation in ecosystems, also help humans adapt via ecosystem-based adaptation. For instance, restoration of natural fire regimes makes catastrophic fires less likely, and reduces human



exposure. Giving rivers more space allows for more water storage in the natural system, reducing flood risk. Restored forest act as a carbon sink, but planting trees in unsuitable regions can exacerbate climate impacts.

There are some synergies and trade-offs between adaptation and mitigation. Adaptation measures often offer short-term benefits, whereas mitigation has longer-term benefits.^[260] Increased use of air conditioning allows people to better cope with heat, but increases energy demand. Compact urban development may lead to reduced emissions from transport and construction. Simultaneously, it may increase the urban heat island effect, leading to higher temperatures and increased exposure.^[261] Increased food productivity has large benefits for both adaptation and mitigation.^[262]

Countries that are most vulnerable to climate change have typically been responsible for a small share of global emissions, which raises questions about justice and fairness. Climate change is strongly linked to sustainable development, along with the use of fossil fuels and emission of greenhouse gases. Limiting global warming makes it easier to achieve sustainable development goals, such as eradicating poverty and reducing inequalities. The connection between the two is recognised in the Sustainable Development Goal 13 which is to "Take urgent action to combat climate change and its impacts". The goals on food, clean water and ecosystem protections have synergies with climate mitigation.

The geopolitics of climate change is complex and has often been framed as a free-rider problem, in which all countries benefit from mitigation done by other countries, but individual countries would lose from investing in a transition to a low-carbon economy themselves. This framing has been challenged. For instance, the benefits in terms of public health and local environmental improvements of coal phase-out exceed the costs in almost all regions. Another argument against this framing is that net importers of fossil fuels win economically from transitioning, causing net exporters to face stranded assets: fossil fuels they cannot sell.

26.9.6 Policy options

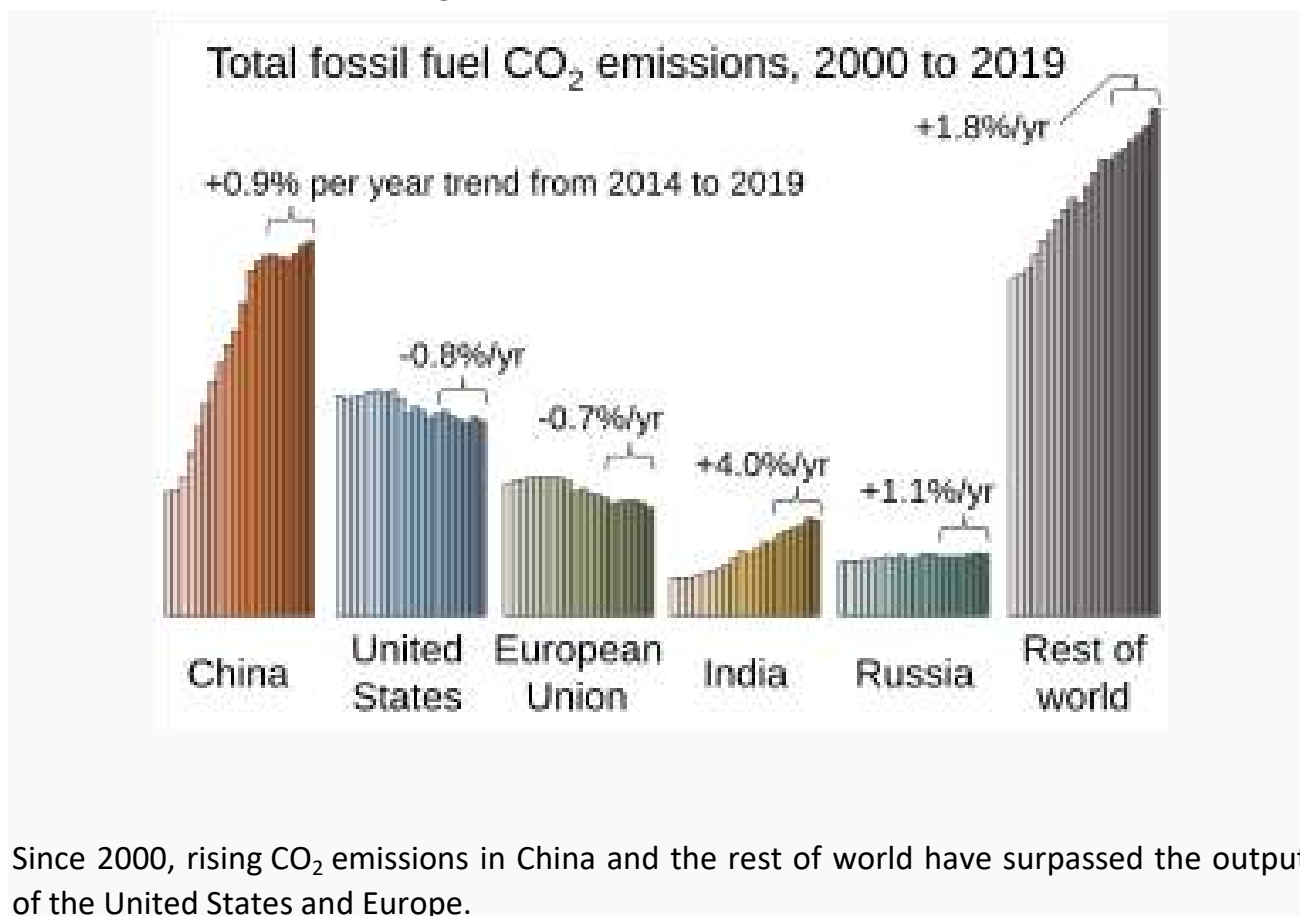
A wide range of policies, regulations and laws are being used to reduce greenhouse gases. Carbon pricing mechanisms include carbon taxes and emissions trading systems. As of 2019, carbon pricing covers about 20% of global greenhouse gas emissions. Direct global fossil fuel subsidies reached \$319 billion in 2017, and \$5.2 trillion when indirect costs

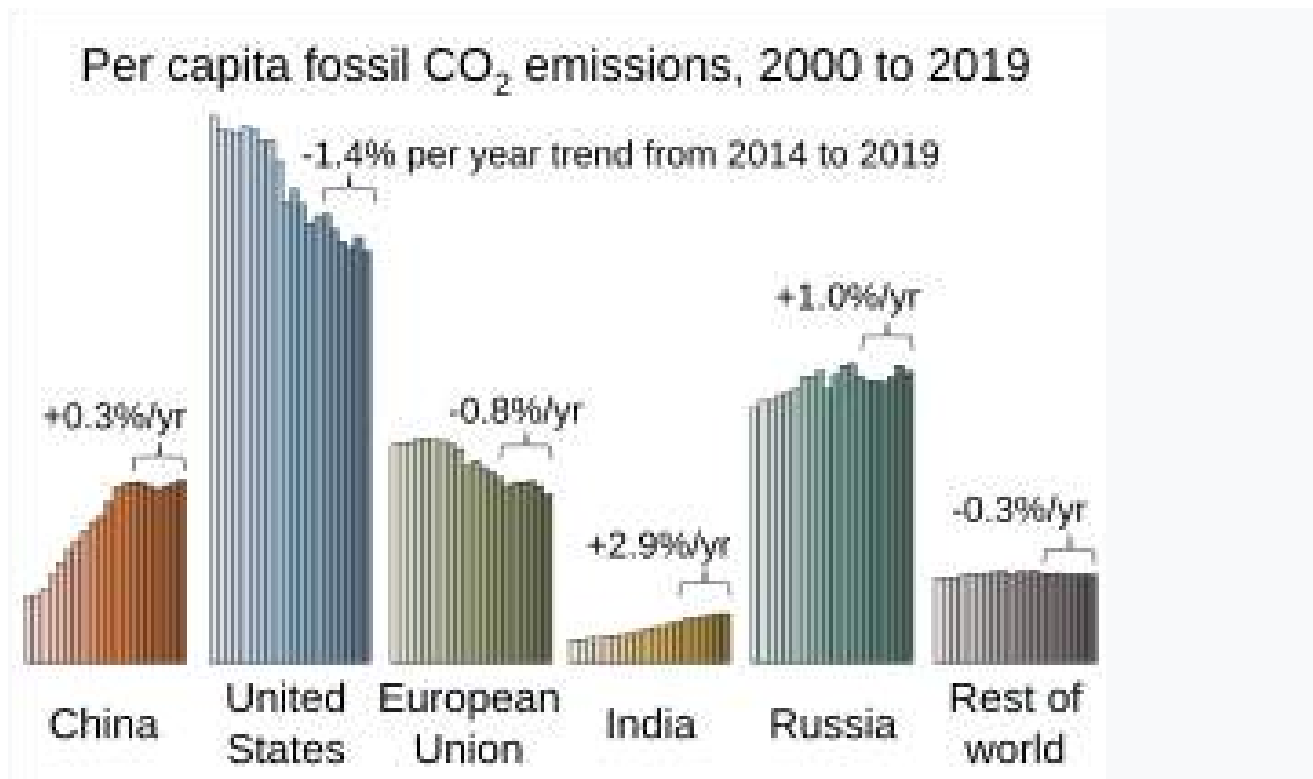


such as air pollution are priced in. Ending these can cause a 28% reduction in global carbon emissions and a 46% reduction in air pollution deaths. Subsidies could also be redirected to support the transition to clean energy. More prescriptive methods that can reduce greenhouse gases include vehicle efficiency standards, renewable fuel standards, and air pollution regulations on heavy industry. Renewable portfolio standards have been enacted in several countries requiring utilities to increase the percentage of electricity they generate from renewable sources.

As the use of fossil fuels is reduced, there are Just Transition considerations involving the social and economic challenges that arise. An example is the employment of workers in the affected industries, along with the well-being of the broader communities involved. Climate justice considerations, such as those facing indigenous populations in the Arctic, are another important aspect of mitigation policies.

26.9.7 International climate agreements





Per person, the United States generates CO₂ at a far faster rate than other primary regions.

Nearly all countries in the world are parties to the 1994 United Nations Framework Convention on Climate Change (UNFCCC). The objective of the UNFCCC is to prevent dangerous human interference with the climate system. As stated in the convention, this requires that greenhouse gas concentrations are stabilised in the atmosphere at a level where ecosystems can adapt naturally to climate change, food production is not threatened, and economic development can be sustained. Global emissions have risen since signing of the UNFCCC, which does not actually restrict emissions but rather provides a framework for protocols that do. Its yearly conferences are the stage of global negotiations.

The 1997 Kyoto Protocol extended the UNFCCC and included legally binding commitments for most developed countries to limit their emissions. During Kyoto Protocol negotiations, the G77 (representing developing countries) pushed for a mandate requiring developed countries to "[take] the lead" in reducing their emissions,^[285] since developed countries contributed most to the accumulation of greenhouse gases in the atmosphere, and



since per-capita emissions were still relatively low in developing countries and emissions of developing countries would grow to meet their development needs.

The 2009 Copenhagen Accord has been widely portrayed as disappointing because of its low goals, and was rejected by poorer nations including the G77. Associated parties aimed to limit the increase in global mean temperature to below 2.0 °C (3.6 °F).^[288] The Accord set the goal of sending \$100 billion per year to developing countries in assistance for mitigation and adaptation by 2020, and proposed the founding of the Green Climate Fund. As of 2020, the fund has failed to reach its expected target, and risks a shrinkage in its funding.

In 2015 all UN countries negotiated the Paris Agreement, which aims to keep global warming well below 1.5 °C (2.7 °F) and contains an aspirational goal of keeping warming under 1.5 °C. The agreement replaced the Kyoto Protocol. Unlike Kyoto, no binding emission targets were set in the Paris Agreement. Instead, the procedure of regularly setting ever more ambitious goals and reevaluating these goals every five years has been made binding. The Paris Agreement reiterated that developing countries must be financially supported. As of February 2021, 194 states and the European Union have signed the treaty and 188 states and the EU have ratified or acceded to the agreement.

The 1987 Montreal Protocol, an international agreement to stop emitting ozone-depleting gases, may have been more effective at curbing greenhouse gas emissions than the Kyoto Protocol specifically designed to do so. The 2016 Kigali Amendment to the Montreal Protocol aims to reduce the emissions of hydrofluorocarbons, a group of powerful greenhouse gases which served as a replacement for banned ozone-depleting gases. This strengthened the makes the Montreal Protocol a stronger agreement against climate change.

26.10 National responses

In 2019, the United Kingdom parliament became the first national government in the world to officially declare a climate emergency. Other countries and jurisdictions followed suit. In November 2019 the European Parliament declared a "climate and environmental emergency", and the European Commission presented its European Green Deal with the goal of making the EU carbon-neutral by 2050. Major countries in Asia have made similar pledges: South Korea and Japan have committed to become carbon neutral by 2050, and China by 2060. Major developing countries like India have undertaken policy initiatives like the National action plan on Climate Change since 2009 that promote development



objectives while also yielding co-benefits for addressing climate change effectively under 8 sub missions. India has a target of 175 GW of renewable energy capacity by 2022 and 450 GW by 2030 under its nationally determined contributions.

As of 2021, based on information from 48 NDCs which represent 40% of the parties to the Paris Agreement, estimated total greenhouse gas emissions will be 0.5% lower compared to 2010 levels, below the 45% or 25% reduction goals to limit global warming to 1.5 °C or 2 °C, respectively.



CHAPTER-27

APPLICATION OF MODERN TECHNOLOGY

27.0 Introduction:

A number of popular technologies are currently being used in the field, but Geographic Information Systems (GIS) and Global Positioning System (GPS) rank at the top. Pick up a modern smart phone and you'll see how far this technology has come in just a short period of time. For modern foresters and loggers, an array of similar handheld receivers can be used to download data gathered from GPS, which can then be input into databases that combine it with other GIS information. This data can then be added directly into spreadsheets, modeling programs, visualization applications and mapping projects. Such technology helps foresters and loggers monitor and analyze timberland health, improve transportation routing, track forest growth and maintain a database of timberland changes.

LIDAR technology (Light Detection and Ranging) is also beneficial for modern foresters, which collects tree measurements and detailed imaging. While traditional prisms are still valuable tools, LIDAR helps to measure canopy heights and volume, basal areas and habitat mapping.

Drones are also proving to be increasingly valuable to foresters. While drones are still considered to be a hobbyist toy by many, forestry professionals use them to help with forest management planning, detecting disease and managing forest fires. For large properties, drones are a great device for assessing volume and the overall condition of tree plantations.

Most of these tools have practical applications on the ground and in the field, which result in real-world information that cannot be replaced. However, combining this information with the detailed, customizable datasets that are available in SilvaStat360 allows foresters to apply context to the information they gather in the field so they are better equipped to make more informed decisions.

All of these technologies provide incredible benefits to the forestry industry and the pace of exciting, new technological developments continues to quicken. Members of the modern forest supply chain who embrace and utilize these technologies will be well-positioned to succeed in the modern global forest economy.



27.1 Modern Technology being adopted:

At present the Forest Officials are quite conversant with the following technology and frequently using for forest management. These are

- Use of Global Positioning System (GPS) in survey, Demarcation & locating the specified spot.
- Use of Differential Global Positioning System (DGPS) for survey of Forest blocks / area with an exact accuracy of 95% level.
- GIS applications for map study / Map preparation etc.
- Study and use of Satellite Imagery for detecting vegetation change, degradation of land / vegetation.
- Use of Satellite imagery for detection of Fire and faster communication of location of incidents.
- Clonally Propagation with mist chamber facilities for better genetically improved seedlings for plantation purpose.
- Root trainer nursery for mass seedling production.
- Use of Sprinkler for watering in Nursery.
- Use of blowers, Chemical fire extinguisher to combat Forest fire.
- Various mobile applications, Infrared radio collars to detect animal movement & reporting.

The available technology at the hands of Forester, as stated above are not used / applied in an extensive manner that is required & desirable. During this plan period it is expected that each forester in field should have access to all these facilities and use them for day to day management.

27.2 Modern Technology to be introduced in Forest Management:

With advancement of technology it is proposed to have the following facilities available with Nayagarh Wildlife Division for better management.

- a. Identified Plus trees within the Division and maintaining a Clonal Orchard.
- b. To have improved Mega Nursery with clonal propagation facilities with mist chamber, Sprinkler System.
- c. Root trainer facilities and capacity to meet requirement of Quality Planting Materials for the division instead of depending upon temporary nursery.
- d. All forest blocks / plantations surveyed with DGPS and mapping thereof.



- e. Establishment of GIS Cell with available Satellite imagery for monitoring purpose.
- f. Modern logging tools to meet emergency in **Post Cyclone Management**.
- g. Drone camera facilities to watch forest fire, wildlife movement and winter birds congregation & problems.
- h. *Presently, clonal propagation through tissue culture or any such advanced technology is not being followed due to lack of infrastructure and steps will be taken to raise genetically improved seedlings / clonal propagules for enhancement of timber productivity in future and accordingly yearly planning shall be made.*
- i. *DGPS survey of forest boundaries shall be done and geo-referenced maps with important administrative and management details shall be prepared.*

27.3 Forest Certification:

The Forest Certification Module provides basic and more detailed information on forest certification as a third-party voluntary, market-based mechanism to promote the sustainable use of forest resources. The module explains what forest certification is, differentiates between forest management certification and chain-of-custody certification, sets out the benefits and costs, and describes the steps that a forest manager must take to acquire it. It also provides links to tools and case studies to foster access to, compliance with and use of forest certification.

27.3.1 What is forest certification?

Forest certification is a voluntary process whereby an independent third party (the “certifier”) assesses the quality of forest management and production against a set of requirements (“standards”) predetermined by a public or private certification organization. Forest certification, and associated labeling, is a way of informing consumers about the sustainability of the forests from which wood and other forest products were produced. There are two types of forest certification:

1. Certification of forest management, which assesses whether forests are being managed according to a specified set of standards; and



2. Certification of the chain of custody (sometimes referred to as CoC certification), which verifies that certified material is identified or kept separate from non-certified or non-controlled material through the production process, from the forest to the final consumer.

To label an end-product as certified, both forest management certification and chain-of-custody certification are required. Most forest management certification standards address a wide range of economic, social, environmental and technical aspects of forest management, including the well-being of workers and of families living in and around the forest area subject to certification.

27.3.2 Why forest managers be interested in certification?

Forest managers – such as forest owners, entrepreneurs, associations and timber companies – may voluntarily decide to apply for certification. They may do so in expectation of better prices for their products, to maintain or increase access to markets for their products, to improve their public image, and to achieve social and environmental goals.

27.3.2 (i) What is behind the idea?

Forest certification is a market mechanism to promote the sustainable use and management of forests and to identify “sustainably produced” products for the consumer. The aim is to reward forest managers who pursue sustainable forest practices rather than practices with the potential to cause negative economic, social and environmental impacts. A certification label on a forest product informs potential buyers that the product was produced in a well-managed forest in accordance with a given set of standards. Consumers concerned about social and environmental issues are expected to give preference to products carrying such a label, and they may also be prepared to pay higher prices for them. Forest managers may be motivated to pursue certification for various reasons, ultimately leading to improvements in the quality of forest management and an increase in the extent of well-managed forests.

27.3.2 (ii) What are the benefits?

In many cases, the most immediate benefit of certification for forest managers is the streamlining of forest operations due to improvements in efficiency and greater control of production processes. Although experience has shown that certified forest products do not always obtain higher prices compared with uncertified products, certification may be essential for maintaining access to some markets. Certification has been shown to be a



valuable tool for positioning products in the marketplace and in certain sectors: in the paper and packaging sector, for example, certification is the norm rather than the exception in many major markets. Certification can also provide confirmation that a product fulfils legal requirements – such as those established by laws aimed at preventing the trade of illegal timber products – and may help producers and traders in fulfilling administrative obligations. Forest certification may help bring about improvements in the working conditions and safety and health of forest workers, lead to improved forest conservation outcomes, and encourage sustainable forest use. Forest certification can help boost the public image of companies – both those that pursue certification in their own forest operations, and those that purchase only certified products.

27.3.2(iii) What are the costs?

Forest managers incur both direct and indirect costs in pursuing certification. Direct costs include those associated with the certification process – such as the fees paid to certifiers to conduct initial assessments and subsequent audits, hold stakeholder consultations and prepare reports. Achieving certification may also require investments in machinery, staff training, infrastructure and logistics to improve forest management in compliance with the certification standards; these indirect costs could be much higher than direct costs, depending on the gap between the existing quality of management and that required to meet the certification standards. Because the direct costs of certification are relatively fixed, they usually decrease per unit of wood production or forest area – in other words, they decline, in relative terms, the larger the forest operation. Indirect costs, on the other hand, increase as operations increase in size because of the need to improve practices across larger areas.

27.3.2(iv) How is certification achieved?

Achieving forest certification can be either a quick or a lengthy process, depending on the pre-certification quality of forest management, administration and documentation systems, and on the capacity of the applicant to make the required adjustments. Basic certification requirements include: compliance with the law; well-written and coherent forest management plans; the implementation and monitoring of operations to reduce forest damage; adequate working conditions; and good relations with people living in and around the forest subject to the certification process. The certification process requires that applicants take a number of steps to demonstrate full compliance with the standards. A



certificate valid for a specified number of years is issued when compliance has been achieved. In more depth

27.3.3 PEFC's criteria for SFM standards Criterion;

The criterion are

3. Maintenance and appropriate enhancement of forest resources and their contribution to the global carbon cycle.
4. Maintenance of forest ecosystem health and vitality.
5. Maintenance and encouragement of productive functions of forests (wood and non-wood).
6. Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems.
7. Maintenance and appropriate enhancement of protective functions in forest management (notably soil and water).
8. Maintenance of other socioeconomic functions and conditions.
9. Compliance with legal requirements.

The concept of forest certification arose as a way of addressing public concerns about tropical deforestation and forest degradation. The Forest Stewardship Council (FSC), which pioneered forest certification in the early 1990s, was created as a result of collaboration between environmental non-governmental organizations, forest product companies and social interest groups. Today, there are more than 50 certification schemes addressing a wide variety of forest types, tenure and management regimes. The Programme for the Endorsement of Forest Certification (PEFC) is the largest certification framework in terms of forest area, accounting for about two-thirds of the total certified area worldwide, while the FSC is the fastest-growing scheme (by certified area)

27.3.4 Principles, Criteria, Indicators and Standards.

In most forest certification schemes, the specific requirements for good forest management are presented in a hierarchical system of principles, criteria and indicators. Principles provide an overall framework and set out a vision of sustainable forest management.

Criteria are categories of conditions or processes by which sustainable forest management can be assessed, and each criterion is characterized by a set of indicators that can be monitored to assess change over time.



The process by which certification bodies have developed their principles, criteria and indicators has varied. In 1994, the FSC defined ten global principles and associated criteria that set the framework within which national groups could develop indicators and verifiers specifying national and sub national standards through multi stakeholder processes. The PEFC adopted a definition of sustainable forest management that was developed by the Ministerial Conference on the Protection of Forests in Europe in 1993 (and later adopted by FAO). The PEFC supplements its principles, criteria and indicators derived from globally recognized intergovernmental processes with additional requirements in national schemes prepared with the involvement of key stakeholders – including forest owners and managers – and endorsed by the PEFC Council. Certification standards are generally developed, reviewed and revised in consultation with stakeholders. Global standards may be adapted to suit national conditions.

During the plan period the concept is to be driven in to Forest management in this aspect.



CHAPTER-28

MISCELLANEOUS REGULATION

28.1 Introduction:

During forest Management many issues remain outside the perview of the Working Plan Prescriptions. Some of the burning issues are attempted to be addressed in this chapter i.e.

“Miscellaneous Regulation”

28.2 Forest Consolidation:

At present there are 27 PRF and 21 no of DPF in the Division. Some of the PRF Notification are dated to during late 70's and early 80's. No substantial progress has been made in declaring PRF as RF under Section 21 of the Forest act to complet the process. Similarly DPF position is not at all improving the List of PRF/ DPF which needs immediate attention for declaring as PRF / RF as applicable.

Table No 27.1 List of PRF waiting for Declaraion as Reserved Forests.			
Sl. No.	Name of PRF	Area in Ha.(Notified)	Notification No.
1	Pankalasahi	66.85	S.R.O.309/70 dt. 30.4.1970
2	Khaman	71.62	S.R.O. 337/70 dt. 2.5.1970
3	Baisipalli Ext-1	80.93	S.R.O. 338/70 dt. 5.5.1970
4	Nephari	67.66	S.R.O.554/70dt. 25.6.1970
5	Gochhabari	521.23	S.R.O.555/70dt. 25.6.1970
6	Gambhariganda	322.33	S.R.O.556/70dt. 25.6.1970
7	Boni	106.83	S.R.O.547/70 dt. 2.7.1970
8	Baliberena	22.98	S.R.O.552/70 dt. 2.7.1970
9	Dhundugadia	566.56	S.R.O.548 / 70 dt. 3.7.1970
10	Chadeyapalli Ext	403.87	S.R.O.551/70 dt. 3.7.1970
11	Baisipalli Ext-II	129.49	S.R.O.756/70 dt. 22.9.1970
12	Baisipalli Ext- III	150.94	S.R.O.558/70 dt. 25.6.1970
13	Araniganda	26.91	S.R.O. 972/70 dt. 17.9.1970
14	Gumurakhola	258.99	S.R.O. 988/70 dt. 17.12.1970
15	Phasi Ext.-I	30.35	F.S. 33822/R dt. 17.5.1984
16	Matia	27.84	S.R.O. 591/70 dt. 2.7.1970



17	Bankamunda Ext-I	191.01	S.R.O. 760/70 dt. 14.9.1970
18	Phasi Ext.- II	114.12	F.S. 33836/R dt. 17.5.1984
19	Phasi Ext.- III	56.65	F.S. 33814/R dt. 17.5.1984
20	Baisipalli Extn – IV	544.7	.S.No.31/82 – 34126/R dated19.5.1984
25	Palva	76.48	S.R.O. 549/70 dt. 3.7.1970
26	Ragadimada	77.69	S.R.O. 971/70 Dt. 17.11.1970
21	Makarapalli	1359.74	S.R.O. 553/70 dt 25.6.1970
22	Banijhari	2810.17	S.R.O. 550/70 dt. 2.7.1970
23	Sukaramala	2533.33	S.R.O. 737/70 dt. 22.8.1970
24	Ambamundia	323.74	F.S. 80173/44251 / R dt. 12.7.1973
25	Barabanka	424.92	S.R.O. 553/84 Dt. 19.5.1984
Div. Total -27PRF		11367.93	

Table No 27.2 List of DPF pending for PRF Notification.		
Sl.No.	Name of Forest Block	Computed / Proposed Area in Ha.
1	Ranga	278.60
2	Baijhari	73.60
3	Sirisabadi	968.20
4	Kerabari	37.80
5	Nandagadu	35.00
6	Sikharpanga	61.50
7	Kuradhinisa	587.50
8	Kuradhinisa Ext.	2436.29
9	Nuagaon DPF	48.05
10	Bankamunda Ext-II	524.48
11	Matia Ext .	601.83
12	Ambaghati DPF-I	1.1650
13	Ambaghati DPF-II	11.8504
14	Ambaghati DPF-III	1.9600
15	Ambaghati DPF-IV	60.3667
16	Arakhataila DPF	247.00
17	Makarprasad DPF	66.00
18	Kurala	630.11
19	Dhadi	235.53
20	Takarakhai	72.84
21	Nariamba	699.31



22	Netabandha	101.33
23	Binjhagiri	257.14
24	Bhagabati	133.02
	Total	8176.6100

There are many good forest patches needs to be brought under administrative control of Forest Department. Steps are required to be taken for initiating proposal for Reservation. The process that requires to followed are

1. Identification of area to be reserved. It should not be less than 50 ha for future management convenience.
2. Collection of Land Schedule as per Hal Settlement and preliminary mapping of Cadastral Map.
3. Obtain permission from PCCF and intimate intention for reservation with due justification (Vegetation, Proximity to water body / River/ Spring etc).
4. Intimate Collector, Nayagarh for his approval
5. On approval take detail survey, prepare Cadastral map, Topo map with Pillar position, Field Book, Latitude / Longitude.
6. Prepare six set of such map / Land Schedule and Field book with Boundary description. (Chainage, Degree with FB/ BB), General Boundary description.
7. Submit proposal to PCCF for his approval.
8. On approval submit the proposal to Collector, Nayagarh for on ward transmission to R& DM department for notification u/s 4 of the Odisha Forest Act,1972.
9. After Section 4 notifications, the process to RF notification u/s 21 to be pursued.

28.3 Forest Boundary Maintenance:

Forest Boundary position is in very poor stage. About 20.38% of the pillars are in good Condition (For RF & PRF only). The Village Forest (as Declared u/s 30 of OFA'1972) boundary is in extremely bad position. The pillars are required to be maintained. The Boundary Pillar maintenance is required to be taken up in a five year Cycle as indicated under Para 2.3.2 & Para 27.2.

In case of Village special drive is required to find out maps / corresponding Hal Settlement records, demarcation and secured its boundary. It is most vulnerable forest area with department.



Immediate action shall be taken for repairing old pillars. Prescriptions will 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.

28.4 Management of Reserved Land (RL)

There are many Reserved Land in Nayagarh Division. Many plantations (Teak / Misc) have been taken up in this land. The legal status not yet finalized. Action need to be initiated to enlist such Reserved Land, survey the area and propose for declaring Reserved Forests as procedure elaborated under Para 27.2 above.

As it is a time consuming process, steps may be initiated to prepare Management Scheme for ten years. A time frame may be prepared in consultation with authorities.

28.5 Fire Protection:

Fire Protection is an important issue in case of Forest management. During 2021, massive fire broke out in Odisha and lot up hue & cry raised. Keeping in view the damage caused and under preparedness in this matter a Standard Operational Calendar has been developed and suggested below.

Table No 27.3 Standard Operational Calendar for Fire Protection			
Sl No	Description	Period	Executing Authority
1	Review of last Fire seasons loss & financial burden	October	Divisional Forest Officer & Supervising authority
2	Review Resource available at Hand	October	
3	Prepare a systematic Fire Fighting method to be adopted – Vulnerable sites etc & requirement of Man power, Resource and equipments.	November	Range Officer, DFO
4	Procure equipments / repair and maintenance of Equipments	November	Range Officer, DFO
5	Activate VSS / Villagers and all squad at hand – Demonstration camps etc	December	Range Officer, DFO
6	Collect & Display Contact number of Fire Station, Emergency Number, Range / Forester / Forest Guard Number	January	Range Officer, DFO



7	Fire Line maintenance	January/ 1st Week of February	Forester / Range Officer and DFO
8	Identification of Vulnerable points / Control burning etc	January / February – 1st part.	Forester / Forest Guard/ Range Officer.
9	Operate Control Room and deploy Frontline Staff / Squads / Vehicles	1st Week of February	Forest Range Officer / DFO
10	Improvement Communication System and appointment of Contact person to Divisional / Range Fire Control Cell.	1st Week of February	DFO
11	Prepare for facing eventuality like Fire Burnt / First aid Kit Hospitalization etc	During Fire Season February – June	Medical Contact to be established February 2nd Week onwards.
13	Fire Review / Guideline / command during season	As and When Required	Forest Range Officer / DFO.
14	Review / Fire mapping	July	Forest Range Officer / DFO.

Fire Protection measures need to be implemented with for better forest management, growth and regeneration.

28.6 Protection against Grazing:

At present Grazing in Reserved forests, Proposed Reserved Forests, DPF etc are not allowed. The forest blocks / sections / plantations needs to be protected against Grazing. A formal notification indicating Regenerated area may be issued by DFO, Nayagarh as “Closed to Grazing” for three years from year of treatment. This needs to be circulated to local bodies, PRI (Panchyat Raj Institutions) to have an effect on controlled grazing.

28.7 Forest road:

There are twenty two forest roads covering a length of 222.40 KM in the division. It should be annually maintained for effective supervision. The Forest Roads need to be closed to Public for a day in a year.

28.8 Identification of Plus Trees:

Plantation is an important component in enrichment of forests and creation of new manmade forests. Day by Day good plus trees – the source of Quality Seed are reducing day by day. To preserve the available genetically superior plus trees in the locality, a special



drive to “**Know your plus trees**” is required to be launched. Under this drive all forest staffs, VSS members, temporarily engaged staffs are to be shortly briefed about aim & objectives of this drive and asked to enlist plus trees in their locality. They may be asked to enlist trees (Plus Trees) of any species found in the locality (private / Govt land / Forest land) and report in the following format.

Name of Species	Description of tree identified	Girth / Height in m	Location	Latitude / Longitude.	Remark / Date of Identification.

Such list is to be compiled, visited by officials for verification. After verification each tree may be given a Unique No from the Division Office and the number may be written on the tree. Consolidated list may be circulated to all staffs / VSS of the locality for its protection and collection of seeds from such trees.

Steps may also be initiated to preserve the Genetic quality by Vegetative Propagation in Central nursery of the division.

28.9 Demarcation of VSS assigned area, Preparation of map and signing of MoU

In general it is observed that the forest assigned to VSS has not been properly demarcated, mapped and MoU has not been signed between Forest Department and Villagers. This aspect is to be addressed in a time bound manner which will give a boosting effect to Joint Forest Management drive in the division. Record keeping pertaining to VSS requires to be monitored and a special drive is to be taken to update the records.

28.10 Special study for *Cycas nayagarhensis*:

Cycas nayagarhensis is a species found only in Nayagarh district of Odisha in India. The species was recently discovered by Indian scientists Rita Singh, P. Radha, and J.S Khuraijam.

As this species is confined to Nayagarh District / Division, a special study is required. Steps for its conservation / propagation may be initiated.





CHAPTER-29

SUMMARY OF PRESCRIPTIONS

29.1 Objectives of Management & Working Circles Constituted:

The objectives of this working plan is to provide a basic approach for sustainable management of forests and preserve its biodiversity in light of the National Forest Policy, encompassing the ecological (environmental), economic (production) and social (including cultural) dimensions. The objectives for attaining this goal include conservation of forests and reducing forest degradation, maintenance and enhancement of ecosystem services including ecotourism, enhancement of forest productivity together with establishment of regeneration to improve forest health and vitality as per ecological and silvicultural requirements of the species, progressively increasing the growing stock and carbon sequestration potential, maintenance of biological diversity, sustainable yield of forest produce, prevention of soil erosion and stabilization of the terrain; improvement and regulation of hydrological regime; people's involvement in planning and management of forests fulfilling socio-economic and livelihood needs of the people. The sectors of consideration are Dynamics of Forests and Stands, Forests and Soil, Forests and Water, Forest Biodiversity, Climate and Forests, Socioeconomic Considerations and generation of forest based employment opportunities and livelihood options. The following Working Circles have been constituted for scientific management of available forest resources of the Division.

- ✓ Selection Working Circle (28557.8841 ha)
- ✓ Rehabilitation Working Circle (70241.8414ha)
- ✓ Plantation Working Circle (3683.4750 ha)
- ✓ Protection Working Circle (3278.00Ha)
- ✓ Miscellaneous Working circle (120.00 Ha)
- ✓ Bamboo (Overlapping) Working Circle (57071.9406ha).
- ✓ Non Timber Forest Produce (Overlapping) Working Circle (103766.5105 Ha).
- ✓ Wildlife (Overlapping) Working Circle (103766.5105 Ha)
- ✓ Joint Forest Management (Overlapping) Working Circle (33786.6140 Ha)
- ✓ Car Timber (Overlapping) Working circle (100368.5105 ha)
- ✓ TOF Working Circle (2015 Ha + 1042.90RKM avenue Plantation)



All total it is proposed to have Ten Working Circle. Out of these working circles, Five Working Circle will have independent area where as other Five Working Circle will have overlapping jurisdiction. The TOF (Tree outside the Forest Area) Working Circle does not cover any RF/ PRF or VF.

29.1.1 Plan Validity:

The period of this working Plan is **from 1st April'2021 to 31st March 2031**. The implementation and probable impact of various prescriptions may be reviewed after five years of working, if it is so required.

Mid-term Evaluation:

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

29.2 Selection Working Circle (S.W.C)

29.2.1 Special objectives of Management:

Special objectives of management of this working Circle is within the general objectives of the Working Plan. The special objectives are outlines below.

- i) To remove mature and silviculturally available trees before they become unsound.
- ii) To create openings in the canopy to allow adequate light so as to allow establishment of light demanding species i.e. principally Sal.
- iii) To thin out the congested pole crop to allow diameter growth and also have interim harvest through which the VSS looking after the area will be benefited.
- iv) To allow natural regeneration and cover the entire area with vegetation of climatic species.
- v) To improve the density of the forest crop as well as stand structure by suitable silvicultural operations.
- vi) To remove dead and unsound trees for creating hygienic condition in the forest.
- vii) To carryout subsidiary silvicultural operations so that conducive situation can be created for better growth of existing crop and natural regeneration.



- viii) To manage the forest so as to maintain it at this Climatic Stage so as to keep this composition of Forest with majority of Sal.

29.2.2 Exploitable Girth

Harvestable diameter is being prescribed in different plans for different species from time to time. Considering all aspect in the outgoing plan the exploitable Girth (GBH) for Sal was fixed at 120cm and above for all species. Considering the present scenario GBH for exploitation is prescribed as follows.

28.1 Exploitable Girth for species- Nayagarh Division			
Sl.No.	Species	Exploitable Girth At Breast Height in cm	Diameter in cm
1	Katranga	105	33
2	Piasal, Kurum, Mitikinia, Siris, Asan, Simili	150	48
3	Sissoo, Gambhari,	120	38
4	Bandhan &Teak	120	38
5	Arjun, Phasi, Jamu	150	48
6	Sal and others	150	48

This will be applicable for all Felling Series and all other situation. Plantation under JVP, the timbers required for Chariot Construction will only be harvested when meet specification of Chariot construction manual.

29.2.3 Silvicultural System:

The Silvicultural System proposed to be adopted is **“Selection System with adequate improvement measures to restock the area in High Forest System”**. Under this adopted system the matured and dead trees will be selectively removed leaving adequate mother trees to have good seed dispersal and natural regeneration. After removal of selected trees, the remaining trees will be treated so as to obtain good established regeneration

29.2.4 Constitution of Felling Series:

The area assigned to this Working Circle has been divided to Six Felling Series. Each felling Series has been sub divided to ten (10) Annual Coupes and numbered as I,II, III --- X prefixed with Felling Series abbreviation.



29.2.5 Yield Projected.

During the Plan period 16303 trees are likely to be marked & removed. The trees will yield 7336.35 Cum of Timber and 4890.90 MT of Firewood.

29.2.6 Subsidiary silvicultural operations (cleaning and thinning):

After Coupe working, the coupe area is required to be improved through Subsidiary Silvicultural Operation. The following works are required to be taken up under Subsidiary Silvicultural Operation (SSO)

- All marked trees those have not been removed by the OFDC Ltd during coupe working are required to be removed without considering its economic value.
- All debris, barks etc are to be removed from the coupe area and may be dumped in pits for natural decay and formation of humus.
- All diseased tree parts should be removed from the coupe and preferable burnt in order to check it's out break.
- High stumps of living trees if found, it should be cut back at a height 30-40cm above the ground level.
- Silvicultural Cleaning and thinning are two major subsidiary silvicultural operations being prescribed. Cleaning is being taken up in Sapling Crops where as thinning is prescribed in Pole Crops. If such crop is available within the coupe cleaning / thinning if required to be taken up.
- Soil & Moisture Conservation work is required to be taken up. The forests assigned to this working circle are mostly matured with advance growth in pole stage. Hence thinning as required is prescribed. The details of thinning have been described under Para- 14.6.10.4 above.
- Soil & Moisture Conservation: Moisture regime of a forest block greatly influences the crop composition, quality class and productivity of the forests. The dryer the tract – poorer is the vegetation. The forests included in this working circle are the best available forest blocks of the division. It is recommended to improve soil moisture regime in forests to improve the vigour of the crop, allow the species towards a climatic climax with increased biodiversity. It is recommended to treat all the available seasonal nallas to enhance period of water flow, check soil erosion in slopes, increase the humus layer in forest floor.

The following activities are prescribed

- A. Vegetative / brushwood Check dams on nalla bed.



- B. Loose boulder Check dams (LBCD)
- C. Percolation Pits.
- D. Create & Maintain Humus layers to reduce run off and enhance time of collection
- E. In congested patches thinning of appropriate grade is prescribed.

29.2.7 Regeneration:

For regenerating the area high forest system is to be adopted. Activities like Sowing of Seeds, Closing to Grazing, Fire Protection Measure & Fire Protection Measure are recommended.

29.3 Rehabilitation Working Circle (RWC)

29.3.1 Special objectives of Management:

The Special Objectives of Management set out for this Working Circle within the ambit of the general objectives of management are as follows.

- To induce natural regeneration & improve the condition of existing forests through protection against encroachment, grazing, fires and illicit felling.
- To improve the crop density to more than 50% from the present position through protection, Silvicultural practices.
- To enhance soil enrichment through Soil & Moisture Conservation measures.
- To regulate the surface water runoff to enhance percolation and water availability down the streams.
- To protect against the River Bank / Stream Bank erosion through vegetative measures.
- To restock barren areas through artificial regeneration with most desirable indigenous species.
- To have partnership with the local community in protection and management of the forests.
- To increase the water retaining capacity of the soil & bring the crop to climax species composition.
- To Control / eradicate the weeds and check its invasion.
- To restore and improve the microclimate and micro edaphic condition of forests.
- To increase the biodiversity and heterogeneity in the forest crop by encouraging natural regeneration.



29.3.2 Silvicultural system:

The Silvicultural System to be adopted for this working Circle is ***“Silvicultural Cleaning, Tending followed by Aided Natural Regeneration supplemented with enrichment Plantation”***

29.3.3 Harvestable diameters:

No removal of trees is prescribed from the forests assigned to this Working Circle. Hence the harvestable diameter for any species has not been fixed in this plan for this Working Circle. These forests are included under Car Timber Overlapping Working Circle. Specific timber like Phasi, Dhaura, Asan, Kumbhi, Simili etc are required on annual basis. Timbers of these species or as required by **Puri Jagannath Temple Management** for Chariot construction will be allowed for removal.

29.3.4 Constitution of Treatment Series:

The assigned area has been allotted to different Rehabilitation series. All total thirty (30) Rehabilitation series have been constituted. Each series is subdivided to 10 sections with year of allotment.

29.3.5 Yield prescribed:

As there is no prescription to harvest forest produce, no yield has been calculated. However during silvicultural cleaning and thinning, brush wood, Fire wood and poles may be obtained. In order to maintain hygiene of the forest, dead trees may be removed leaving some dead trees / fallen trees at least 4-5 trees per hectare for wildlife management point of view.

In case of VSS assigned area, the removed forest produce may be given to the Villagers as per JFM Resolution after maintaining necessary records of removal and sharing mechanism as per VSS Resolution.

29.3.6 Treatment suggested:

The following activities have been recommended for improvement of Forest stock. These are Demarcation of Annual Rehabilitation Area, Preparation of Treatment Map & Treatment Plan, Fencing of the Area, Silvicultural Cleaning, Silvicultural thinning, Eradication of weeds, Soil & Moisture Conservation, Treatment of Natural seedlings available, Restocking of Area by Planting (Artificial Regeneration) & Post-care operation, Control of Grazing and Fire Protection Measures.



29.4 Plantation Working Circle:

29.4.1 Objectives of Management

The objectives of management of this working circle are in tandem with the general objectives of this Plan. The Special Objectives are as follows.

- ❖ To manage Economic plantations / Teak Plantations of out going plans in a scattered manner and improve growth status through Silvicultural practices.
- ❖ To bring the plantations raised here and there to a single management fold and scientifically manage to optimize the yield.
- ❖ To encourage participatory management of erstwhile Social Forestry Plantations and activate the VFC.
- ❖ To manage the plantations raised under Compensatory Afforestation Scheme and declared as Protected Forest thereafter.
- ❖ To Increase availability of Firewood and timbers in the locality and reduce pressure on forests for fuel wood and furniture wood.
- ❖ To increase the crop density of forests and improve the Carbon Sequestration.
- ❖ To develop a healthy usufruct benefit sharing mechanism in the villages and encourage natural resource management with a community approach method.
- ❖ To take suitable measures to prevent soil erosion and conserve soil and moisture in barren hilly tracts.
- ❖ To cover-up the encroached areas under tree cover after its eviction.

29.4.2 Area included in the Working Circle::

The crops included in this working circle are of three types i.e. Teak & Economic Plantations, Social Forestry Project Plantation (VF), Encroachment, Plantations under Compensatory Afforestation.

29.4.3 Silvicultural System:

The Silvicultural System for woodlots of erstwhile Social Forestry Plantation will be managed with Silvicultural System **“Uniform conversion silvicultural System”**. Where ever promising coppice shoots will be developed / come up, the same will also be retained to reduce the replanting cost. The number of standards per hectare will depend upon biotic interference, possibility of dispersal of seeds for a high forest system, fruit bearing species, having timber value at a higher girth class. The minimum number of trees prescribed for retention is 25 number and maximum 75 numbers per hectare.



In case of Teak Plantation / Economic Plantation / Compensatory afforestation raised in outgoing Plans or under other schemes it will be Silviculturally tendered to have a good stand. Thinning along with Soil & Moisture Conservation measures will be implemented to enhance growth rate with removal of **“Stems having Utility value”**.

The encroached areas after eviction will be planted up following standard planting procedure / norm.

29.4.4 Rotation Period:

The rotation period prescribed is as below.

- Teak Sisoo, Gambhari – 100 Years,
- Eucalyptus, Other Soft wood, Acacia, Cassia etc - 25 years,
- Fruit bearing: As long as fruiting continues,
- Timber species for Chariot construction: As per standard requirement of Temple management (Shree Jagannath Temple / Lingaraj Temple):
- In case of SFP Plantations Clear felling with Standard is being followed. Rotation period is applicable for Standards only.

29.4.5 Harvestable Diameter/ GBH:

The harvestable GBH prescribed is as follows.

- 1) *Acacia auriculiformis* (Sunajhari) - 90cm,
- 2) *Anacardium occidentale* (Cashew): As long as Fruiting continues.
- 3) *Anogeissus acuminata* (Phashi): 180cm,
- 4) *Anthocephalus cadamba* (Kadamba: 150cm,
- 5) *Azadirachta indica* (Neem): 180cm,
- 6) *Bomax ceiba* (Simili): 150cm,
- 7) *Erythrina variegata* (Paladhua) : 120cm,
- 8) *Gmelina arborea* (gambhari) : 120cm,
- 9) *Melia azedarach* (Mahaneema): 120cm,
- 10) Fruit bearing species: As long as Fruiting continues.
- 11) Teak, Sisoo: 120 cm



29.4.6 Prescription:

For all Economic / Teak Plantations/ Compensatory Afforestation Plantations, thinning has been prescribed at 8th Year, 16th Year, 32nd Year, 48th Year, 64th Year, 80th Year and harvesting at 100th Year. During Plan period only one thinning in a plantation is prescribed.

For SFP plantations **“Clear felling with Standard system followed by planting”** has been prescribed.

For encroached areas eviction followed by Plantation suggested.

29.5 Protection Working Circle (Pr.WC)

29.5.1 Sites included in the Working Circle:

The Forest area in the vicinity of Mahanadi needs to be protected to a highest degree to check soil erosion in the forest and protect the life of Reservoir by checking siltation.

The Baisipali Wildlife sanctuary and Mahanadi Gorge Sanctuary combined declared as Tiger Reserve is adjacent to this division.

Central Reserved Forest – Buguda Elephant corridor is within this division. Elephant movement is experienced in these Forests. The elephant corridor as well as the forests in the movement zone needs adequate protection with undisturbed vegetation.

Ratnaganda waterfall is also originating forests of Dasappa. This block is also needs protection. These forest blocks are included in this Protection Working Circle.

29.5.2 The objectives of Management:

The special objectives of Management of this Working Circle are within broader objectives of this working plan. The objectives are outlines as follows.

- a. To provide a continuous undisturbed habitat for elephants & ensure safe movement of mega animals.
- b. To nalla banks / Spring origin are to be well covered with vegetation of all classes (Trees/ Herbs/ Shrubs/ Grasses) to provide a “Food Corridor” for animals.
- c. The bamboo forests coming within the allotted area to be well maintained.
- d. Soil Erosion of any form is to be completely reduced / checked.
- e. Full protection to vegetation against illicit felling , Fire.
- f. Ensure regeneration of palatable food / grass stock all along the protected area.
- g. No tree felling in any forest for any purpose within this area will be taken up.



29.5.3 Silvicultural System:

The area assigned to this working circle will be under “360⁰ Protection” from all angles. Hence no Silvicultural System is prescribed for assigned blocks / areas. In case of exigency required “Soil & Moisture Conservations” of limited scale is recommended. It is better to allow nature to nurse the crop with an ideal concept **“Least management is the best management”**

29.5.4 Rotation period:

There is no prescription for removal of trees from these forests under this Working Circle. Hence no rotation period is prescribed.

29.5.5 Harvestable diameters:

As no felling is involved there is no **“Harvestable Diameter”** recommendation in this working circle.

29.5.6 Prescription:

The assigned area to this working circle will be strictly protected against fire, illicit felling, poaching, encroachment etc. No activities are generally prescribed. In case of any extraordinary situation, activities may be taken up with the approval of higher authority and with a justification for deviation. Annual deviation statement needs to be submitted and get approval.

This working circle is constituted with an objective to maintain natural vegetation without any interference or managerial / silvicultural manipulation of crop composition. This principle is to be strictly adhering to.

29.6 Bamboo Overlapping Working Circle [Bamboo (O) WC]

29.6.1 Crop Condition:

Bamboo is an important NTFP available in this division. Daspalla Bamboo Forest has a great attraction since long. Due to various reasons the demand on Bamboo has reduced resulting Bamboo working uneconomic. Most of the bamboo forests are in a congested stage. Its management is of paramount importance. All bamboo forests of outgoing plan included in Bamboo (Overlapping) Working Circle are included in this plan (except Kuradhinisha Ext DPF) for management. An area of 57071.9406 ha has been included in this working circle for management. This constitutes about 52.98% of the area under management.



The forest blocks having Bamboo in abundance has been included in this working Circle for future management.

29.6.2 Special objectives of Management:

The special objectives of management in respect of this Over Lapping Working Circle are within the scope of general objectives of management of forest. These are as follows:

- I. To enforce scientific harvesting of Bamboo and provide bamboo to local artisans and industrial purpose basically to paper mills for raw materials on sustainable basis.
- II. To restore the bamboo forests through intense silvicultural practices and checking fire & soil erosion.
- III. To enhance fodder availability to wild animals from bamboo crops.
- IV. To improve the bamboo growing stock through plantations.
- V. To improve bamboo forests through JFM and provide employment to bamboo artisans

29.6.3 Silvicultural system:

For Bamboo forests proposed for commercial harvesting will be worked under “**Culm Selection Cum Improvement System**”. Under this system, Bamboo culms are selectively removed depending upon number of culms available under different age i.e. 1st yr to 4th year and above. After cutting of bamboo as per rules, Simultaneous Silvicultural operation is to be taken up to improve the clump and induce good regeneration.

29.6.4 Cutting Cycle:

A four year cutting cycle and treatment Cycle is prescribed in this plan. During the Plan period 2 & ½ Cycle will be completed.

29.6.5 Yield Projected:

The annual yield has been estimated on cutting series wise. It has been based on number of clumps per ha and number of harvestable bamboo available per clump. During Plan Period 46961 SU of Salia bamboo and 19539 SU of Daba bamboos will be harvested. The total production is estimated to 66500 SU (95809Ton)

29.6.6 Prescription:

Bamboo may be harvested as per Bamboo cutting Rules. After coupe working Simultaneous Silvicultural operation (SSO), strict Fire Protection and regeneration by Seed



showing has been prescribed. All bamboo forests need to be attained otherwise “Non Working” will lead to Congestion clumps and damage to Bamboo forests.

Planting of bamboo is a good option to restock the depleted bamboo forests. Standard planting techniques as per approved cost norm is to be followed. A 400 plant density per hectare is suggested. Instead of seed origin seedlings which take a long time for clump formation, it is suggested to have bamboo seedlings from layering method and planting of off sets after dismantling the raised congested clumps.

- b) Planting of Bamboo over 5% of the area assigned i.e. 5% of 57071.94 = 2853.0 ha in 10 years.
- c) Just after coupe is surrendered or in month of June 1st fortnight, Salia Bamboo seeds @ 5 Quintals per year in a coupe / treatment section for two consecutive year is to be broadcasted.

29.7 Non Timber Forest Produce (Overlapping) Working Circle

29.7.1 Crop Condition:

The Non Timber Forest Produces (NTFP) including Medicinal & Aromatic Plants (MAP) is mostly seen in moist forests of Daspalla and Mahipur Range of the division. Besides Char, kendu, Kusuma, myrobalance, Siali leaves, Kendu leaf, Bana haldi, Satabari, Sarpagandha, and Honey are available to a greater extent in this division. Cane is naturally occulting along the nalla course on moist areas. The entire forest area excluding those of erstwhile Social Forestry Plantation and area declared as PF due to its small and scattered in nature has been assigned to this Working Circle.

29.7.2 Special objectives of Management:

The special objectives of management are as follows.

- I. To educate VSS / JFM Committee and Gram panchyat about scientific collection methods of NTFP on a sustainable basis.
- II. To educate primary collectors of NTFP about contribution of NTFP towards their livelihood and share of income from NTFP.
- III. To educate VSS / Primary collectors about propagation of various herbs / shrubs / climbers and how to improve the stock in forest both quality and quantity.
- IV. To enhance abundance of NTFP species in forest through regulatory mechanism in non-assigned VSS areas / VSS areas.



- V. To conserve and protect the depleting natural medicinal plant resources in the forest area.
- VI. To encourage local community for ex-situ / in situ conservation of NTFP & medicinal plants through VSS.
- VII. To generate self employment and livelihood support for the forest fringe dwellers.
- VIII. To develop and disseminate scientific harvesting, processing and storage techniques relating to NTFP products.
- IX. To share market information to primary gatherers.
- X. To impart training on value addition

29.7.3 Silvicultural system:

No silvicultural System is prescribed for management of NTFP species found in the forests. It is proposed to manage the NTFP resource through

- Regulated collection & trading with Value addition by regular training.
- Impart training on Scientific Collection.
- Improve growing Stock by checking biotic interference.
- In-situ & Ex-situ Conservation.

29.7.4 Collection Cycle:

The NTFP like fruits / leaves, tubers, etc are normally collected in an annual cycle depending on its maturity and requirement/ utility. Honey, wax, mushrooms are widely collected depending upon availability & season. Many MAP (Medicinal & Aromatic) Plants are collected as and when required throughout the year.

29.7.5 Yield Projected:

No yield is projected as most of the items under this Working Circle are being regulated by Panchyats.

29.7.6 Prescription:

For improvement of NTFP collection “Scientific Collection method” has been suggested. Further In-Situ, Ex Situ conservation has been suggested. Plantation of cane & other NTFP species @100 ha per year and Demonstration plot over 10 ha has been suggested.

29.8 Wildlife (Overlapping) Working Circle [WL(O)WC]

The natural forest area is the niche for the Wild animals. Due to Proximity to Baisipali Sanctuary, Mahanadi Gorge Sanctuary under Mahanadi Wildlife Division, the movement of



animals from and to Sanctuary is commonly noticed. These Sanctuaries are also declared as Satkosia Tiger Reserve. The forests of this division are also part of Mahanadi Elephant Reserve. Buguda- Central Reserved Forest Elephant corridor is entirely within the divisional jurisdiction. Elephants from Central RF move to Ghumsur North Division via this corridor. The forests assigned to this Working Circle are all Reserved Forests, All PRF, and DPF of the Division.

29.8.1 Objectives of Management:

The special objectives of management are in line of general objectives of Working Plan. All objectives under Elephant Reserve are also objectives of this working Circle. Besides the above other objectives are as follows.

- To Conserve, Protect and improve existing wild life and their habitat.
- To enhance bio-diversity and Wild Life population in the region.
- To involve people in management of Wildlife & associate them in preventing crime against Wild animals.
- To build up scientific knowledge on wildlife resources of the region.
- To train personnel at various levels for conservation and management of wildlife.
- Carry out research relevant to management including the development of techniques appropriate to Indian conditions especially to this locality.
- To educate people about wildlife and need for their conservation.
- To prevent sporadic and strategic crime against wild animals / birds.
- To protect Life and properties of public against animal depredation.

29.8.2 Management Approach

The cardinal points of management approach are

- Public Participation,
- Public Awareness,
- Education,
- Nature Interpretation Centres,
- Coordination

29.8.3 Prescriptions:

Prescription includes Improvement of Habitats, Maintenance of Wet lands, Maintenance of Creeks, Creation & Maintenance of Grass Land, Providing water to animals, Providing Protection, Fire Protection measures, Detail study of Animal behaviour & scientific Documentation.



29.9 Joint Forest Management (Overlapping) Working Circle

Joint forest management is concept of developing relationships between fringe forest groups and forest department on the basis of mutual trust and jointly defined roles and responsibilities for forest protection and development. Odisha remains the first to pass the first resolution for JFM. At present, the JFM Resolution 2011 is the basis on which forests are assigned

29.9.1 Salient Features of Joint Forest Management:

Joint Forest management encourages the development of partnerships between local people and forest department to manage forest resource jointly. It provides a communication structure for consultation and negotiation between forest Department and forest users and provides legalized access for the local communities to forest lands. JFM encourages local people to protect forest areas in order to prevent free grazing of livestock and to assist in preventing illegal activities by outsiders. JFM assures local people that a certain proportion of the intermediate and final harvests from forest lands will accrue to them.

29.9.2 Special Objectives of Management:

The special objectives of Management of this Working Circle are as follows.

- i) To restock the degraded Forests through community participation.
- ii) To ensure protection, regeneration and management of the forest wealth through a participatory approach.
- iii) Mass Awareness campaign and motivation to the villagers is to be spread to every forest fringe village.
- iv) To make the people and Forest Department equal partners in management process.
- v) Demarcation and Survey of the area allotted under V.S.S.
- vi) Artificial regeneration in the degraded forest area is to be taken up to restore the barren and blank area.
- vii) Soil and Moisture Conservation Measures have to be adopted in the VSS assigned area and preparation of micro-plan to each VSS.
- viii) To reduce the dependency on forest, income generating activities are to be created.



- ix) The other Department involve in peoples participatory aspects like Agriculture, Horticulture, Soil Conservation, veterinary; Health, mass education etc. have to be involved to achieve all-round socio-economic development of the village.
- x) To develop VSS as an institution at local level to manage **“Natural Resource”**.
- xi) To have special thrust on **“Fringe Forest Management.”**

29.9.3 Prescriptions:

The prescription involves Demarcation of VSS Area, Preparation of Micro-plan, Plantation & Choice of Species, Incentive Schemes for the VSS, Capacity Building Program , VFDF (Village Forest Development Fund) ,and Training camps for VSS Members.

29.9.4 Scope of expanding JFM Working Circle:

(i) Out of 105301.7505 ha of forest area under management fold, 33786.614 ha has been assigned to different JFM committee (VSS) which workout to be 32.10% of the forest area. There is ample scope to increase the area under JFM. At present **“AJY -Aama Jungal Yojana”** is being implemented which provides an avenue to expand area under JFM.

(ii) There are many forested area under the administrative control of Revenue department. The JFM resolution 2011 has extended its purview to manage Revenue Forests in a **Joint Forest Management** approach. Where PRI (Panchyat Raj Institutes) are interested in management of such forests, the same may be taken for management under VSS.

29.10 Miscellaneous Working Circle:

There are forest blocks where Central Nursery has been developed, Eco tourism has taken ground and need special management practices than Silvicultural prescriptions generally prescribed for management of Forests. These areas has been included in this working Circle namely **“Miscellaneous Working Circle”**

29.10.1 Costitution of Working Circle:

- a) **Nursery:** The two sites earmarked for Nursery is under Permanent Central Nursery with facilities for Quality Seedling / Saplings Production.
- b) **Places of Religious Importance:** Hatimunda RF and Sulia RF are two places where people gather to worship the presiding deity. On festive occasions, local people also gather and enjoy the surrounding nature's beauty.



c) Places of Recreational value:

There are places of Recreational Value which needs to be maintaining under a hygienic useable condition. Thousands of local people / outsider's visit places during winter mostly.

29.10.2 Special Objectives:

The objectives of Management are within the basic principle & objectives of the Working Plan. The specific onjectives are different depending upon the land use patern.

a) For Nursery:

- To have production of Quality Planting Materials (QPM) and made available to public throughout the year to meet any occasion / event.
- To encourage clonal propagation facilities to retain genetically superiority and not to degrade the Genepool due to cross pollination with inferior species.
- To provide Root trainer facilities, Mist Chamber etc.
- To produce organic manure from Nyrserly waste / weeds for use in nursery.

b) For Places of Worship:

- To provide peace and tranquility of the area.
- To maintain Cleanness / hygienic atmosphere compatable with the spiritual and environmental conditions.
- To extent necessary help / assistance to the devoty on their visit to the place.
- To propagate / spread message on Forest Conservation, Forest Diversity, Importance of wild animals etc through posters / signages.

c) For Recreational / Eco Tourisim Sites.

- To provide an healthy / hygienic atmosphere to nature lovers.
- To facilitate nature lovers on tracking inside the forests and make them familiar with the situation / forests and its importance.
- To enhance children's concern towards forests & wildlife.
- To educate people to have cohabitation with nature than in modern township.

29.10.3 Silvicultural system:

The nature of management is not silvicultural. Hence no Silvicultural System has been prescribed.



29.10.4 Harvestable diameters:

The area will be strictly **“Maintain & Protected against all types of threats”**. No tree will be removed excepted wind fallen, uprooted or which is considered as threatened to life & properties.

29.10.5 Series / Sections for treatment:

Considering the nature of importance and use, the area is sub divided in to three treatment series. The series have been constituted basing of “Land Use Pattern” and each place has its unique features. Hence each unit is considered as one section.

29.10.6 Method of executing the Treatment:

The area assigned to this working circle is required to be demarcated in the field. A development approach paper is to be prepared with due regard to the provisions of Forest (Conservation) Act, 1980. The sites are being proposed for management for different requirements. All aspects of peoples’s sentiment is to be considered when formulating regulating measures.

29.11 TOF Working Circle:

The Forest area in Nayagarh Division is about 54.29% of Geographical area. Out of the forest area recorded around 32.44% area is of DLC Land / Revenue Forest. Besides the forests, under administrative control of Forest department about 540.0Sq.KM of Revenue forests (32.44% of the Geographical area) remain outside the management purview. Plantations are being raised under various schemes like Forest Development Agency, Mahatma Gandhi National Rural Employment Guarantee Act (MANREGA), CAMPA, Farm Forestry, Avenue Plantations etc. Hence its management is of equal importance. In order to provide a management strategy for these plantations / natural forests, it is proposed to constitute **“ToF Working Circle”**

29.11.1 Constitution of Working Circle:

The area allotted to this Working circle consists of two types of Plantation i.e. Misc. Plantation and Avenue Plantation. In case of miscellaneous Plantation all long term rotation species like Teak, Phasi, Sisoo, Asan are planted.

29.11.2 Objectives of management:

The objectives of management are varied and depending upon category of plantations the special objectives TOF management & specific objectives are furnished as follows.



a) General Objectives:

- To increase tree cover of the district / division through planting outside the forest land.
- To increase bio mass production by planting quick growing species.
- To stabilize the loose soil through planting & protect catchment area of Kolab River / Reservoir.
- To improve the aesthetic value along the road net work.
- To encourage Farm forestry to meet the demand of Raw materials of papermill.
- To enhance the Economic Condition of People.

b) Of Teak Plantation.

- To enhance timber productivity of Forests,
- To enrich existing vegetation outside the forest area and meet the demand of timber especially timber required for furniture.

c) Of Avenue Plantations:

- To improve the aesthetic value of the landscape,
- To ameliorate the climate,
- To provide shade to passer-by,
- To provide habitat to birds / reptiles/ rodents.
- To add tree cover to bring the area within the standard norm i.e. 33% tree cover of the total geographical area.

d) Of Farm Forestry:

- To encourage public to have their own backyard plantation to meet their household requirement on firewood, fodder.
- To bring private land under tree planting.
- To supplement raw material availability for industries/ furniture woods.
- To make public less dependent on forests.

29.11.3 Silvicultural system:

Silvicultural System to be adopted is ***“Improvement of Stand by Silvicultural tending”***. Under this system all plantations will be treated for improving the quality of stands i.e. both height & Girth to bring the stand to more useful stage. Activities will be Thinning of appropriate Grade along with Soil & Moisture Conservation.

29.11.4 Rotation period:

The area assigned to this working Circle bears Teak and other Species. For Teak a rotation period of 100 years has been fixed. For other species found in TOF areas the rotation period fixed under Para 16.6.3 will be applicable.



29.11.5 Harvestable diameter/ Girth:

There is no prescription for final harvest of any plantation. Harvestable diameter prescribed under para 16.4 of this plan will be applicable for all other purpose if so required.

29.11.6 Calculation of the yield:

No final harvest is prescribed for any plantations included in this working circle. From teak plantation some poles of utility may be obtained. From other plantations no utilizable produce is expected. There is Teak plantation as a mixed species. During light grade thinning i.e. C Grade thinning 20 numbers of poles may be expected to be removed per hectare for better enhancement of retained stems. From other planted species no utilizable yield is expected.

29.12 Car Timber (Overlapping) Working Circle:

The Car Festival (Ratha Yatra / Ghosha Yatra) at Puri is celebrated in the month of "Asadha" each year. Ceremonial construction of the Holy Chariots starts from the day of Saraswatipuja in the month of February and regular construction of the grand chariots for the deities starts on the day of Akshaya Trutiya which is generally observed during the first week of May.

Traditionally the timbers for building of the grand Chariots / Cars at Puri were supplied by the King of Daspalla, which was an ex-princely state of Orissa. After merger of Daspalla in the state in 1948, the Govt. of Orissa continues to uphold the traditional commitment. Divisional Forest Officer, Nayagarh on the direction of the State Government supplies the annual requirement of timbers for the Car Festival at Puri, free of cost including delivery at Rathagada, Puri.

Similarly for the Car Festival of Lord Lingaraj at Bhubaneswar, which is celebrated on the day of "Ashokastami" in the month of "Chaitra" on the day proceeding of "Rama Navami", the Divisional Forest Officer Nayagarh also supplies timber for the Car Festival.

29.12.1 Special objectives of Management:

The special objectives of management set for this overlapping working circle are listed below

- (i) To provide required timber to Puri Shree Jagannath Temple Trust for construction of Chariots annually.



- (ii) To provide required timber to Lord Lingaraj Temple trust for construction of Rukuna Ratha as and when required.
- (iii) To maintain and improve the available growing stock with a view to ensure sustained supply of timber for car festival annually.
- (iv) To induce conditions that would promote regeneration of principal species specially for Asan, Dhaura and Sal in these Forests.
- (v) To ensure conditions that would encourage bio-diversity, soil and moisture conservation, with canopy closure.
- (vi) To restock barren areas through artificial regeneration with desirable indigenous species like Asan, Dhaura and Simili.
- (vii) To increase heterogeneity in the forest crop by encouraging natural regeneration of principal species and to encourage ecological stability.

29.12.2 Silvicultural system:

The silvicultural system adopted is "Selection System". The improvement of crop is covered under Selection Working Circle, Rehabilitation and Plantation Working circles.

2.12.3 Rotation period:

Rotation period for various species has been discussed at Para 14.6.3 of this plan. The same is applicable to this working circle. For Asan, Dhaura and Phasi is fixed at 120 years. As the requirement of timber is considered from its girth only, the species can only be considered for removal when attain the requisite girth only. For Lord Lingaraj Temple species required are Sal, Simili, Mai and Kumbhi.

2.12.4 Harvestable diameters:

The Girth of various species required are the Girth of various species required as mentioned in the Chariot construction Manual. The girth mentioned is the mid girth of the timber i.e. about 2-3 meters above the ground. For Phasi which is required for Wheel's component (Pahi and Tumba) is above 180cm

The harvesting of desired species per annum is of fixed quantity. No deviation is accepted. Hence it is proposed to harvest the required timber from the assigned area.

The annual removed tree is to be recorded and the harvested trees are required to be adjusted against the designated coupe under Selection Working Circle.



29.12.5 Regeneration:

The availability of Car timber is in a declined stage. It is becoming difficult year after year to full fill the obligation of supplying the required quality & quantity of Car Timber. A continuous and long term steps are required to be taken. The following measures are suggested to regenerate the designated area with required species. The steps are

- In case of SWC area, the blank areas may be regenerated through seed showing. Species like Asan, Dhaura, Phasi can be easily grown in thalies in month of May every year in the previous year coupes.. At least 200 thalies may be developed every year in each coupe.
- In case of RWC area Gap planting is being practiced. Planting @ 200 plants per ha has been provided in the Cost norm of ANR. It is suggested to include 20% of plants those are required for Car timber purpose.
- The available seedlings of desired species, if available in the field, necessary silvicultural attention like Soil working, Fertilizing the plan may be taken up on priority.

29.13 Water Resource Management & Climate Change:

29.13.1 The Present Practices:

The present practices for water resources management involves protection of catchment area of major rivers, Reservoirs and origin of springs. SMC Measures has been prescribed in SWC, RWC, PIWC and Protection WC.

29.13.2 Management Unit:

For management purposes each range will be taken as a unit. All forest blocks coming within the range jurisdiction will be the specific site for interventions.

The Nayagarh district mainly drains to River Mahanadi and a small portion to River Rushikullya. The Section sub unit of management for water resource is the water shed. The method of treatment is mainly focused on

- a) Intensive Soil & Moisture Conservation.
- b) Judicious use of Ground Water
- c) Creation of Inland water body
- d) Rain water harvesting
- e) Awareness program on “Importance of Water & its management”



29.13.3 Mitigation:

Limiting climate change – consists of reducing greenhouse gas emissions and removing them from the atmosphere. Methods to achieve this include

- a) The development and deployment of low-carbon energy sources such as wind and solar,
- b) A phase-out of coal, enhanced energy efficiency, and forest preservation.

29.14 Reduce Emissions from Deforestation and forest Degradation (REDD+)

REDD+ stands for countries' efforts to “Reduce Emissions from Deforestation and forest Degradation”, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks. Deforestation and forest degradation are the second leading cause of global warming, responsible for about 15% of global greenhouse gas emissions, which makes the loss and depletion of forests a major issue for climate change

29.14.1 Suggestive measures on Forestry Sector.

In forestry sector to combat climate change the following activities are suggested.

- a) To reduce felling of trees in all sphere and enhance creation of renewable energy.
- b) To reduce dependency on fossil fuel including that of firewood.
- c) To enhance use of solar energy / wind energy where ever possible.
- d) To motivate people to reduce consumerism & reduce generation of solid waste.
- e) Conserve water body and enhance efficient use of water.

29.15.Application of Modern Technology

A number of popular technologies are currently being used in the field, but Geographic Information Systems (GIS) and Global Positioning System (GPS) rank at the top. LIDAR technology (Light Detection and Ranging) is also beneficial for modern foresters, which collects tree measurements and detailed imaging. While traditional prisms are still valuable tools, LIDAR helps to measure canopy heights and volume, basal areas and habitat mapping.

Drones are also proving to be increasingly valuable to foresters. While drones are still considered to be a hobbyist toy by many, forestry professionals use them to help with forest management planning, detecting disease and managing forest fires.

29.15.1 Suggestions:

With advancement of technology it is proposed to have the following facilities available with Jeypore Division for better management.



- a. Identified Plus trees within the Division and maintaining a Clonal Orchard.
- b. To have improved Mega Hi-tech Nursery with clonally propagation facilities with mist chamber, Sprinkler System at Naktidangar Central Nursery.
- c. Root trainer facilities and capacity to meet requirement of Quality Planting Materials (QPM) for the division instead of depending upon temporary nursery.
- d. All forest blocks / plantations to be surveyed with DGPS and mapping thereof, which is in progress.
- e. Establishment of GIS Cell with available Satellite imagery for monitoring purpose at Divisional and Range level.
- f. Modern logging tools to meet emergency.
- g. Drone camera facilities to watch forest fire, wildlife movement and winter bird's congregation & problems.
- h. Use of Tranquilizing guns and drug and other rescue equipments for dealing with problematic Wild animals.
- i. Use of Red Dot Sight and Laser Range Finder.
- j. Night vision Binocular.
- k. Trap- Cameras, Mega phone with Siren, Public Portable Address Sound system.
- l. Use of VHF fixed set and Hand held set for communication.
- m. Improvement and enhancement of VHF network is suggested.

29.16 Miscellaneous Regulation

The following issues are highlighted for taking followup action for a better management. These area Forest Consolidation, Forest Boundary Maintenance, Management of Reserved Land (RL), Fire Protection, Protection against Grazing, Harvesting & Disposal Mechanism for Sandalwood, Identification of Plus Trees, Demarcation of VSS assigned area, Preparation of map and signing of MoU.

These are some of the aspects need attention during implementation of Working Plan Prescription.

**CHAPTER-30****GENERAL****30.1 General financial forecast and financial plan of operation:**

Considering the prescriptions in various working circles, the activities involve & its quantum of operation with financial forecast at the present price level is furnished at Table no 29.1

Table No 29.1: General financial forecast				
Sl No	Name of Working Circle	Suggested area of operation. In Ha	Per unit Cost norm in Lakh Rs	Total amount in Lakh Rs
1	SWC	28557.8841		
a	Coupe Marking	60 coupe	25000	15.00
b	Thinning	28557.8841	Rs0.05	1427.89
c	SSO in Coupe	28557.8841	Rs0.05	1427.89
d	Fires Protection, Grazing	28557.8841	Rs0.20	5711.58
2	Rehabilitation WC	70241.8414		
a	RDF activities		@Rs0.65	45657.2
b	Treatment to natural seed origin seedlings		@Rs0.1	7024.184
c	Fires Protection, Grazing		0.20	14048.37
3	Protection WC	3278.00		
a	Training of nalla & SMC		@Rs 0.03	98.34
b	Fire Protection Measures		@Rs0.01	32.78
c	Control of Grazing		@Rs0.003	9.834
d	Motivation, Fencing & Other activities		LS	500.0
4	Plantation WC	3683.475		
a	Replanting of VWL(VF)	579.45	@Rs3.00	1738.35
	Thinning	3055.24	@0.10	305.52
	Eviction & Plantation	48.785	@3.50	170.75
5	Bamboo (O) WC	57071.9406		
a	Simultaneous Silvicultural Operation. (SSO)	2.5x57071.9406	@15 MD per ha	6656.02



			Wage rate Rs311 per MD	
b	Broad casting of Bamboo seeds (112 Section)	112*2*5=1120 qt	@Rs0.05 per Qt	56.00
c	Bamboo Plantation	2854	@1.00	2854.00
7	NTFP(O) WC	103766.5105		
a	In situ conservation	Training to Primary collectors etc	LS	50.00
b	Ex- situ conservation	100 ha Planting	@2.00 lakh per ha	200.00
c	Demonstration Plot		LS	40.00
8	Wildlife (O) WC	103766.5105		
a	Creation of Water body	100 nos	@6.00 Lakh	600.00
b	Maintenance of Creaks	10 no	@10.00 lakh	100.00
c	Wetland Management	2 no	@15.00 Lakh	30.00
d	Grass Land Development.	100 ha	@50,000/-	50.00
e	Public Awareness	50 camps	@35000/-	17.50
9	JFM (O) WC	336 VSS		
a	Training of VSS members		LS	50.00
b	Audit of VSS Account & Documentation.		LS	50.00
c	NAP	1000 ha	@Rs3.00 Lakh	3000.0
10	Miscellaneous WC	8 site (120.00 ha)		
a	Places of Worship	Overall development	LS	100.00
b	Central Nursery	Infrastructure Improvement	LS	200.00
c	Recreational value / Eco tourism		LS	150.00
11	TOF WC			
a	Silvicultural Thinning	2015	@0.25 per ha	503.75
b	Avenue Plantation	1042.9	@0.1 per RKM	104.29
c	Monitoring of Farm Forestry		LS	50.00
12	Car Timber (O) WC			
a	Annual Tree marking / Felling and Transportation			150.00



b	Regeneration			200.00
13	REDD+			
a	Reduce dependency on fossil fuel including that of firewood		LS	100.00
b	Use of solar Energy		LS	100.00
c	Public awareness		LS	50.00
14	Application of Modern Technology			
a	Plus Tree / Clone Orchard		LS	100.00
b	High tech Nursery		LS	150.00
c	GIS Cell & Drone camera		LS	40.00
15	Consolidation			
a	Pillar posting & Consolidation activities		Ls	200.00
16	Water Resource Management & Climate Change		LS	1000.00
		Total		95119.25

(NB: The financial requirement to implement the plan prescription is 951.19 crore at the present price level on an holistic approach. Basing on Wage escalation, the cost of implementation will be hiked by minimum 20% of the estimated cost.)

30.2 Source of Funding:

The division receives funds from State Plan, Central Plan, CAMPA Fund, National Afforestation Program, MANREGA, district Planning untie Funds. The level of present resource allocation is to a tune of Rs 15.0 Crores to 18.00 Crores. Govt. is putting more thrust in plantations and rehabilitation of degraded forests. Resources to a tune of Rs 95.00 crores to 98.00 crores annually may be a constrain. More fund flow from NREGS, FDA, CAMPA are the source of possibility. Hence it is expected to implement the plan prescription in totality and no financial constrain will be faced.



30.3 Miscellaneous:

Besides the Working Plan Prescription various miscellaneous regulation in form Acts/ Rules / administrative directives are framed and being implemented by the Forest Department. These are

- 1) Forest (Conservation) Act,1980;
- 2) Ban on use of Polythene in State / Country.
- 3) Forest Rights Act,2005, etc.

These rules / guidelines are to be followed for better management of Forest & Environment.

30.4 Petty felling and Extraction:

Petty Felling and extraction for research and training needs may be allowed by Divisional Forest Officer on academic interest. It is necessary to emphasize the fact that experimental, preservation and sample plot, seed stand and their demarcated surrounds, etc. are excluded from all operations prescribed in the working plan. Special grants in exceptional circumstances for maintenance of these may be allowed, which do not cause much deviation.

30.5 Rights and Concessions:

At present Rights & Concessions those are allowed are

- i) Right of Way on Forest Blocks,
- ii) Collection of Non Timber Forest Produce as admissible in JFM Resolution-2011
- iii) Rights on Forest land either individual or Community to be allowed as per provisions of Forest Rights Act,2005 / Rules,2006

No other rights & concessions are allowed at this stage.

30.6 Other research and Bio Diversity study.

It is proposed to have a detail Biodiversity Study in Forest blocks of Daspalla Range & Mahipur. Peoples Bio Diversity Register may be prepared with the help of Bio Diversity Board of the State. A special study in *Cycas nayagarensis* may be taken up with help of Reserch Scholar.



Research on regeneration study including status of regeneration of important species, conditions necessary to facilitate regeneration, etc would be conducted by laying research plots in different forest blocks.

30.7 CONTROL FORMS

CONTRL FORMS

WORKING CIRCLE: Selection Working Circle

Felling Control Form

TABLE - FELLING CONTROL FORM									
Working Circle Forest Block		Felling Series Cutting Section		Localities prescribed / Localities suggested				COUPE CONTRL FORM	
								Coupe No.	Page
Block & Comptt.	Area	Species	Diameter Class	Trees marked	Unit factor	Volume marked	Trees retained	% Trees retained	Remarks
1	2	3	4	5	6	7	8	9	10



CONTROL FORM BAMBOO (OL) WORKING CIRCLE

CONTRL FORM NO.

WORKING CIRCLE: Bamboo (OL) Working Circle

Felling Control Form

a. Coupe Control Form (Basically for Bamboo Overlapping Working Circle).

TABLE - COUPE CONTROL FORM									
Working Circle Forest Block		Felling Series Cutting Section		Localities prescribed / Localities suggested				COUPE CONTRL FORM	
								Coupe No.	Page
Prescription in brief	W.P. para	Year due	As carried out				Excess (+) or Deficit (-)		Remarks & Sanction
			Year	Block/ Comptt.	Area	Quantity	Area	Quantity	
1	2	3	4	5	6	7	8	9	10

b. Felling Control Form

TABLE - FELLING CONTROL FORM									
Working Circle Forest Block		Felling Series Cutting Section		Localities prescribed / Localities suggested				COUPE CONTRL FORM	
								Coupe No.	Page
Block &Comptt.	Area	Species	Diameter Class	Trees marked	Unit factor	Volume marked	Trees retained	% Trees retained	Remarks
1	2	3	4	5	6	7	8	9	10



CONTROL FORM REHABILITATION WORKING CIRCLE

CONTRL FORM NO.

REHABILITATION CONTROL

WORKING CIRCLE:

Rehabilitation Series

..... Rehabilitation Series

TABLE - FORM OF ANNUAL COUPES UNDER REHABILITATION SERIES								
Year of Treatment	Area prescribed					Achievement (in Ha.)		
	Coupe No.	Forest Block details				Area	Running Excess/ Deficit	Remarks
1	2	3	4	5	6	7	8	9
2021-22	I							
2022-23	II							
2023-24	III							
2024-25	IV							
2025-26	V							
2026-27	VI							
2027-28	VII							
2028-29	VIII							
2029-30	IX							
2030-31	X							



PLANTATION WORKING CIRCLE

CONTROL FORM NO.

CONTROL OF TENDING OPERATIONS

WORKING CIRCLE: Plantation

Plantation Series:

TABLE - FORM OF ANNUAL COUPES UNDER PLANTATION SERIES							
Prescription							
Year	Coupe No.	Forest Block	Status	Compt.	Area in Ha.	Years in which actually done	Remarks
1	2	3	4	5	6	7	8
2021-22	I						
2022-23	II						
2023-24	III						
2024-25	IV						
2025-26	V						
2026-27	VI						
2027-28	VII						
2028-29	VIII						
2029-30	IX						
2030-31	X						



PROTECTION WORKING CIRCLE

CONTRL FORM NO.

PROTECTION WORKING CIRCLE

WORKING CIRCLE: Protection

Protection Series:

TABLE- FORM OF ANNUAL COUPES UNDER PROTECTION SERIES								
Year of Treatment	Area prescribed					Achieve-ment area (in Ha.)	Running Excess/ Deficit	Remarks
	Coupe No.	Forest Block	Status (RF/PRF/ DPF)	Compt.	Area in Ha.			
1	2	3	4	5	6	7	8	9
2021-22	I							
2022-23	II							
2023-24	III							
2024-25	IV							
2025-26	V							
2026-27	VI							
2027-28	VII							
2028-29	VIII							
2029-30	IX							
2030-31	X							



BAMBOO (OVERLAPPING) WORKING CIRCLE

CONTROL FORM NO.

WORKING CIRCLE: Bamboo (Overlapping)

Cutting Series...

Nature of Felling: Culm selection cum Clump improvement

Coupes to be marked annually:

TABLE - FORM OF ANNUAL COUPES UNDER BAMBOO SERIES					
Summary of Units Marked					
Year of Working	Annual Coupe	Units Marked (SU)	Excess or Deficit	Running Excess or Deficit	Remarks
1	2	3	4	5	6
2021-22	D				
2022-23	A				
2023-24	B				
2024-25	C				
2025-26	D				
2026-27	A				
2027-28	B				
2028-29	C				
2029-30	D				
2030-31	A				



NTFP (OVERLAPPING) WORKING CIRCLE

CONTROL FORM NO.

WORKING CIRCLE: NTFP (Overlapping)

TABLE - FORM OF YEARWISE ACTIVITIES UNDER NTFP SERIES								
Year of treatment	NTFP Plantation (in Ha)					Other activities done		Remarks
	Blocks	Species	Species	Species	Total	Location	Type of work	
1	2	3	4	5	6	7	8	9
2021-22								
2022-23								
2023-24								
2024-25								
2025-26								
2026-27								
2027-28								
2028-29								
2029-30								
2030-31								



CAR TIMBER (OL) WORKING CIRCLE

CONTRL FORM NO.

WORKING CIRCLE: Car Timber (overlapping)

TABLE - FORM OF YEARWISE ACTIVITIES UNDER WILDLIFE SERIES			
Year of Treatment	Activities Done		
	Forest Block	Qty of timber harvested	Remarks
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			



WILD LIFE (OVERLAPPING) WORKING CIRCLE

CONTRL FORM NO.

WORKING CIRCLE: Wildlife (Overlapping)

TABLE - FORM OF YEARWISE ACTIVITIES UNDER WILDLIFE SERIES			
Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			



JOINT FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE

CONTRL FORM NO.

WORKING CIRCLE: Joint Forest Management (Overlapping)

TABLE - FORM OF YEARWISE ACTIVITIES UNDER JFM SERIE			
Year	Activities Done		
	No. of VSS	Micro plans Done	Remarks (activities done etc.)
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			



MISCELLANEOUS REGULATIONS

CONTROL FORM NO.

MISCELLANEOUS CONTROL

Miscellaneous Regulations

Forest Consolidation

TABLE - YEARWISE ACTIVITIES UNDER FOREST CONSOLIDATION

Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			



Miscellaneous Regulations Area discrepancy & reconciliation

TABLE - YEARWISE ACTIVITIES UNDER AREA DISCREPANCY & RECONCILIATION			
Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			

Miscellaneous Regulations System of Sale & Disposal

TABLE- YEARWISE ACTIVITIES UNDER SYSTEM OF SALE & DISPOSAL			
Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2021-22			
2022-23			



2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			

Miscellaneous Regulations

Irregular Exploitation

TABLE- YEARWISE ACTIVITIES UNDER IRREGULAR EXPLOITATION			
Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			



Miscellaneous Regulations Maintenance of Block Boundary

YEARWISE ACTIVITIES UNDER MAINTENANCE OF BLOCK BOUNDARY			
Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			

Miscellaneous Regulations Forest Fire Management

YEARWISE ACTIVITIES UNDER FOREST FIRE MANAGEMENT			
Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			



2028-29			
2029-30			
2030-31			

Miscellaneous Regulations Grazing & Fodder Management

TABLE- YEARWISE ACTIVITIES UNDER GRAZING & FODDER MANAGEMENT			
Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			

Miscellaneous Regulations Maintenance of Records

TABLE - YEARWISE ACTIVITIES UNDER MAINTENANCE OF RECORDS		
Year of activity	Activities Done	
	Types of records maintained	Remarks
1	2	3
2021-22		
2022-23		
2023-24		



2024-25		
2025-26		
2026-27		
2027-28		
2028-29		
2029-30		
2030-31		

Miscellaneous Regulations Development of Forest Roads

TABLE - YEARWISE ACTIVITIES UNDER DEVELOPMENT OF FOREST ROADS			
Year of Work	Road Details		
	Name	Length Done (in Km.)	Remarks (works etc.)
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			



Miscellaneous Regulations Development of Buildings/Wells

TABLE - YEARWISE ACTIVITIES UNDER DEVELOPMENT OF BUILDINGS/WELLS			
Year of Work	Building / Well Details		
	Name	Work Done	Remarks
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			

Miscellaneous Regulations

Encroachment

TABLE - YEARWISE ACTIVITIES UNDER ENCROACHMENT			
Year	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			



2028-29			
2029-30			
2030-31			

Miscellaneous Regulations

Titles issued under FRA

TABLE - YEARWISE ACTIVITIES UNDER TITLES ISSUED UNDER FRA			
Year	Activities Done		
	Location	Status of the forest block	Area in Ha.
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			

Miscellaneous Regulations

Illicit Felling & Prosecution

TABLE - YEARWISE ACTIVITIES UNDER ILLICIT FELLING & PROSECUTION			
Year	Activities Done		
	Action Taken	Results	Remarks
1	2	3	4
2021-22			
2022-23			



2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			

Miscellaneous Regulations Communication system & Mobility

TABLE - YEARWISE ACTIVITIES UNDER COMMUNICATION SYSTEM & MOBILITY			
Year	Systems Developed		
	VHFs	Vehicles	Remarks
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			



Miscellaneous Regulations Human Resources Development

TABLE - YEARWISE ACTIVITIES UNDER HUMAN RESOURCES DEVELOPMENT			
Year	Actions Taken		
	Trainings	Other Activities	Remarks
1	2	3	4
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			



TREE OUTSIDE FOREST (ToF) WORKING CIRCLE

CONTROL FORM NO.

WORKING CIRCLE: Tree outside Forest (ToF)

Year	Area in Ha.	Type of plantation done	Remarks
1	6	7	8
2021-22			
2022-23			
2023-24			
2024-25			
2025-26			
2026-27			
2027-28			
2028-29			
2029-30			
2030-31			





ANNEXURES

OF REVISED WORKING PLAN OF NAYAGARH DIVISION FOR THE YEAR 2021-22 TO 2030-31

Sl No	Details of annexure	Annexure No	Page No
1	The detail of Buildings	I	791-795
2	The details of Forest Rest Houses	II	796
3	The range wise forest roads	III	797 - 798
4	The sample Point enumeration information	IV	799 - 1017
5	Mahanadi Elephant Reserve notification	V	1018-1025
6	Satkoshia Tiger Reserve Notification	VI	1026-1031
7	The winter birds Census for the year 2020	VII	1032-1034
8	The ban order of CPCB (Central Pollution Control Board)	VIII	1035-1040
9	The General sale value of Timber as per OFDC Ltd	IX	1041-1044
10	The NTFP Policy Report	X	1045-1046
11	JFM Resolution 2011	XI	1047-1067
12	JFM Resolution 2015 and 2019	XIA & XIB	1068,1069
13	The Divisional Forest Officers and their period on incumbency	XII	1071-1072
14	Letter no 3628/ 11F (SFM)-15 / 2018 dated 26.02.2019.	XIII	1073-1078
15	The area allotted to different Working circle	XIV	1079-1089
16	The Divisional Area Statement	XV	1090-1099
17	The Stock maps of the representative Blocks assigned to SWC	XVI	1100-1102
18	<i>Orissa Grama Panchayats (Minor Forest Produce Administration) Rules, 2002</i>	XVIII	1103-1112

Annexure-I

List of Buildings of Nayagarh Division
(as on 31.03.2020)

List of Building of Nayagarh Division			
Sl. No.	Name & location of Building	Plinth Area in sqft/ Sqm	Year of Construction
Nayagarh Range			
1	Division office Building	5789	1958-59
2	Nayagarh Range Office	N.A	
3	DFO Residence at Ratnpur Road	5949	1931
4	Driver Qtr at Ratnpur Road	800	1952-53
5	Driver Qtr at Ratnpur Road	1000	
6	Clerk Qtr at Ratnpur Road	1000	1952-53
7	Clerk Qtr at Ratnpur Road	1000	1977-78
8	Clerk Qtr at Ratnpur Road	1000	1977-78
9	Clerk Qtr at Ratnpur Road	1000	1953-54
10	Steno Qtr at Trinath Chakka	1672	1938-39
11	Accountant Qtr at Trinath Chakka	1550	1938-39
12	Head Clerk Qtr at Trinath Chakka	1000	1938-39
13	Clerk Qtr Duplex Building at Trinath Chakka	1370	2014-15
14	Fr Qtr at Trinath Chakka	1000	
15	UD Clerk Qtr at Trinath Chakka	1740	1964-65
16	ACF Qtr at college Road	1740	1977-78
17	LIC Clerk Qtr at college Road	1740	1960-61
18	LIC Clerk Qtr at college Road	1740	1960-61
19	CNG Qtr 3 Nos at Check Gate	1302	1955-56
20	FR Qtr	900	1934-35
21	Ara Beat House	700	1961-62
22	Khadagprasad Beat House	500	1962-63
23	Koska Beat House	1500	1942-43
24	Jogiapalli Beat House	2000	1931-32
25	Chahali Beat House	2000	1956-57
26	Gochhabari Beat House	600	2010-11

Mahipur Range			
27	Range Office Building, Mahipur	1123	2014
28	Mahipur Forester Qtr , Mahipur	690	2015
29	F.G Qtr Mahipur	500	2009
30	R.O Residence Mahipur	950	2019
31	FG Qtr Banuasahi	500	2014
32	FG Qtr Sampada	500	2007
33	FG Qtr Gateri	1370	2007
34	Section Office –cum-Residence Mahitama	1370	old
35	Seizureyard Mahitama Office Campus	500	2014
36	FG Qtr Jiginipada	500	2015
37	FG Qtr Nuagaon	478	2009
38	FG Qtr Korada	630	2009
39	FG Qtr Krushnaprasad	500	2018
40	FG Qtr Khamamada	530	old
41	FG Qtr Kosalanga	480	old
42	FRH Barakola	1621	old
43	FG Qtr Gumi inside FRH Campus	500	2014
44	FG Qtr Dimiria inside FRH Campus	500	2020
45	FG Qtr Senteri inside FRH Campus	500	2020
46	FG Qtr Kaptapalli	366	old
47	Forester Qtr Gumi	680	old
Dasapalla Range			
48	New Forest Range Office, Jagapur Road	1190	2013
49	FRO Residence, Jagapur Road	1370	NA
50	Barrak at Medical Sqaure	730	2013
51	Daspalla Forester Quarter at Trinath Bazar.	740	NA
52	Daspalla Beat Quarter at Medical Squire near Barrak site	475	2014
53	Puruna Daspalla Beat Quarter at In front of Daspalla High School. Old Range Office Campus	585	2020
54	Godibida Beat Quarter at Godibida	609	2007
55	Pankua Beat Quarter	600	NA
56	Sakini Beat Quarter at Sakini	884	NA
57	Sakini Forester Quarter at Pankua	525	2008

58	Pokharigochha Forester Quarter at Pokharigochha	960	2015
59	Pokharigochha Beat Quarter at Pokharigochha	560	2014
60	Chadeyapalli Forester Quarter at Hanumanta	640	2014
61	Chadeyapalli Beat Quarter at Hanumanta	660	NA
62	Nuagaon Beat Quarter at Nuagaon	420	NA
63	Takara Forester Quarter at Takara		NA
64	Takara Beat Quarter at Takara	572	NA
65	Tilabadi Beat Quarter at Mitukuli	572	2014-15
66	Kurubari Beat Quarter at Sanakurubari	567	2015-16
67	Banigochha Forester quarter at Banigochha	893	NA
68	Banigochha Beat quarter at Banigochha	494	2014
69	Kujamendhi Beat quarter at Bandhakhaman	494	NA
70	Permanent Nursery shed at Kuanria	445	2015
71	Seizureyard	780	2012
72	Malkhana	925	2012
Gania Range			
73	Range office building		2013-14
74	R.O's Residence	900	-
75	Fr, quarter, Gania	690	2017-18
76	Fr, quarter, Gania	650	NA
77	FRH	1020	NA
78	FG, quarter, Gania	500	NA
79	Rest shed, Gania (old)	380	NA
80	Barrack	860	NA
81	FG. quarter Langalakanta	500	NA
82	FG. quarter, Dankarisahi	500	2014-15
83	FG. quarter Adakata	470	
84	Fr, quarter Madhyakhanda	690	2013-14
85	FG. quarter, Nachhiur	500	
86	FG. Quarter Ghugudipada	500	2013-14
87	Nursery shed, Adakata	500	2014-15
Khandapara Range			

88	Range Office, Khandapada		Reconstructed during 2014
89	RO residence, Khandapada		2014
90	Khandapada Section Office H/q, Khandapada	690	1955-56
91	Singhapada Section Office H/q, Singhapada	690	1933-34
92	Kantilo Section Office H/q, Banapur	690	2014-15
93	Bhapur Section Office H/q, Bhapur	690	1934
94	Khandapada Beat H/q, Khandapada	527	
95	Khalisahi Beat H/q, Khalisahi	527	2014-15
96	Barapalli Beat H/q, Barapalli	527	1931-32
97	Nuapalli Beat H/q. Nuapalli	527	2014-15
98	Anlapata Beat H/q, Analapata	527	NA
99	Nahakahata Beat H/q.	527	NA
100	Akurabandh Beat H/q, Akurabandh	527	2012-13
101	Banapur Beat H/q, Banapur		NA
102	Kumbharpada Beat H/q, Kumbharpada(GCI sheet roof in damage condition)		1930-31
103	Rakesia Beat H/q.		NA
104	Baigunia Beat H/q, Baigunia	527	2012-13
105	Gohiriapada Beat H/q, Gohiriapada	527	2013-14
106	Marada Beat H/q, Marada	527	2016-17
107	Fategarh Beat H/q, Fategarh	527	2016-17
108	Social Forestry Range Office Building, Khandapada (AC sheet roof in damage condition)		Not Available
109	VFW Qtr. at Bhapur Section H/q, Bhapur	527	Not Available
110	Permanent Nursery Shed, Durgapur		2012-13
111	Eco-tourism Project, Sidhamula		2011-12
112	VHF Center, Khandapada		1992-93
113	VHF Center, Bhapur		1993-94
114	Food distribution center,		1994-95
Odagaon Range			
115	Forest Range Office	1123	2010-11
116	Forest Guard Qtr, Naukhala	500	2009-10

117	Forest Guard Qtr, Balisinsa	500	2009-10
118	Forest Guard Qtr, Banthapur	500	2010-11
119	Forest Guard Qtr, Phasipalli	500	2011-12
120	Forest Barrack Odagaon	500	2012-13
121	Forest Guard Qtr, Sakeri	500	2012-13
122	Common toilet & Bathroom, Odagaon	220	2012-13
123	Forest Guard Qtr, Chemedi	500	2013-14
124	Forest Guard Qtr, Bahadajhola	500	2015-16
125	Residence of Forest Range Officer	900	2015-16
126	Forest Guard Qtr, Dholamaska	500	2016-17
127	Forest Guard Qtr, Odagaon	500	2017-18
128	Forest Rest shed	1080	NA
129	Forester Qtr, Odagaon	1536	old
130	Forester Qtr, Bahadajhola	1000	old
Panchirida Range			
131	Forest Guard Qtr, B iruda	500	2016-17
132	Residence of Forest Range Officer	900	2014-15
133	Forest Guard Qtr, Biruda	500	2014-15
134	Forest Guard Qtr, Tulubi	500	2013-14
135	Staff Barrack, Malisahi	650	2013-14
136	Seizure Yard, Sarankul	1092	2012-13
137	Seizure Yard, Sarankul	350	2009-10
138	Forest Range Office, Sarankul	1475	2012-13
139	Forester Qtr, Sarankul	810	2012-13
140	Staff Barrack, Sarankul	650	20010-11
141	Forest Guard Qtr, Darpanarayanpur	670	20010-11
142	Forest Guard Qtr, Sarankul	635	2008-09
143	Forester Qtr, Darpanarayanpur	1452	1930-31
144	Forest Guard Qtr, Gaudaput	500	1965-66
145	Forest Guard Qtr, Godipada	500	1930-31
	Total 145 Building		

Annexure-II

Forest Rest Houses of Nayagarh Forest Division

SI No	Name of FRH	Location	No of Suits available.	Latitude	Longitude
1	Barakola FRH	Barakhola , Mahipur Range		20° 09' 52.14" N	84° 51' 11.49"E
2	Naukhala Forest Rest Shed	Naukhala, Odapada Range		19° 57' 30.3"N	84° 5'45.82"E

Annexure-III

Forest Roads of Nayagarh Division										
Sl. No	Name of The Range	Name of the Forest Road	From	To	Surface road in Km			Un surfaced road in Kms		Total Length in Km
					WBM	Black top	Cement. Concert	Motor able	Non Motor able	
1	2	3	4	5	6	7	8	9	10	12
1	Panchirida	Angisingi - Gochha	Angosingi	Gochha	7	7.4	0	0	0	14.4
2	Panchirida	Gochha - Simili - Dhuanali	Gochha	Dhuanali	10	0	0	0	2	12.0
3	Odagaon	Rohibanka - Chemedi	Rohibanka	Chemedi	7.9	13.5	0	0	0	21.4
4	Khandapada	Singhapada - Angisingi	Singhapada	Angisingi	9.6	4.8	0	0	0	14.4
5	Khandapada	Khandapada - Kaudia	Khandapada	Kaudia	8	0	0	0	0	8
6	Khandapada	Khalisahi - Nuapalli	Khalisahi	Nuapalli	6.5	2.5	0	0	0	9
7	Nayagarh	Andharakani - Kaudia	Bicharapath ara	Kaudia	30	0	0	0	0	30
8	Nayagarh	Gochhabari - Sampada	Gochhabari	Rajan, Badruma, BhuinaniThak urani	9	3	0	0	0	12
9	Nayagarh	Belbabani - Badruma- Bajrakot	Belabani	Badruma, Bajrakot	4	0	0	0	4.8	8.8
10	Gania	Takera - Badasilinga	Chilipathara nala	Sanasilinga	9.2	0	0.3	0	0	9.5

11	Daspalla	Khamana - Kanapaju	Khamana	kanapaju	6.233	0	0.367	0	0	6.6
12	Daspalla	Takera - Birigada	Takera	Birigada	5.926	0	0.074	0	0	6
13	Daspalla	Takera - Badasilinga - Sanasilinga	Takera	Sanasilinga	2.45	0	0.25	0	0	2.7
14	Daspalla	Banigochha - Chadeyapalli	Banigochha	Chadeyapalli	7.9	2.5	0.5	0	3.5	14.4
15	Daspalla	Banigochha - Gandapaju	Banigochha	Gandapaju	0	1.45	0.15	0	0	1.6
16	Daspalla	Badalsahi - Chancherapalli	Badalasahi	Chancherapa lli	3.7	10	0.7	0	0	14.4
17	Mahipur	Gateri - Barakola	Gateri	Barakola	18	0	0	0	0	18
18	Mahipur	Lingribari - Bajrakot	Lingribari	Bajrakot	6.4	0	0	0	0	6.4
19	Mahipur	Jakeda - Lunisara	Jakeda	Lunisara	0	0	0	0	12.8	12.8
				Total:	151.809	45.150	2.341	0.000	23.100	222.400

Sample Point Enumeration

12/30/2020

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Daspalla	Section :	Banigochha
Beat :	Kankanmendhi	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Papadahandi
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	868324020463274
Data Capture Time :		Data Insert Time :	03-07-2017 09:23:09
Data Update Time :	24-09-2019 17:11:01		

Working Plan Base Information

Unique Id :	NY1	Division :	NAYAGARH
Latitude :	20.4007540	Longitude :	84.5235308

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint

Latitude :	20.4005952	Longitude :	84.5235087
Altitude :	555.000	Accuracy Horizontal :	14.00
Accuracy Vertical :	0.00	Time :	02-07-2017 17:48:11

General Information

Data Collection Date & Time :	02-07-2017 17:48:11	Forest Canopy Status :	0-10%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	75.00
Remarks :			

Plot Approach Information

Range :	Daspalla	Block and/or beat:	Kankanamendhi, Ambalimba RF
Compartment :	C-1	Grid:	F45S11

Latitude :	20.4005952	Longitude :	84.5235087
Journey/approach to the plot :	To reached the Ny-1, I started my journey from my beat by motorcycle 10km and 0.6km on foot then reached the navigate point	Ocular stock assessment:	moderate dense Forest

12/30/2020

Database Error

General observational information :	I navigate the grid points of PDA REACHED THE EXACT POINT NY-1, Which is Eastern aspect of Ambalimba RF The Slope of the area is near about is 75 western with a little soil erosion there is no water resource of the point . The crop density is 0.6% The principal species is Asan	Conspicuous features:	On the way to the point faced moderate dense forest
Removal of fuel wood and fodder :	Nil		

Plot Description Information

Range :	Daspalla	Block and or beat:	Beat
Compartment :	C-1	Grid:	F45S11
Latitude :	20.4005952	Longitude :	84.5235087
Altitude :	555.000	Slope :	75
Aspect:	Eastern	Legal Status:	Ambalimba RF C-1
Land Use :	Moderate dense Forest	General topography:	Hilly
Rock and geology:	Forest and hilly soil	Soil data:	Texture, Depth 1.3' premibility, moderate
Soil erosion :	Mild	Crop composition:	0.6%
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Damaged by wildlife and natural calamities
Grazing incidence :	Light	Presence of bamboos:	Yes
Presence of grasses :	15%	Presence of weeds:	20%
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Moderately degraded natural calamits	Faunal sighting, if any :	Nil
Faunal traces of flagship species.:	Nil		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Shorea robusta	Sal	45.00	11.00	Sound
2	Terminalia tomentosa	Asan/Sahaj	40.00	13.00	Sound
3	Terminalia tomentosa	Asan/ Sahaja	32.00	14.00	Sound
4	Terminalia tomentosa	Asan/ Sahaja	26.00	15.00	Sound
5	Anogeissus latifolia	Dhaura	43.00	13.00	Sound
6	Diospyros melanoxylon	kendu	51.00	16.00	Sound
7	Madhuca indica	Mahula	54.00	11.00	Sound
8	Terminalia tomentosa	Asan/ Sahaja	31.00	15.00	Sound

9	Dillenia pentagyna	Rai	29.00	3.00	Unsound
10	Scheichera oleosa	Kusum	13.00	8.00	Sound
11	Buchanania lanzan	Char	35.00	10.00	Sound
12	Ougeinia oojeinensis	Bandhan/Tinsa	26.00	6.00	Sound

12/30/2020

Database Error

13	Anogeissus latifolia	Dhaura	41.00	8.00	Sound
14	Adina cordifolia	Haldu (kurum)	53.00	15.00	Sound
15	Anogeissus latifolia	Dhaura	40.00	11.00	Dead

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150
Adina Cordifolia					1	15.00								
Anogeissus Latifolia				3	10.67									
Buchanania Lanzan			1	10.00										
Dillenia Pentagyna		1	3.00											
Diospyros Melanoxylon					1	16.00								
Madhuca Indica					1	11.00								
Ougeinia Oojeinensis		1	6.00											
Scheichera Oleosa	1	8.00												
Shorea Robusta				1	11.00									
Terminalia Tomentosa		1	15.00	2	14.50									
Terminalia Tomentosa				1	13.00									

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Dasapalla	Section :	Dasapalla
Beat :		Forest Block:	Non-Forest Block
District :	Nayagarh	CD Block :	Dasapalla
Tehsil :	Dasapalla	Gram Panchayat :	Forest
Village :	Forest(Forest)	Parliament Constituency :	Kandhamal
Assembly Constituency :	Dasapalla		

Data Capture Information

Captured On :	Web	Device :	N.A
Data Capture Time :		Data Insert Time :	19-02-2019 13:28:21
Data Update Time :	27-08-2019 18:33:35		

Working Plan Base Information

Unique Id :	NY693	Division :	NAYAGARH
Latitude :	20.2921684	Longitude :	84.9075991

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint			
Latitude :	20.2921684	Longitude :	84.9075991
Altitude :	0.000	Accuracy Horizontal :	0.00
Accuracy Vertical :	0.00	Time :	19-02-2019 13:28:21

General Information			
Data Collection Date & Time :	19-02-2019 13:28:21	Forest Canopy Status :	70% and Above
Forest Undergrowth Status :	Dense	Average slope in degree-decimal :	10.00
Remarks :			

Plot Approach Information

Range :	Dasapalla	Block and/or beat:	purunadasapalla
Compartment :		Grid:	F45S15
Latitude :	20.2921684	Longitude :	84.9075991

12/29/2020

Journey/approach to the	by footpath	Ocular stock assessment:	Miscellaneous
plot :		Database Error	
General observational information :	Hills	Conspicuous features:	Presence of Terrain
Removal of fuel wood and fodder :	Nil		

Plot Description Information

Range :	Daspalla	Block and or beat:	purunadaspalla
Compartment :	Poibadi	Grid:	F45S15
Latitude :	20.2921684	Longitude :	84.9075991
Altitude :	0.000	Slope :	10
Aspect:	Northern	Legal Status:	RF
Land Use :	Dense Forest	General topography:	Hilly
Rock and geology:	Alluvilla	Soil data:	Sandy
Soil erosion :	Mild	Crop composition:	Dhaura
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Damaged by natural calamite
Grazing incidence :	Nil	Presence of bamboos:	Yes
Presence of grasses :	Nil	Presence of weeds:	Moderate
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Degradation due to Nature	Faunal sighting, if any :	Mamal
Faunal traces of flagship species.:	Nil		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Grewia tiliaefolia	Dhaman	50.00	10.00	Sound
2	Cassia fistula	Sunari	10.00	8.00	Sound
3	Bridelia retusa	Kasi	15.00	9.00	Unsound
4	Bridelia retusa	Kasi	10.00	7.00	Sound
5	Pterospermum canescens	Giringa	14.00	12.00	Unsound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Daspalla	Section :	Chadeyapali
Beat :	Chadeyapali	Forest Block:	Non-Forest Block
District :	Nayagarh	CD Block :	Dasapalla
Tehsil :	Daspalla	Gram Panchayat :	Forest
Village :	Forest(Forest)	Parliament Constituency :	Kandhamal
Assembly Constituency :	Daspalla		

Data Capture Information

Captured On :	Mobile	Device :	868474039799612
Data Capture Time :		Data Insert Time :	02-01-2019 13:20:58
Data Update Time :	16-10-2019 09:10:57		

Working Plan Base Information

Unique Id :	NY246	Division :	NAYAGARH
Latitude :	20.2360600	Longitude :	84.6567944

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.2361000	Longitude :	84.6568000
Altitude :	553.500	Accuracy Horizontal :	3.30
Accuracy Vertical :	0.00	Time :	16-12-2018 12:51:58

General Information			
Data Collection Date & Time :	16-12-2018 12:51:58	Forest Canopy Status :	70% and Above
Forest Undergrowth Status :	Dense	Average slope in degree-decimal :	30.00
Remarks :			

Plot Approach Information			
Range :	Daspalla	Block and/or beat:	Chadeyapalli RF/Chadeyapalli
Compartment :	5	Grid:	F45S12
Latitude :	20.2361000	Longitude :	84.6568000
Journey/approach to the plot :	To reach NY-246 and started my journey from my head quarter by motor cycle 2.5kms & then 5.2 kms on foot and reached there by navigate the point.	Ocular stock assessment:	Dense Forest



Odisha State Forest Department

General observational information :	I navigated the grid point of PDA and reached the exact point NY246, which is east aspect at Chadeyapalli RF, C-5. The slope of the area is near about 45 degree towards south with little soil erosion. There is no water resource exact the point. The crop density is 60%. The principal species is Sal.	Conspicuous features:	Dense Forest
Removal of fuel wood and fodder :	No		

Plot Description Information

Range :	Daspalla	Block and or beat:	Chadeyapalli RF/Chadeyapalli
Compartment :	5	Grid:	F45S12
Latitude :	20.2361000	Longitude :	84.6568000
Altitude :	553.500	Slope :	40
Aspect:	South-eastern	Legal Status:	RF
Land Use :	Very Dense Forest	General topography:	Hilly
Rock and geology:	Alluvial Soil	Soil data:	1-3'
Soil erosion :	Moderate	Crop composition:	Sal 35 %
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Lopping
Grazing incidence :	nil	Presence of bamboos:	nil
Presence of grasses :	10%	Presence of weeds:	10%
Plantation status :	nil	Water bodies:	nil



Odisha State Forest Department

Drivers of degradation:	Moderate	Faunal sighting, if any :	Wildbore , Beer
Faunal traces of flagship species.:	nil		

Tree



Odisha State Forest Department

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Shorea robusta	Sal	20.00	7.00	
2	Scheichera oleosa	Kusum	25.00	8.00	
3	Cleistanthus collinus	Karada	20.00	6.00	
4	Madhuca indica	Mahula	19.00	6.00	
5	Cleistanthus collinus	Karada	20.00	6.00	
6	Diospyros sylvatica	Kalachua	20.00	3.00	
7	Scheichera oleosa	Kusum	25.00	4.50	
8	Ixora arborea	Telkuruma/Bhuinkuruma	20.00	1.70	
9	Diospyros melanoxylon	kendu	12.00	5.00	
10	Lagerstroemia speciosa	Patuli	22.00	8.00	
11	Anogeissus latifolia	Dhaura	15.00	6.00	
12	Cleistanthus collinus	Karada	16.00	4.50	
13	Lannea coromandelica	Mai	14.00	5.70	
14	Lannea coromandelica	Mai	30.00	9.00	
15	Cleistanthus collinus	Karada	12.00	3.00	
16	Shorea robusta	Sal	14.00	5.00	
17	Diospyros montana	Halda	16.00	6.00	
18	Shorea robusta	Sal	30.00	6.50	
19	Shorea robusta	Sal	25.00	4.50	
20	Lagerstroemia speciosa	Patuli	24.00	6.50	
21	Diospyros sylvatica	Kalachua	16.66	4.00	
22	Shorea robusta	Sal	30.00	4.70	
23	Shorea robusta	Sal	22.00	6.50	
24	Anogeissus latifolia	Dhaura	16.00	5.00	
25	Shorea robusta	Sal	20.00	7.00	
26	Bridelia retusa	Kasi	20.00	4.50	
27	Shorea robusta	Sal	22.00	6.00	
28	Shorea robusta	Sal	13.00	4.00	
29	Careya arborea	Kumbhi	10.00	2.50	
30	Scheichera oleosa	Kusum	16.00	4.50	
31	Ougeinia oojeinensis	Bandhan/Tinsa	10.00	2.00	
32	Shorea robusta	Sal	22.00	7.50	
33	Lagerstroemia parviflora	Sidha	10.66	2.10	



Odisha State Forest Department

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)																														
Botanical Name	10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		100-110		110-120		120-130		130-140		140-150		>150	
Anogeissus Latifolia	2	5.50																												
Bridelia Retusa			1	4.50																										
Careya Arborea	1	2.50																												
Cleistanthus Collinus	2	3.75	2	6.00																										
Diospyros Melanoxylon	1	5.00																												
Diospyros Montana	1	6.00																												
Diospyros Sylvatica	1	4.00	1	3.00																										
Ixora Arborea			1	1.70																										
Lagerstroemia Parviflora	1	2.10																												
Lagerstroemia Speciosa			2	7.25																										
Lannea Coromandelica	1	5.70			1	9.00																								
Madhuca Indica	1	6.00																												
Ougeinia Oojeinensis	1	2.00																												
Scheichera Oleosa	1	4.50	2	6.25																										
Shorea Robusta	2	4.50	6	6.06	2	5.60																								

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs



Odisha State Forest Department

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
1	NE	Shorea robusta	Sal	9.00	4.00	155.00	Scanty
2	NW	Dalbergia latifolia	Pahadi sisoo	7.00	4.00	165.00	Moderate
3	SE	Schelichera oleosa	Kusuma	8.00	3.00	175.00	Scanty
4	SW	Terminalia tomentosa	Asana sahaja	6.00	3.00	185.00	Moderate

Herbs						
Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)	
1	NE	Shorea robusta	Sal	40.00	Scanty	
2	NW	Anogeissus latifolia	Dhaura	50.00	Moderate	
3	SE	Combretum deccandrum	Atundi	45.00	Scanty	
4	SW	Celosia cristata	Iswarjata	35.00	Moderate	

Approval Details			
Current Status :	DFO Approved	User Level :	Division

	Range	Division	Circle	State
Status	Approve	Approve	Provisional	Provisional
Approved Date	16-10-2019	18-10-2019		
Approved By	Forest Range Officer	DFO Nayagarh		



Odisha State Forest Department

Surveyor Details

Name :	Bidyadhar Rauta	Designation :	Forest Guard	Mobile :	6370407767

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Daspalla	Section :	Takera
Beat :	Baijhari	Forest Block:	Non-Forest Block
District :	Nayagarh	CD Block :	Dasapalla
Tehsil :	Daspalla	Gram Panchayat :	Forest
Village :	Forest(Forest)	Parliament Constituency :	Kandhamal
Assembly Constituency :	Daspalla		

Data Capture Information

Captured On :	GPS PDA	Device :	SxT510318020875
Data Capture Time :		Data Insert Time :	16-12-2018 16:36:57
Data Update Time :	23-03-2019 18:40:56		

Working Plan Base Information

Unique Id :	NY22	Division :	NAYAGARH
Latitude :	20.3966363	Longitude :	84.6698464

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint

Latitude :	20.3965577	Longitude :	84.6699255
Altitude :	218.700	Accuracy Horizontal :	13.00
Accuracy Vertical :	0.00	Time :	16-12-2018 14:35:37

General Information

Data Collection Date & Time :	16-12-2018 14:35:37	Forest Canopy Status :	70% and Above
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	10.00
Remarks :			

Plot Approach Information

Range :	Daspalla	Block and/or beat:	Baijhari/ Baisipalli Ext-II PRF
Compartment :	Baisipalli Ext.PRF, II	Grid:	F45S11
Latitude :	20.3965577	Longitude :	84.6699255

Journey/approach to the plot :	12 Km distance covered by Motorcycle & 500 Mtr distance covered by walking to reach the Grid Point	Ocular stock assessment:	MDF
General observational	I navigate to the point with GPS	Conspicuous features:	MDF
12/29/2020 Database Error			
information :	PDA and reached the extract point NY-22 Which is situated southern side of Baisipalli Ext-II, PRF. The slope of the place is around 4-15 Degree toward Northen with mild soil erosion . There is no water resource inside of near to the plot . The principle species is Sal and its associates . The Crop density is 0.05		
Removal of fuel wood and fodder :	Fire wood has been extracted by the local people of Durga Prasad		

Plot Description Information

Range :	Daspalla	Block and or beat:	Baijhari/ Baisipalli Ext.II, PRF
Compartment :	Baisipalli Ext.ii, PRF	Grid:	F45S11
Latitude :	20.3965577	Longitude :	84.6699255
Altitude :	218.700	Slope :	15
Aspect:	Northern	Legal Status:	PRF
Land Use :	Open Forest	General topography:	Gently Rolling
Rock and geology:	Loomy and sandy	Soil data:	Moderate
Soil erosion :	Mild	Crop composition:	8%
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Damaged by natural calamite
Grazing incidence :	Light	Presence of bamboos:	10%
Presence of grasses :	20%	Presence of weeds:	15%
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Not degraded	Faunal sighting, if any :	Nil
Faunal traces of flagship species.:	Nil		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Shorea robusta	Sal	30.00	13.00	Sound
2	Madhuca indica	Mahula	45.00	13.00	Sound
3	Shorea robusta	Sal	22.00	10.00	Sound
4	Semecarpus anacardium	Bhalia	12.00	10.00	Sound
5	Dalbergia paniculata	Barabakulia	10.00	10.00	Sound
6	Careya arborea	Kumbhi	11.00	7.00	Sound
7	Shorea robusta	Sal	40.00	10.00	Unsound
8	Buchanania lanzan	Char	15.00	10.00	Sound

9	Shorea robusta	Sal	20.00	8.00	Sound
10	Shorea robusta	Sal	20.00	8.00	Sound
11	Shorea robusta	Sal	30.00	13.00	Sound
12	Ougeinia oojeinensis	Bandhan/Tinsa	12.00	8.00	Sound

12/29/2020

Database Error

13	Cleistanthus collinus	Karada	10.00	3.00	Sound
14	Shorea robusta	Sal	45.00	15.00	Sound
15	Ougeinia oojeinensis	Bandhan/Tinsa	20.00	8.00	Sound
16	Lannea coromandelica	Mai	10.00	8.00	Sound
17	Pterocarpus marsupium	Piasal/ Bijasal	10.00	10.00	Sound
18	Shorea robusta	Sal	30.00	18.00	Sound
19	Dalbergia paniculata	Barabakulia	20.00	10.00	Sound
20	Dalbergia paniculata	Barabakulia	20.00	10.00	Sound
21	Ougeinia oojeinensis	Bandhan/Tinsa	20.00	12.00	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name		10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>
Buchanania Lanza	1	10.00														
Careya Arborea	1	7.00														
Cleistanthus Collinus	1	3.00														
Dalbergia Paniculata	1	10.00	2	10.00												
Lannea Coromandelica	1	8.00														
Madhuca Indica					1	13.00										
Ougeinia Oojeinensis	1	8.00	2	10.00												
Pterocarpus Marsupium	1	10.00														
Semecarpus Anacardium	1	10.00														
Shorea Robusta			3	9.00	3	14.67	2	12.50								

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Daspalla	Section :	Takera
Beat :	Takera	Forest Block:	Non-Forest Block
District :	Nayagarh	CD Block :	Dasapalla
Tehsil :	Daspalla	Gram Panchayat :	Forest
Village :	Forest(Forest)	Parliament Constituency :	Kandhamal
Assembly Constituency :	Daspalla		

Data Capture Information

Captured On :	GPS PDA	Device :	SxT510318020875
Data Capture Time :		Data Insert Time :	08-12-2018 18:01:33
Data Update Time :	18-03-2019 20:02:07		

Working Plan Base Information

Unique Id :	NY91	Division :	NAYAGARH
Latitude :	20.4015219	Longitude :	84.8127033

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint

Latitude :	20.4013440	Longitude :	84.8128282
Altitude :	191.800	Accuracy Horizontal :	7.40
Accuracy Vertical :	0.00	Time :	05-12-2018 14:40:34

General Information

Data Collection Date & Time :	05-12-2018 14:40:34	Forest Cannopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	20.00
Remarks :			

Plot Approach Information

Range :	Daspalla	Block and/or beat:	Takara, Central RF
Compartment :	01	Grid:	F45S15
Latitude :	20.4013440	Longitude :	84.8128282
Journey/approach to the plot :	Ton reach the plot I coveed 8 Km distance by watercycle & 2 Km by walking	Ocular stock assessment:	MDF

12/30/2020

General observational	I navigated the grid point of	Conspicuous features:	Journey to the Plot i observe a
information :	PDA and reached the exact point NY 91, which is Eastern aspect at Central RF, C-1. The slope of the area is 40 degree with little soil erosion. There is no water resource exact the point. The crop density is 0.4%. The principal species is Bamboo.	Database Error	terrain of 150mtr no such grass land approach for the plot.
Removal of fuel wood and fodder :	No fire wood collection at this point		

Plot Description Information

Range :	Daspalla	Block and or beat:	Takara/ Central RF
Compartment :	1	Grid:	F45S15
Latitude :	20.4013440	Longitude :	84.8128282
Altitude :	191.800	Slope :	40
Aspect:	Northern	Legal Status:	RF
Land Use :	Open Forest	General topography:	Hilly
Rock and geology:	Forest and Hilly	Soil data:	1' IOW PERMIBILITY
Soil erosion :	Mild	Crop composition:	Non Sal-10%
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Loppi
Grazing incidence :	Nil	Presence of bamboos:	Yes
Presence of grasses :	10%	Presence of weeds:	20%
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Nil	Faunal sighting, if any :	Monkey
Faunal traces of flagship species.:	Nil		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Diospyros sylvatica	Kalachua	20.00	7.00	Sound
2	Ficus bengalensis	Bara	18.00	8.00	Unsound
3	Hymenodictyon excellsum	Kansa	20.00	7.00	Sound
4	Ficus bengalensis	Bara	20.00	10.00	Sound
5	Anogeissus latifolia	Dhaura	25.00	8.00	Unsound
6	Semecarpus anacardium	Bhalia	15.00	7.00	Sound
7	Lannea coromandelica	Mai	30.00	8.00	Sound
8	Ficus bengalensis	Bara	20.00	7.00	Sound
9	Diospyros montana	Halda	15.00	8.00	Sound
10	Grewia tiliaefolia	Dhaman	20.00	7.00	Sound
11	Cleistanthus collinus	Karada	15.00	10.00	Sound

12	Diospyros montana	Halda	25.00	12.00	Sound
13	Pterospermum heyneanum	Giringa	30.00	8.00	Unsound

12/30/2020

Database Error

14	Ficus bengalensis	Bara	30.00	8.00	Sound
15	Bombax ceiba	Simili	25.00	9.00	Sound
16	Diospyros sylvatica	Kalachua	10.00	4.00	Sound
17	Lagerstroemia parviflora	Sidha	30.00	8.00	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150
Anogeissus Latifolia		1	8.00												
Bombax Ceiba		1	9.00												
Cleistanthus Collinus	1	10.00													
Diospyros Montana	1	8.00	1	12.00											
Diospyros Sylvatica	1	4.00	1	7.00											
Ficus Bengalensis	1	8.00	2	8.50	1	8.00									
Grewia Tiliaefolia		1	7.00												
Hymenodictyon Excellsum		1	7.00												
Lagerstroemia Parviflora				1	8.00										
Lannea Coromandelica				1	8.00										
Pterospermum Heyneanum				1	8.00										
Semecarpus Anacardium	1	7.00													

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Gania	Section :	Madhyakhanda
Beat :	Nachhipur	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Papadahandi
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	868324020460841
Data Capture Time :		Data Insert Time :	08-06-2017 15:26:09
Data Update Time :	13-03-2019 11:05:30		

Working Plan Base Information

Unique Id :	NY13	Division :	NAYAGARH
Latitude :	20.3972666	Longitude :	84.8795687

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.3972293	Longitude :	84.8795637
Altitude :	144.300	Accuracy Horizontal :	7.30
Accuracy Vertical :	0.00	Time :	08-06-2017 11:29:59

General Information			
Data Collection Date & Time :	08-06-2017 11:29:59	Forest Canopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	40.00
Remarks :			

Plot Approach Information			
Range :	Gania	Block and/or beat:	Nachhipur beat
Compartment :	Arakhataila DPF	Grid:	F45S15
Latitude :	20.3972293	Longitude :	84.8795637
Journey/approach to the plot :	I started to work the working plan exercise for the point Ny-13. Rushed to approach the point by my bike to Alapanga village . Then I follow the foot path shown by PDA. It is 2 km. towards north from Alapanga village	Ocular stock assessment:	karada,mai,dhaura,asana,halada,bhalia,mundi,ghanta,kusuma,kaluchua,anchhu
General observational information :	By following the navigation of PDA I reached at that point NY-13.it is a hilly land and mild soil erosion .The point is 45 degree slope towards northern aspect .There is no water source. The density of canopy is 10-40%.	Conspicuous features:	it is a hilly and hard rocky soil covered with siali and dantari climbers
Removal of fuel wood and fodder :	nil		

Plot Description Information			
Range :	Gania	Block and or beat:	Nachhipur beat
Compartment :	Arakhataila DPF	Grid:	F45S15



Odisha State Forest Department

Latitude :	20.3972293	Longitude :	84.8795637
Altitude :	144.300	Slope :	40
Aspect:	Northern	Legal Status:	DPF
Land Use :	moderate	General topography:	hilly
Rock and geology:	granite	Soil data:	forest and hilly
Soil erosion :	mild	Crop composition:	karada,mai,dhaura,asana,halada,bhalia,mundi,ghanta,kusuma,kaluchua,anchhu
Regeneration status :	moderate	Injury/ damage to crop,if any :	nil
Grazing incidence :	nil	Presence of bamboos:	nil
Presence of grasses :	Nil	Presence of weeds:	Nil
Plantation status :	nil	Water bodies:	nil
Drivers of degradation:	browsing fire	Faunal sighting, if any :	nil
Faunal traces of flagship species.:	nil		

Tree



Odisha State Forest Department

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Cleistanthus collinus	Karada	24.00	8.00	Unsound
2	Lannea coromandelica	Mai	43.00	12.00	Sound
3	Anogeissus latifolia	Dhaura	11.00	7.00	Sound
4	Terminalia tomentosa	Asan/ Sahaja	19.00	6.00	Unsound
5	Anogeissus latifolia	Dhaura	12.00	7.00	Sound
6	Anogeissus latifolia	Dhaura	20.00	11.00	Unsound
7	Cleistanthus collinus	Karada	20.00	7.00	Unsound
8	Diospyros montana	Halda	10.00	6.00	Unsound
9	Mitragyna parviflora	Mundi/Mitkania	15.00	8.00	Unsound
10	Anogeissus latifolia	Dhaura	14.00	6.00	Unsound
11	Terminalia tomentosa	Asan/ Sahaja	13.00	8.00	Unsound
12	Zizyphus xylopyra	Ghanta	12.00	5.00	Unsound
13	Terminalia tomentosa	Asan/ Sahaja	24.00	5.00	Unsound
14	Scheichera oleosa	Kusum	10.00	5.00	Unsound
15	Anogeissus latifolia	Dhaura	10.00	6.00	Unsound
16	Diospyros sylvatica	Kalachua	10.00	6.00	Unsound
17	Diospyros montana	Halda	11.00	5.00	Unsound
18	Morinda tinctoria	Anchhu	16.00	5.00	Sound
19	Semecarpus anacardium	Bhalia	14.00	7.00	Unsound
20	Anogeissus latifolia	Dhaura	18.00	8.00	Unsound



Odisha State Forest Department

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)																														
Botanical Name	10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		100-110		110-120		120-130		130-140		140-150		>150	
Anogeissus Latifolia	5	6.80	1	11.00																										
Cleistanthus Collinus			2	7.50																										
Diospyros Montana	2	5.50																												
Diospyros Sylvatica	1	6.00																												
Lannea Coromandelica						1	12.00																							
Mitragyna Parviflora	1	8.00																												
Morinda Tinctoria	1	5.00																												
Scheichera Oleosa	1	5.00																												
Semecarpus Anacardium	1	7.00																												
Terminalia Tomentosa	2	7.00	1	5.00																										
Zizyphus Xylopyra	1	5.00																												

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
No Records Found...							

Herbs

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
No Records Found...					



Odisha State Forest Department

Approval Details

Current Status :	DFO Approved	User Level :	Division

	Range	Division	Circle	State
Status	Approve	Approve	Provisional	Provisional
Approved Date	17-03-2019	15-05-2019		
Approved By	Ro.Ganis	DFO Nayagarh		

Surveyor Details

Name :	KAILASH PRADHAN	Designation :	Forester	Mobile :	9938668711

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Gania	Section :	Madhyakhanda
Beat :	Ghugudipada	Forest Block:	Non-Forest Block
District :	Nayagarh	CD Block :	Gania
Tehsil :	Gania	Gram Panchayat :	Forest
Village :	Forest(Forest)	Parliament Constituency :	Kandhamal
Assembly Constituency :	Daspalla		

Data Capture Information

Captured On :	GPS PDA	Device :	865733029237690
Data Capture Time :		Data Insert Time :	01-11-2018 13:19:17
Data Update Time :	16-10-2019 09:51:02		

Working Plan Base Information

Unique Id :	NY26	Division :	NAYAGARH
Latitude :	20.4771077	Longitude :	84.8157802

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.4771290	Longitude :	84.8157753
Altitude :	110.300	Accuracy Horizontal :	5.80
Accuracy Vertical :	0.00	Time :	31-10-2018 11:31:06

General Information			
Data Collection Date & Time :	31-10-2018 11:31:06	Forest Canopy Status :	0-10%
Forest Undergrowth Status :	Scanty	Average slope in degree-decimal :	0.00
Remarks :			

Plot Approach Information			
Range :	Gania	Block and/or beat:	ghugudipada beat
Compartment :	baisipalli ext iv	Grid:	F45S15
Latitude :	20.4771290	Longitude :	84.8157753
Journey/approach to the plot :	I started to work the working plan exercise for the point Ny-26. Rushed to approach the point by my bike to Badasilinga village . Then I follow the foot path shown by PDA. It is 2 km. towards north from Badasilinga village.	Ocular stock assessment:	Moderate forest



Odisha State Forest Department

General observational information :	By following the navigation of PDA I reached at that point NY-26.it is a hilly land and mild soil erosion .The point is 10 degree slope towards eastern aspect .There is no water source. The density of canopy is 0-10%.	Conspicuous features:	This place is hilly and rocky place .The area is covered with siali and dantari climbers
Removal of fuel wood and fodder :	nil		

Plot Description Information			
Range :	Gania	Block and or beat:	ghugudipada beat
Compartment :	baisipalli ext iv	Grid:	F45S15
Latitude :	20.4771290	Longitude :	84.8157753
Altitude :	110.300	Slope :	10
Aspect:	eastern	Legal Status:	prf
Land Use :	open forest	General topography:	gently flat
Rock and geology:	granite	Soil data:	alluvial
Soil erosion :	mild	Crop composition:	mahula,dhaura,asana,sal
Regeneration status :	moderate	Injury/ damage to crop,if any :	nil
Grazing incidence :	nil	Presence of bamboos:	nil
Presence of grasses :	scanty	Presence of weeds:	moderate
Plantation status :	nil	Water bodies:	nil
Drivers of degradation:	browsing fire	Faunal sighting, if any :	nil



Odisha State Forest Department

Faunal traces of flagship species.:	nil		

Tree					
Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Madhuca indica	Mahula	12.00	13.00	Sound
2	Anogeissus latifolia	Dhaura	12.00	14.00	Sound
3	Terminalia tomentosa	Asan/ Sahaja	14.00	20.00	Sound
4	Shorea robusta	Sal	16.00	45.00	Sound
5	Shorea robusta	Sal	15.00	15.00	Sound
6	Shorea robusta	Sal	20.00	20.00	Sound
7	Terminalia tomentosa	Asan/ Sahaja	15.00	18.00	Sound
8	Terminalia tomentosa	Asan/ Sahaja	20.00	20.00	Sound
9	Terminalia tomentosa	Asan/ Sahaja	20.00	22.00	Sound
10	Madhuca indica	Mahula	20.00	20.00	Sound
11	Madhuca indica	Mahula	15.00	15.00	Sound
12	Anogeissus latifolia	Dhaura	18.00	16.00	Sound
13	Anogeissus latifolia	Dhaura	20.00	10.00	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)																														
Botanical Name	10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		100-110		110-120		120-130		130-140		140-150		>150	
Anogeissus Latifolia	2	15.00	1	10.00																										
Madhuca Indica	2	14.00	1	20.00																										
Shorea Robusta	2	30.00	1	20.00																										
Terminalia Tomentosa	2	19.00	2	21.00																										



Odisha State Forest Department

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
1	NE	Shorea robusta	Sal	7.00	3.00	172.00	Moderate
2	NW	Anogeissus latifolia	Dhaura	8.00	4.00	185.00	

Herbs

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
1	NE	Phoenix dantyliferas	Khajuri	20.00	Scanty
2	NE	Phoenix dantyliferas	Khajuri	25.00	Scanty
3	NW	Alangium salvifolium	Ankula	25.00	Moderate
4	SE	Alangium salvifolium	Ankula	30.00	Moderate
5	NW	Woodfordia fruticosa	Dhatiki	35.00	Moderate
6	SW	Woodfordia fruticosa	Dhatiki	22.00	Moderate
7	SE	Woodfordia fruticosa	Dhatiki	26.00	Moderate



Odisha State Forest Department

Approval Details

Current Status :	DFO Approved	User Level :	Division

	Range	Division	Circle	State
Status	Approve	Approve	Provisional	Provisional
Approved Date	16-10-2019	16-10-2019		
Approved By	Forest Range Officer	DFO Nayagarh		

Surveyor Details

Name :	ASHOK SAHOO	Designation :	Forester	Mobile :	9437476557

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Gania	Section :	Gania
Beat :	Dankarishahi	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Kashipur
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	865733029262318
Data Capture Time :		Data Insert Time :	18-06-2017 09:42:11
Data Update Time :	11-03-2019 18:02:11		

Working Plan Base Information

Unique Id :	NY57	Division :	NAYAGARH
Latitude :	20.4230703	Longitude :	84.9572639

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.4230492	Longitude :	84.9572497
Altitude :	194.600	Accuracy Horizontal :	6.70
Accuracy Vertical :	0.00	Time :	18-06-2017 08:18:12

General Information			
Data Collection Date & Time :	18-06-2017 08:18:12	Forest Canopy Status :	40-70%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	70.00
Remarks :			

Plot Approach Information			
Range :	Gania	Block and/or beat:	dankarisahi beat
Compartment :	manivadra rf	Grid:	F45S15
Latitude :	20.4230492	Longitude :	84.9572497
Journey/approach to the plot :	I started to work the working plan exercise for the point NY-57 Rushed to approach the point by my bike to Bhagamunda village . Then I follow the foot path shown by PDA. It is 2.0km. towards south from Bhagamunda village.	Ocular stock assessment:	moderate forest



Odisha State Forest Department

General observational information :	By following the navigation of PDA I reached at that point NY-57 it is a hilly land and mild soil erosion .The point is 700 degree slope towards northern aspect .There is no water source. The density of canopy is 10-40%.	Conspicuous features:	This place is hilly and rocky place .The area is covered with siali and dantari climbers
Removal of fuel wood and fodder :	nil		

Plot Description Information			
Range :	Gania	Block and or beat:	Dankarisahi Beat
Compartment :	Makaraprasad rf	Grid:	F45S15
Latitude :	20.4230492	Longitude :	84.9572497
Altitude :	194.600	Slope :	70
Aspect:	southern	Legal Status:	rf
Land Use :	moderate	General topography:	hilly
Rock and geology:	laterite	Soil data:	forest and hill soil
Soil erosion :	moderate	Crop composition:	kusum, asana, dhura, bandhna, gphantla, mai, sirish
Regeneration status :	dhaura, karada, chara	Injury/ damage to crop,if any :	nil
Grazing incidence :	nil	Presence of bamboos:	yes
Presence of grasses :	nil	Presence of weeds:	yes
Plantation status :	nil	Water bodies:	nil
Drivers of degradation:	forest fire	Faunal sighting, if any :	nil



Odisha State Forest Department

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Scheichera oleosa	Kusum	11.00	5.00	Unsound
2	Terminalia tomentosa	Asan/ Sahaja	23.00	7.00	Sound
3	Grewia tiliaefolia	Dhaman	16.00	6.00	Sound
4	Ougeinia oojeinensis	Bandhan/Tinsa	20.00	7.00	Sound
5	Ziziphus xylocarpus	Ghontol (Gotha)	20.00	5.00	Unsound
6	Lannea coromandelica	Mai	11.00	6.00	Sound
7	Lagerstroemia speciosa	Patuli	16.00	7.00	Sound
8	Albizzia lebbek	Siris	20.00	7.00	Sound
9	Ougeinia oojeinensis	Bandhan/Tinsa	10.00	5.00	Sound
10	Cleistanthus collinus	Karada	13.00	5.00	Unsound
11	Lannea coromandelica	Mai	13.00	7.00	Sound
12	Lagerstroemia speciosa	Patuli	10.00	5.00	Sound
13	Grewia tiliaefolia	Dhaman	20.00	7.00	Sound
14	Cassia fistula	Sunari	10.00	5.00	Sound
15	Lannea coromandelica	Mai	10.00	6.00	Sound
16	Scheichera oleosa	Kusum	10.00	5.00	Sound
17	Lagerstroemia parviflora	Sidha	30.00	7.00	Sound
18	Ziziphus xylocarpus	Ghontol (Gotha)	12.00	6.00	Unsound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)



Odisha State Forest Department

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150
Albizzia Lebbek		1	7.00												
Cassia Fistula	1	5.00													
Cleistanthus Collinus	1	5.00													
Grewia Tiliaefolia	1	6.00	1	7.00											
Lagerstroemia Parviflora			1	7.00											
Lagerstroemia Speciosa	2	6.00													
Lannea Coromandelica	3	6.33													
Ougeinia Oojeinensis	1	5.00	1	7.00											
Scheichera Oleosa	2	5.00													
Terminalia Tomentosa			1	7.00											
Ziziphus Xylocarpus	1	6.00	1	5.00											

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)

No Records Found...

Shrubs

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)

No Records Found...

Herbs

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)

No Records Found...



Odisha State Forest Department

Approval Details

Current Status :	DFO Approved	User Level :	Division

	Range	Division	Circle	State
Status	Approve	Approve	Provisional	Provisional
Approved Date	11-03-2019	15-05-2019		
Approved By	Ro Gania	DFO Nayagarh		

Surveyor Details

Name :	NILAMANI DALEI	Designation :	Forest Guard	Mobile :	8018604021

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Gania	Section :	Madhyakhanda
Beat :	Madhyakhanda	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Papadahandi
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	868324020460841
Data Capture Time :		Data Insert Time :	18-06-2017 11:30:48
Data Update Time :	16-10-2019 09:35:55		

Working Plan Base Information

Unique Id :	NY71	Division :	NAYAGARH
Latitude :	20.4176365	Longitude :	84.9027172

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.4176258	Longitude :	84.9027580
Altitude :	250.900	Accuracy Horizontal :	4.70
Accuracy Vertical :	0.00	Time :	18-06-2017 09:55:46

General Information			
Data Collection Date & Time :	18-06-2017 09:55:46	Forest Cannopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	55.00
Remarks :			

Plot Approach Information			
Range :	Gania	Block and/or beat:	madhyakhanda beat
Compartment :	Bankamund extn1	Grid:	F45S15
Latitude :	20.4176258	Longitude :	84.9027580
Journey/approach to the plot :	I started to work the working plan exercise for the point Ny-550. Rushed to approach the point by my bike to Ostia village . Then I follow the foot path shown by PDA. It is 2 km. towards north from Ostia village.	Ocular stock assessment:	karada,asana,bheru,bela,mai,sisoo,dhaura,patuli,jari,giringa,sidha
General observational information :	By following the navigation of PDA I reached at that point NY-550.it is a hilly land and mild soil erosion .The point is 45 degree slope towards southern aspect .There is no water source. The density of canopy is 10-40%.	Conspicuous features:	This place is hilly and rocky place .The area is covered with throney bushes ,siali and dantari climbers
Removal of fuel wood and fodder :	nil		

Plot Description Information			
Range :	Gania	Block and or beat:	madhyakhanda beat



Odisha State Forest Department

Compartment :	bankamunda ext 1	Grid:	F45S15
Latitude :	20.4176258	Longitude :	84.9027580
Altitude :	250.900	Slope :	55
Aspect:	southern	Legal Status:	prf
Land Use :	moderate	General topography:	hilly
Rock and geology:	granite	Soil data:	alluvial
Soil erosion :	mild	Crop composition:	karada,asana,bheru,bela,mai,sisoo,dhaura,patuli,jari,giringa,sidha
Regeneration status :	moderate	Injury/ damage to crop,if any :	nil
Grazing incidence :	nil	Presence of bamboos:	salia
Presence of grasses :	scanty	Presence of weeds:	moderate
Plantation status :	nil	Water bodies:	nil
Drivers of degradation:	browsing fire	Faunal sighting, if any :	nil
Faunal traces of flagship species.:	nil		

Tree



Odisha State Forest Department

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Cleistanthus collinus	Karada	12.00	7.00	Sound
2	Terminalia tomentosa	Asan/ Sahaja	11.00	7.00	Sound
3	Terminalia tomentosa	Asan/ Sahaja	13.00	8.00	Sound
4	Chloroxylon swietenia	Bheru	26.00	15.00	Sound
5	Terminalia tomentosa	Asan/ Sahaja	16.00	10.00	Sound
6	Aegle marmelos	Bela	20.00	10.00	Sound
7	Lannea coromandelica	Mai	22.00	15.00	Sound
8	Lannea coromandelica	Mai	20.00	10.00	Sound
9	Dalbergia latifolia	Sisoo	14.00	11.00	Sound
10	Lannea coromandelica	Mai	16.00	11.00	Sound
11	Anogeissus latifolia	Dhaura	13.00	7.00	Sound
12	Lagerstroemia speciosa	Patuli	14.00	8.00	Unsound
13	Cleistanthus collinus	Karada	18.00	13.00	Unsound
14	Strychnos potatorum	Katakala	15.00	13.00	Unsound
15	Ficus virens	Jida	25.00	15.00	Unsound
16	Pterospermum heyneanum	Giringa	11.00	10.00	Sound
17	Lannea coromandelica	Mai	14.00	7.00	Sound
18	Naringi crenulata	Benta	18.00	8.00	Sound
19	Cleistanthus collinus	Karada	14.00	8.00	Sound
20	Cleistanthus collinus	Karada	20.00	8.00	Sound
21	Anogeissus latifolia	Dhaura	26.00	13.00	Sound
22	Dalbergia latifolia	Sisoo	16.00	8.00	Sound
23	Strychnos potatorum	Katakala	21.00	8.00	Sound
24	Lagerstroemia parviflora	Sidha	13.00	13.00	Sound
25	Strychnos potatorum	Katakala	13.00	7.00	Sound
26	Dalbergia latifolia	Sisoo	13.00	8.00	Unsound
27	Lagerstroemia speciosa	Patuli	16.00	8.00	Sound
28	Terminalia tomentosa	Asan/ Sahaja	10.00	10.00	Sound



Odisha State Forest Department

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		100-110		110-120		120-130		130-140		140-150		>150	
Aegle Marmelos			1	10.00																										
Anogeissus Latifolia	1	7.00	1	13.00																										
Chloroxylon Swietenia			1	15.00																										
Cleistanthus Collinus	3	9.33	1	8.00																										
Dalbergia Latifolia	3	9.00																												
Ficus Virens			1	15.00																										
Lagerstroemia Parviflora	1	13.00																												
Lagerstroemia Speciosa	2	8.00																												
Lannea Coromandelica	2	9.00	2	12.50																										
Naringi Crenulata	1	8.00																												
Pterospermum Heyneanum	1	10.00																												
Strychnos Potatorum	2	10.00	1	8.00																										
Terminalia Tomentosa	4	8.75																												

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
No Records Found...							

Herbs



Odisha State Forest Department

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
No Records Found...					

Approval Details			
Current Status :	DFO Approved	User Level :	Division

	Range	Division	Circle	State
Status	Approve	Approve	Provisional	Provisional
Approved Date	16-10-2019	18-10-2019		
Approved By	Forest Range Officer	DFO Nayagarh		

Surveyor Details					
Name :	KAILASH PRADHAN	Designation :	Forest Guard	Mobile :	993866871

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images	

Sample Area Images	



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Gania	Section :	Gania
Beat :	Langalkanta	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Kashipur
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	865733029262318
Data Capture Time :		Data Insert Time :	16-06-2017 10:22:28
Data Update Time :	11-03-2019 18:04:55		

Working Plan Base Information

Unique Id :	NY314	Division :	NAYAGARH
Latitude :	20.3782786	Longitude :	85.0693424

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.3782825	Longitude :	85.0693538
Altitude :	197.700	Accuracy Horizontal :	15.00
Accuracy Vertical :	0.00	Time :	16-06-2017 07:31:17

General Information			
Data Collection Date & Time :	16-06-2017 07:31:17	Forest Canopy Status :	40-70%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	10.00
Remarks :			

Plot Approach Information			
Range :	Gania	Block and/or beat:	langalakata beat
Compartment :	gania rf	Grid:	F45T03
Latitude :	20.3782825	Longitude :	85.0693538
Journey/approach to the plot :	I started to work the working plan exercise for the point NY-314 Rushed to approach the point by my bike to kishoreprasada village . Then I follow the foot path shown by PDA. It is 2.5km. towards west from kishoreprasada village.	Ocular stock assessment:	moderate



Odisha State Forest Department

General observational information :	By following the navigation of PDA I reached at that point NY-314 it is a hilly land and mild soil erosion .The point is 10 degree slope towards western aspect .There is no water source. The density of canopy is 10-40%.	Conspicuous features:	This place is hilly and rocky place .The area is covered with siali and dantari climbers
Removal of fuel wood and fodder :	nil		

Plot Description Information			
Range :	Gania	Block and or beat:	langalakanta beat
Compartment :	gania rf	Grid:	F45T03
Latitude :	20.3782825	Longitude :	85.0693538
Altitude :	197.700	Slope :	10
Aspect:	western	Legal Status:	rf
Land Use :	moderate	General topography:	hily
Rock and geology:	laterite	Soil data:	forest and hilly soil
Soil erosion :	mild	Crop composition:	sisu, piasal, asan, dhaura, kendu,
Regeneration status :	moderate	Injury/ damage to crop,if any :	nil
Grazing incidence :	nil	Presence of bamboos:	nil
Presence of grasses :	nil	Presence of weeds:	yes
Plantation status :	nil	Water bodies:	nil
Drivers of degradation:	forest fire	Faunal sighting, if any :	nil



Odisha State Forest Department

Faunal traces of flagship species.:	nil		

Tree



Odisha State Forest Department

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Cleistanthus collinus	Karada	11.00	5.00	Sound
2	Cleistanthus collinus	Karada	10.00	5.00	Sound
3	Cleistanthus collinus	Karada	12.00	6.00	Sound
4	Pterospermum canescens	Giringa	13.00	7.00	Sound
5	Dalbergia latifolia	Sisoo	11.00	5.00	Sound
6	Streblus asper	Sahada	11.00	5.00	Sound
7	Albizzia lebbek	Siris	27.00	12.00	Sound
8	Albizzia lebbek	Siris	13.00	7.00	Unsound
9	Pterospermum canescens	Giringa	11.00	7.00	Sound
10	Terminalia bellirica	Bahada	18.00	8.00	Sound
11	Terminalia bellirica	Bahada	16.00	8.00	Sound
12	Aegle marmelos	Bela	15.00	6.00	Sound
13	Albizzia lebbek	Siris	20.00	10.00	Sound
14	Albizzia lebbek	Siris	23.00	12.00	Sound
15	Albizzia lebbek	Siris	22.00	11.00	Sound
16	Lannea coromandelica	Mai	15.00	10.00	Sound
17	Albizzia lebbek	Siris	25.00	15.00	Sound
18	Albizzia lebbek	Siris	22.00	15.00	Sound
19	Albizzia lebbek	Siris	24.00	15.00	Sound
20	Albizzia lebbek	Siris	20.00	10.00	Sound
21	Diospyros montana	Halda	11.00	10.00	Sound
22	Diospyros montana	Halda	13.00	11.00	Sound
23	Albizzia lebbek	Siris	15.00	12.00	Sound
24	Albizzia lebbek	Siris	11.00	10.00	Sound
25	Cassia fistula	Sunari	11.00	8.00	Sound
26	Albizzia lebbek	Siris	28.00	10.00	Sound
27	Lannea coromandelica	Mai	15.00	10.00	Sound
28	Lagerstroemia speciosa	Patuli	11.00	8.00	Sound
29	Albizzia lebbek	Siris	11.00	7.00	Sound



Odisha State Forest Department

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150
Aegle Marmelos	1	6.00													
Albizia Lebbek	4	9.17	9	12.43											
Cassia Fistula	1	8.00													
Cleistanthus Collinus	3	5.33													
Dalbergia Latifolia	1	5.00													
Diospyros Montana	2	10.50													
Lagerstroemia Speciosa	1	8.00													
Lannea Coromandelica	2	10.00													
Pterospermum Canescens	2	7.00													
Streblus Asper	1	5.00													
Terminalia Bellirica	2	8.00													

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
No Records Found...							

Herbs

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
No Records Found...					



Odisha State Forest Department

Approval Details

Current Status :	DFO Approved	User Level :	Division

	Range	Division	Circle	State
Status	Approve	Approve	Provisional	Provisional
Approved Date	11-03-2019	15-05-2019		
Approved By	Ro Gania	DFO Nayagarh		

Surveyor Details

Name :	Rajesh Kumar Meher	Designation :	Forest Guard	Mobile :	9861652972

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Khandapada	Section :	Kantilo
Beat :	Kumbharpada	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Kashipur
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	865733029220704
Data Capture Time :		Data Insert Time :	17-06-2017 12:21:58
Data Update Time :	13-03-2019 22:07:00		

Working Plan Base Information

Unique Id :	NY537	Division :	NAYAGARH
Latitude :	20.3842832	Longitude :	85.0595585

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.3840662	Longitude :	85.0598963
Altitude :	291.100	Accuracy Horizontal :	4.10
Accuracy Vertical :	0.00	Time :	17-06-2017 08:00:07

General Information			
Data Collection Date & Time :	17-06-2017 08:00:07	Forest Canopy Status :	0-10%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	40.00
Remarks :			

Plot Approach Information			
Range :	Khandapada	Block and/or beat:	Kumbharpada Beat
Compartment :	Mainsibindha RF	Grid:	F45T03
Latitude :	20.3840662	Longitude :	85.0598963
Journey/approach to the plot :	Journey started from Beat H/Q with motor cycle towards NY537. After 6.5Km. near village Mainsibindha start the GPS PDA navigation to reach the point and start survey work.	Ocular stock assessment:	MDF



Odisha State Forest Department

General observational information :	The track is plain area to hilly Aspect is western Well drained Soil depth 2.5ft. Under growth status is moderate Under growth status of climber is moderate Density is about 40% Regeneration of principal species is moderate	Conspicuous features:	Big Bara tree
Removal of fuel wood and fodder :	No		

Plot Description Information

Range :	Khandapada	Block and or beat:	Kumbharpada Beat
Compartment :	Mainsibindha RF	Grid:	F45T03
Latitude :	20.3840662	Longitude :	85.0598963
Altitude :	291.100	Slope :	40
Aspect:	Western	Legal Status:	RF
Land Use :	MDF	General topography:	Hilly
Rock and geology:	Black granite rock Red loam soil	Soil data:	Red loam soil
Soil erosion :	Moderate	Crop composition:	28%
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Damaged by natural calamities
Grazing incidence :	No	Presence of bamboos:	No
Presence of grasses :	5%	Presence of weeds:	10%
Plantation status :	No	Water bodies:	No
Drivers of degradation:	Degraded by natural calamities	Faunal sighting, if any :	No



Odisha State Forest Department

Faunal traces of flagship species.:	No		

Tree



Odisha State Forest Department

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Anogeissus latifolia	Dhaura	11.00	6.00	Sound
2	Cleistanthus collinus	Karada	11.00	5.00	Sound
3	Lannea coromandelica	Mai	13.00	6.00	Sound
4	Aegle marmelos	Bela	13.00	7.00	Sound
5	Lannea coromandelica	Mai	11.00	5.00	Sound
6	Lannea coromandelica	Mai	12.00	6.00	Sound
7	Cleistanthus collinus	Karada	13.00	5.00	Sound
8	Anogeissus latifolia	Dhaura	14.00	5.00	Sound
9	Cleistanthus collinus	Karada	14.00	5.00	Sound
10	Aegle marmelos	Bela	14.00	5.00	Sound
11	Lannea coromandelica	Mai	13.00	5.00	Sound
12	Anogeissus latifolia	Dhaura	15.00	6.00	Sound
13	Aegle marmelos	Bela	14.00	6.00	Sound
14	Lannea coromandelica	Mai	11.00	6.00	Sound
15	Lannea coromandelica	Mai	10.00	5.00	Sound
16	Cleistanthus collinus	Karada	14.00	4.00	Sound
17	Cleistanthus collinus	Karada	12.00	5.00	Sound
18	Aegle marmelos	Bela	11.00	6.00	Sound
19	Aegle marmelos	Bela	13.00	5.00	Sound
20	Aegle marmelos	Bela	14.00	7.00	Sound
21	Aegle marmelos	Bela	10.00	5.00	Sound
22	Anogeissus latifolia	Dhaura	14.00	6.00	Sound
23	Anogeissus latifolia	Dhaura	11.00	5.00	Sound
24	Aegle marmelos	Bela	13.00	6.00	Sound
25	Cleistanthus collinus	Karada	14.00	6.00	Sound
26	Lannea coromandelica	Mai	17.00	6.00	Sound
27	Aegle marmelos	Bela	16.00	6.00	Sound
28	Anogeissus latifolia	Dhaura	14.00	4.00	Sound
29	Cleistanthus collinus	Karada	16.00	5.00	Sound
30	Lannea coromandelica	Mai	11.00	4.00	Sound
31	Lannea coromandelica	Mai	33.00	6.00	Sound
32	Lannea coromandelica	Mai	14.00	5.00	Sound
33	Aegle marmelos	Bela	11.00	5.00	Sound
34	Aegle marmelos	Bela	13.00	4.00	Sound
35	Cleistanthus collinus	Karada	14.00	7.00	Sound
36	Anogeissus latifolia	Dhaura	17.00	5.00	Sound
37	Anogeissus latifolia	Dhaura	18.00	6.00	Sound
38	Anogeissus latifolia	Dhaura	19.00	7.00	Sound



Odisha State Forest Department

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)																														
Botanical Name	10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		100-110		110-120		120-130		130-140		140-150		>150	
Aegle Marmelos	11	5.60																												
Anogeissus Latifolia	9	5.75																												
Cleistanthus Collinus	8	5.10																												
Lannea Coromandelica	9	5.42			1	6.00																								

Bamboo							
Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs							
Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
1	NE	Cipadessa baccifera	Nahalbell	3.00	2.00	135.00	Scanty

Herbs					
Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
No Records Found...					

Approval Details			
Current Status :	DFO Approved	User Level :	Division
Range	Division	Circle	State



Odisha State Forest Department

Status	Approve	Approve	Provisional	Provisional
Approved Date	13-03-2019	01-05-2019		
Approved By	R.O. Khandapada	DFO Nayagarh		

Surveyor Details

Name :	PRABHAT KUMAR PRADHAN	Designation :	Forest Guard	Mobile :	9778109143

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Khandapada	Section :	Bhapur
Beat :	Baigania	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Rayagada
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	865733029220704
Data Capture Time :		Data Insert Time :	14-06-2017 14:19:20
Data Update Time :	13-03-2019 23:55:40		

Working Plan Base Information

Unique Id :	NY42	Division :	NAYAGARH
Latitude :	20.2575571	Longitude :	85.2281766

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint

Latitude :	20.2575413	Longitude :	85.2281795
Altitude :	71.200	Accuracy Horizontal :	3.60
Accuracy Vertical :	0.00	Time :	09-06-2017 07:39:46

General Information

Data Collection Date & Time :	09-06-2017 07:39:46	Forest Canopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	15.00
Remarks :			

Plot Approach Information

Range :	Khandapada	Block and/or beat:	Baigunia Beat
Compartment :	Bandra RF	Grid:	F45T03
Latitude :	20.2575413	Longitude :	85.2281795
Journey/approach to the plot :	Started journeying from Bahada-Bhapur main road towards Bandra RF. Started navigation and reached the point no. NY42	Ocular stock assessment:	MDF
General observational information :	Plain Well drainage Soil depth- 2.5mtr. Density of corp 10-40% Principal species - Sal	Conspicuous features:	Nala
Removal of fuel wood and fodder :	No		

Plot Description Information



Odisha State Forest Department

Range :	Khandapada	Block and or beat:	Baigunia
Compartment :	Bandra RF	Grid:	F45T03
Latitude :	20.2575413	Longitude :	85.2281795
Altitude :	71.200	Slope :	15
Aspect:	Southern	Legal Status:	RF
Land Use :	MDF	General topography:	Flat
Rock and geology:	Calcareous	Soil data:	Sandy loam 6ft to 7ft Moderate
Soil erosion :	Mild	Crop composition:	Sal is a dominant & Chara is predominant
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Mild damage by natural calamities
Grazing incidence :	Light	Presence of bamboos:	No
Presence of grasses :	Moderate	Presence of weeds:	Moderate
Plantation status :	No plantation	Water bodies:	Nala
Drivers of degradation:	Natural calamities	Faunal sighting, if any :	No
Faunal traces of flagship species.:	No		

Time



Odisha State Forest Department

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Shorea robusta	Sal	15.00	10.00	Sound
2	Buchanania lanzan	Char	10.00	8.00	Sound
3	Madhuca indica	Mahula	11.00	9.00	Sound
4	Buchanania lanzan	Char	14.00	9.00	Sound
5	Shorea robusta	Sal	16.00	11.00	Sound
6	Shorea robusta	Sal	14.00	10.00	Sound
7	Shorea robusta	Sal	15.30	10.00	Sound
8	Shorea robusta	Sal	14.90	11.00	Sound
9	Shorea robusta	Sal	13.00	11.00	Sound
10	Shorea robusta	Sal	13.30	11.00	Sound
11	Shorea robusta	Sal	11.40	8.00	Sound
12	Shorea robusta	Sal	12.30	7.00	Sound
13	Shorea robusta	Sal	13.50	9.00	Sound
14	Shorea robusta	Sal	11.30	7.00	Sound
15	Shorea robusta	Sal	10.00	10.00	Sound
16	Shorea robusta	Sal	10.20	11.00	Sound
17	Buchanania lanzan	Char	10.40	10.00	Sound
18	Shorea robusta	Sal	10.30	11.00	Sound
19	Shorea robusta	Sal	10.60	12.00	Sound
20	Shorea robusta	Sal	10.10	10.00	Sound
21	Shorea robusta	Sal	10.10	11.00	Sound
22	Shorea robusta	Sal	10.20	12.00	Sound
23	Shorea robusta	Sal	10.40	13.00	Sound
24	Shorea robusta	Sal	10.10	12.00	Sound
25	Shorea robusta	Sal	14.00	15.00	Sound
26	Buchanania lanzan	Char	14.10	14.00	Sound
27	Buchanania lanzan	Char	13.80	14.00	Sound
28	Buchanania lanzan	Char	10.90	11.00	Sound
29	Shorea robusta	Sal	12.20	14.00	Sound
30	Shorea robusta	Sal	12.80	12.00	Sound
31	Shorea robusta	Sal	12.50	13.00	Sound
32	Buchanania lanzan	Char	13.30	14.00	Sound
33	Buchanania lanzan	Char	14.70	13.00	Sound
34	Shorea robusta	Sal	13.10	13.00	Sound
35	Shorea robusta	Sal	13.20	13.00	Sound
36	Shorea robusta	Sal	13.90	15.00	Sound
37	Shorea robusta	Sal	13.40	14.00	Sound
38	Shorea robusta	Sal	11.90	13.00	Sound
39	Shorea robusta	Sal	13.80	13.00	Sound
40	Shorea robusta	Sal	14.90	12.00	Sound
41	Buchanania lanzan	Char	11.70	11.00	Sound
42	Shorea robusta	Sal	13.90	13.00	Sound
43	Shorea robusta	Sal	14.80	11.00	Sound
44	Shorea robusta	Sal	12.80	11.00	Sound
45	Shorea robusta	Sal	12.90	13.00	Sound
46	Shorea robusta	Sal	12.90	11.00	Sound
47	Shorea robusta	Sal	13.10	11.00	Sound
48	Shorea robusta	Sal	12.90	14.00	Sound
49	Shorea robusta	Sal	11.90	12.00	Sound
50	Shorea robusta	Sal	11.50	15.00	Sound
51	Shorea robusta	Sal	13.60	15.00	Sound
52	Shorea robusta	Sal	14.40	13.00	Sound
53	Shorea robusta	Sal	11.10	11.00	Sound
54	Shorea robusta	Sal	12.20	11.00	Sound
55	Shorea robusta	Sal	13.30	13.00	Sound
56	Shorea robusta	Sal	13.90	12.00	Sound
57	Shorea robusta	Sal	13.80	11.00	Sound
58	Shorea robusta	Sal	12.00	9.00	Sound
59	Shorea robusta	Sal	11.00	8.00	Sound



Odisha State Forest Department

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150
Buchanania Lanza	9	11.56													
Madhuca Indica	1	9.00													
Shorea Robusta	49	11.35													

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
No Records Found...							

Herbs

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
1	SE	Imperata arundinaceae	Channa grass	10.00	Scanty

Approval Details

Current Status :		DFO Approved		User Level :		Division	
Range		Division		Circle		State	
Status	Approve	Approve	Approve	Provisional	Provisional	Provisional	Provisional



Odisha State Forest Department

Approved Date	13-03-2019	01-05-2019		
Approved By	R.O. Khandapada	DFO Nayagarh		

Surveyor Details

Name :	SANDHYARANI NAYAK	Designation :	Forester	Mobile :	8763995040

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Khandapada	Section :	Kantilo
Beat :	Akurabandha	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Bisamcuttack
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	868324020450073
Data Capture Time :		Data Insert Time :	11-09-2017 14:52:38
Data Update Time :	25-09-2019 13:41:03		

Working Plan Base Information

Unique Id :	NY78	Division :	NAYAGARH
Latitude :	20.3498624	Longitude :	85.1291590

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint

Latitude :	20.3501208	Longitude :	85.1291428
Altitude :	119.200	Accuracy Horizontal :	5.20
Accuracy Vertical :	0.00	Time :	17-08-2017 08:01:14

General Information

Data Collection Date & Time :	17-08-2017 08:01:14	Forest Canopy Status :	0-10%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	40.00
Remarks :			

Plot Approach Information

Range :	Khandapada	Block and/or beat:	Akurabandha Beat
Compartment :	Barakhola RF	Grid:	F45T03
Latitude :	20.3501208	Longitude :	85.1291428
Journey/approach to the plot :	Started journey from Beat H/Q with motorcycle towards NY78. After 1.5Km. near village Akurabandha started the PDA navigation to reach the point and start survey work.	Ocular stock assessment:	OF to MDF
General observational information :	The track is plain area to plain Aspect is north-west Soil depth is 2.5ft. Density is 35% Undergrowth status of climber is moderate Regeneration of principal species is moderate	Conspicuous features:	No
Removal of fuel wood and fodder :	No		

Plot Description Information

Range :	Khandapada	Block and or beat:	Akurabandha Beat
Compartment :	Barakhola RF	Grid:	F45T03
Latitude :	20.3501208	Longitude :	85.1291428
Altitude :	119.200	Slope :	3
Aspect:	North-West	Legal Status:	RF
Land Use :	MDF	General topography:	Flat
Rock and geology:	Black granite rock Red loam soil	Soil data:	Red loam soil
Soil erosion :	Moderate	Crop composition:	Moderate
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Damage by natural calamities
Grazing incidence :	Moderate	Presence of bamboos:	Nil
Presence of grasses :	5%	Presence of weeds:	10%
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Degraded through natural calamities	Faunal sighting, if any :	No
Faunal traces of flagship species.:	No		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)

1	Tectona grandis	Saguan	12.00	11.00	Unsound
Database Error					
2	Shorea robusta	Sal	10.30	12.00	Sound
3	Anogeissus latifolia	Dhaura	11.30	9.00	Unsound
4	Tectona grandis	Saguan	14.00	11.00	Unsound
5	Diospyros sylvatica	Kalachua	13.30	10.00	Unsound
6	Ailanthus excelsa	Mahanimba	16.00	8.00	Unsound
7	Tectona grandis	Saguan	26.00	12.00	Unsound
8	Lagerstroemia parviflora	Sidha	13.00	8.00	Unsound
9	Careya arborea	Kumbhi	18.00	10.00	Unsound

1/2/2021

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150
Ailanthus Excelsa	1	8.00													
Anogeissus Latifolia	1	9.00													
Careya Arborea	1	10.00													
Diospyros Sylvatica	1	10.00													
Lagerstroemia Parviflora	1	8.00													
Shorea Robusta	1	12.00													
Tectona Grandis	2	11.00	1	12.00											

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Khandapada	Section :	Bhapur
Beat :	Marada	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Rayagada
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	868324020450073
Data Capture Time :		Data Insert Time :	30-06-2017 13:37:50
Data Update Time :	13-03-2019 23:47:37		

Working Plan Base Information

Unique Id :	NY299	Division :	NAYAGARH
Latitude :	20.3254508	Longitude :	85.2461699

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.3255747	Longitude :	85.2461178
Altitude :	98.300	Accuracy Horizontal :	4.00
Accuracy Vertical :	0.00	Time :	30-06-2017 11:13:37

General Information			
Data Collection Date & Time :	30-06-2017 11:13:37	Forest Canopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	25.00
Remarks :			

Plot Approach Information			
Range :	Khandapada	Block and/or beat:	Marada Beat
Compartment :	Dengabahada RF, C/2	Grid:	F45T03
Latitude :	20.3255747	Longitude :	85.2461178
Journey/approach to the plot :	Started journeying from Marada Beat House via Marada-Gohiriapada road. After journey about 3Km. started navigation and reached the point no. NY299	Ocular stock assessment:	MDF
General observational information :	Plain Little soil erosion Well drainage Sandy soil 2.5mtr. 10-40% Gentle slope Sana chakunda is principal species	Conspicuous features:	Nil
Removal of fuel wood and fodder :	No		

Plot Description Information



Odisha State Forest Department

Range :	Khandapada	Block and or beat:	Marada Beat
Compartment :	Dengabahada RF, C/2	Grid:	F45T03
Latitude :	20.3255747	Longitude :	85.2461178
Altitude :	98.300	Slope :	15
Aspect:	South-East	Legal Status:	RF
Land Use :	MDF	General topography:	Plain
Rock and geology:	Sandy Soil	Soil data:	Sandy soil
Soil erosion :	Mild	Crop composition:	Most dominant - Sanachakunda, Teak
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Damage by natural calamities
Grazing incidence :	Light	Presence of bamboos:	Nil
Presence of grasses :	5% (Moderate)	Presence of weeds:	10% (Moderate)
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Biotic interference	Faunal sighting, if any :	No
Faunal traces of flagship species.:	No		

Tree



Odisha State Forest Department

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Tectona grandis	Teak / Saguan	15.80	7.00	Sound
2	Cassia siamea	Chakundi	19.00	20.00	Sound
3	Cassia siamea	Chakundi	11.00	4.00	Unsound
4	Cassia siamea	Chakundi	13.30	8.00	Sound
5	Cassia siamea	Chakundi	11.00	8.00	Dead
6	Cassia siamea	Chakundi	12.80	9.00	Sound
7	Cassia siamea	Chakundi	13.70	7.00	Sound
8	Cassia siamea	Chakundi	10.40	13.00	Sound
9	Cassia siamea	Chakundi	17.00	15.00	Sound
10	Cassia siamea	Chakundi	12.30	6.00	Sound
11	Cassia siamea	Chakundi	19.00	17.00	Sound
12	Tectona grandis	Saguan	15.00	17.00	Sound
13	Cassia siamea	Chakundi	18.50	12.00	Sound
14	Cassia siamea	Chakundi	14.80	13.00	Sound
15	Cassia siamea	Chakundi	20.00	18.00	Sound
16	Cassia siamea	Chakundi	14.90	16.00	Sound
17	Cassia siamea	Chakundi	11.70	9.00	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)



Odisha State Forest Department

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150
Cassia Siamea	14	11.04	1	18.00											
Tectona Grandis	1	17.00													
Tectona Grandis	1	7.00													

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
1	NE	Cipadessa baccifera	Nahalbell	3.00	2.00	80.00	Scanty

Herbs

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
1	SE	Manilkara hexandra	Khirkoli	45.00	Scanty

Approval Details

Current Status :	DFO Approved	User Level :	Division

Range	Division	Circle	State
Status	Approve	Approve	Provisional
		Provisional	Provisional



Odisha State Forest Department

Approved Date	13-03-2019	01-05-2019		
Approved By	R.O. Khandapada	DFO Nayagarh		

Surveyor Details

Name :	ARDHENDU PARIDA	Designation :		Mobile :	9938035304

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Khandapada	Section :	Singhapada
Beat :	Nuapalli	Forest Block:	Non-Forest Block
District :	Nayagarh	CD Block :	Khandapara
Tehsil :	Khandapada	Gram Panchayat :	Forest
Village :	Forest(Forest)	Parliament Constituency :	Cuttack
Assembly Constituency :	Khandapada		

Data Capture Information

Captured On :	GPS PDA	Device :	SxT510318020697
Data Capture Time :		Data Insert Time :	31-10-2018 12:07:42
Data Update Time :	13-03-2019 23:12:01		

Working Plan Base Information

Unique Id :	NY840	Division :	NAYAGARH
Latitude :	20.3030182	Longitude :	85.0697216

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint			
Latitude :	20.3020318	Longitude :	85.0729715
Altitude :	242.300	Accuracy Horizontal :	11.00
Accuracy Vertical :	0.00	Time :	30-10-2018 09:36:24

General Information			
Data Collection Date & Time :	30-10-2018 09:36:24	Forest Canopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	20.00
Remarks :			

Plot Approach Information

Range :	Khandapada	Block and/or beat:	Nuapalli Beat
Compartment :	Sapua RF, C/7	Grid:	F45T03
Latitude :	20.3020318	Longitude :	85.0729715
Journey/approach to the plot :	Started journey from Nuapalli Beat H/Q with motorcycle towards NY840 via Singhapada-Angisingi Forest Road. After 1.5Km. near village Saranda proceeds towards right & from village Saranda start the GPS PDA navigation & reached at the zero point in Sapua RF, C/7 and start the survey work.	Ocular stock assessment:	Open forest to Moderate Dense Forest
General observational information :	The track is plain area to hilly. Aspect is south-east Slope - Gentle Well drained Rock- Black granite Soil - Red loam Regeneration of principal species - Moderate Grothe of climber is poor	Conspicuous features:	ANR plantation 2018-19, Sapua RF 200 Ha and WHS observed during journeying to the plot.
Removal of fuel wood and fodder :	No removal of fuel wood & fodder		

Plot Description Information

Range :	Khandapada	Block and or beat:	Nuapalli Beat
Compartment :	Sapua RF, C/7	Grid:	F45T03
Latitude :	20.3020318	Longitude :	85.0729715
Altitude :	242.300	Slope :	40
Aspect:	South-East	Legal Status:	RF
Land Use :	Open Forest	General topography:	Hilly
Rock and geology:	Black granite rock Red loam soil	Soil data:	Red loam 3ft to 5ft. Moderate
Soil erosion :	Moderate	Crop composition:	40%
Regeneration status :	Adequate	Injury/ damage to crop,if any :	Damage by natural calamities
Grazing incidence :	Light	Presence of bamboos:	Bamboo density - Good Quality - Moderate Bamboo regeration - Poor
Presence of grasses :	5% cover of grass	Presence of weeds:	10% of weeds
Plantation status :	No	Water bodies:	No

Drivers of degradation:	Mildly degraded through natural calamities	Faunal sighting, if any :	No

1/2/2021

Database Error

Faunal traces of flagship species.:	No		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Madhuca indica	Mahula	16.30	7.00	Sound
2	Buchanania lanzan	Char	29.60	6.00	Sound
3	Buchanania lanzan	Char	28.60	5.00	Sound
4	Dalbergia paniculata	Barabakulia	24.00	4.00	Sound
5	Buchanania lanzan	Char	22.60	7.00	Sound
6	Buchanania lanzan	Char	18.00	5.00	Sound
7	Terminalia tomentosa	Asan/Sahaj	15.30	3.00	Sound
8	Buchanania lanzan	Char	21.60	4.00	Sound
9	Bursera serrata	Nimburumoi	18.00	3.00	Sound
10	Buchanania lanzan	Char	18.30	4.00	Sound
11	Buchanania lanzan	Char	17.60	4.00	Sound
12	Dalbergia paniculata	Barabakulia	26.60	5.00	Sound
13	Dalbergia paniculata	Barabakulia	24.00	4.00	Sound
14	Cleistanthus collinus	Karada	16.00	3.00	Sound
15	Terminalia tomentosa	Asan/Sahaj	15.00	3.00	Sound
16	Terminalia tomentosa	Asan/Sahaj	12.60	3.00	Sound
17	Dalbergia paniculata	Barabakulia	14.00	3.00	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150

[illegible]

1/2/2021

Database Error

[illegible]

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Mahipur	Section :	Gumi
Beat :	Centeri Dimiria	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Chandrapur
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	865733029256674
Data Capture Time :		Data Insert Time :	04-07-2017 18:58:57
Data Update Time :	15-10-2019 18:07:29		

Working Plan Base Information

Unique Id :	NY84	Division :	NAYAGARH
Latitude :	20.2078812	Longitude :	84.8722996

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.2079097	Longitude :	84.8722988
Altitude :	254.400	Accuracy Horizontal :	8.90
Accuracy Vertical :	0.00	Time :	04-07-2017 08:37:46

General Information			
Data Collection Date & Time :	04-07-2017 08:37:46	Forest Canopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	10.00
Remarks :			

Plot Approach Information			
Range :	Mahipur	Block and/or beat:	Bhagabati DPF /Dimiria Beat
Compartment :		Grid:	F45S16
Latitude :	20.2079097	Longitude :	84.8722988
Journey/approach to the plot :	Started journey from my beat house to Bhagabati DPF over 5 km by motorcycle and wlked about 2 km to reach on grid point.	Ocular stock assessment:	Open forest
General observational information :	Plain area of slope 3 to 8 degree. rock seen Granite and soil is sandy loam soil . well drainage. Under wood seenn Karada,sal,giringa ,Halda etc and under growth seen Atundi.,Kanteikoli,Pokasunga etc	Conspicuous features:	Plain area
Removal of fuel wood and fodder :	Apprximately 10 kg firewood may obtain		



Odisha State Forest Department

Plot Description Information

Range :	Mahipur	Block and or beat:	Bhagabti DPF/Dimiria Beat
Compartment :	1	Grid:	F45S16
Latitude :	20.2079097	Longitude :	84.8722988
Altitude :	254.400	Slope :	5
Aspect:	Southern	Legal Status:	DPF
Land Use :	Open forest	General topography:	Flat
Rock and geology:	Granite	Soil data:	Loamy & sandy soil
Soil erosion :	Mild	Crop composition:	Sal,Giringa,Halda etc
Regeneration status :	Moderate	Injury/ damage to crop,if any :	No
Grazing incidence :	Light	Presence of bamboos:	No
Presence of grasses :	Moderate	Presence of weeds:	Moderate
Plantation status :	No	Water bodies:	No
Drivers of degradation:	Grazing, Cyclone	Faunal sighting, if any :	No
Faunal traces of flagship species.:	Elephant dung		

Tree



Odisha State Forest Department

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Terminalia tomentosa	Asan/ Sahaja	10.00	6.00	Sound
2	Pterospermum canescens	Giringa	37.00	13.00	Sound
3	Cleistanthus collinus	Karada	25.00	4.00	Unsound
4	Pterospermum canescens	Giringa	25.00	7.00	Unsound
5	Cleistanthus collinus	Karada	16.00	5.00	Unsound
6	Cleistanthus collinus	Karada	14.00	6.00	Sound
7	Adina cordifolia	Haldu (kurum)	38.00	12.00	Sound
8	Adina cordifolia	Haldu (kurum)	38.00	11.00	Sound
9	Diospyros sylvatica	Kalachua	16.00	8.00	Sound
10	Pterospermum canescens	Giringa	34.00	9.00	Sound
11	Pterospermum canescens	Giringa	20.00	7.00	Sound
12	Pterospermum heyneanum	Giringa	38.00	13.00	Sound
13	Dillenia pentagyna	Rai	15.00	8.00	Sound
14	Pterospermum canescens	Giringa	44.00	14.00	Sound
15	Terminalia tomentosa	Asan/ Sahaja	51.00	16.00	Sound
16	Dillenia pentagyna	Rai	18.00	8.00	Sound
17	Lannea coromandelica	Mai	50.00	15.00	Dead
18	Pterospermum canescens	Giringa	20.00	9.00	Sound
19	Anogeissus latifolia	Dhaura	27.00	10.00	Sound
20	Pterospermum canescens	Giringa	21.00	9.00	Sound
21	Adina cordifolia	Haldu (kurum)	90.00	22.00	Unsound
22	Terminalia tomentosa	Asan/ Sahaja	27.00	4.00	Unsound
23	Pterospermum canescens	Giringa	25.00	11.00	Sound
24	Pterospermum canescens	Giringa	31.00	10.00	Sound
25	Pterospermum canescens	Giringa	30.00	10.00	Sound
26	Diospyros sylvatica	Kalachua	44.00	17.00	Sound
27	Cleistanthus collinus	Karada	17.00	6.00	Sound
28	Adina cordifolia	Haldu (kurum)	11.00	5.00	Sound
29	Terminalia chebula	Harida	17.00	7.00	Sound
30	Cleistanthus collinus	Karada	17.00	7.00	Sound
31	Adina cordifolia	Haldu (kurum)	19.00	7.00	Sound
32	Terminalia chebula	Harida	16.00	6.00	Sound



Odisha State Forest Department

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)																														
Botanical Name	10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		100-110		110-120		120-130		130-140		140-150		>150	
Adina Cordifolia	2	6.00			2	11.50											1	22.00												
Anogeissus Latifolia			1	10.00																										
Cleistanthus Collinus	4	5.83	1	4.00																										
Dillenia Pentagyna	2	8.00																												
Diospyros Sylvatica	1	8.00					1	17.00																						
Lannea Coromandelica									1	15.00																				
Pterospermum Canescens			5	8.67	4	10.50	1	14.00																						
Pterospermum Heyneanum					1	13.00																								
Terminalia Chebula	2	6.50																												
Terminalia Tomentosa	1	6.00	1	4.00					1	16.00																				

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs



Odisha State Forest Department

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
1	SE	Shorea robusta	Sal	7.00	3.00	184.00	Abundant
2	SW	Shorea robusta	Sal	5.60	2.00	165.00	Moderate
3	SE	Pterospermum canescens	Giringa	6.00	3.00	168.00	Scanty
4	NW	Pterospermum canescens	Giringa	4.00	2.00	140.00	Moderate
5	SE	Terminalia tomentosa	Asana sahaja	6.00	3.00	155.00	Moderate
6	SW	Diospyros montana	Halda	4.50	2.00	160.00	Moderate
7	NE	Diospyros montana	Halda	4.00	2.00	155.00	Moderate

Herbs						
Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)	
1	NW	Andrographis paniculata	Bhuinimba	35.00	Scanty	
2	NW	Combretum deccandrum	Atundi	45.00	Moderate	

Approval Details				
Current Status :		DFO Approved	User Level :	Division
Range		Division	Circle	State
Status	Approve	Approve	Provisional	Provisional
Approved Date	15-10-2019	18-10-2019		



Odisha State Forest Department

Approved By	Sudhansu Sekhar Panda	DFO Nayagarh		

Surveyor Details

Name :	RANJAN KUMAR PRADHAN	Designation :	Forest Guard	Mobile :	8455858163

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Mahipur	Section :	Mahitama
Beat :	KOSALANGA	Forest Block:	Non-Forest Block
District :	Nayagarh	CD Block :	Nuagaon
Tehsil :	Nuagaon	Gram Panchayat :	Forest
Village :	Forest(Forest)	Parliament Constituency :	Kandhamal
Assembly Constituency :	Daspalla		

Data Capture Information

Captured On :	GPS PDA	Device :	SxT510318020700
Data Capture Time :		Data Insert Time :	02-11-2018 13:23:01
Data Update Time :	15-10-2019 18:00:09		

Working Plan Base Information

Unique Id :	NY450	Division :	NAYAGARH
Latitude :	20.2470859	Longitude :	85.0221424

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.2470897	Longitude :	85.0221240
Altitude :	166.800	Accuracy Horizontal :	13.00
Accuracy Vertical :	0.00	Time :	02-11-2018 11:06:52

General Information			
Data Collection Date & Time :	02-11-2018 11:06:52	Forest Canopy Status :	40-70%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	55.00
Remarks :			

Plot Approach Information			
Range :	Mahipur	Block and/or beat:	Hatimunda RF ,Kosalanga Beat
Compartment :	1	Grid:	F45T04
Latitude :	20.2470897	Longitude :	85.0221240
Journey/approach to the plot :	Walking from my Kosalanga beta house about 500 mtr , i reached boundary of Hatimunda RF near Kosalanga village, then walked about 2 km inside Hatimunda RF, i reached the grid point .on the way inside the RF I saw ANR Plantation 2016-17 and a Nala.	Ocular stock assessment:	MDF



Odisha State Forest Department

General observational information :	Configuration- Plain, Aspect- Gently Slope-3 degree , Drainage-well drainage, Rock- Granite , Soil- sandy loam , Water resource-Nil, Density-40-70, Under growth- Salia bamboo,Karada,Kanteikoli,	Conspicuous features:	On the way i faced –ANR plantation 2016-17
Removal of fuel wood and fodder :	Quantity of head loads of fuel woods removal-20 Kg approximately Quantity of fodder removal- NIL		

Plot Description Information

Range :	Mahipur	Block and or beat:	Hatimunda RF, Kosalanga Beat
Compartment :	1	Grid:	F45T04
Latitude :	20.2470897	Longitude :	85.0221240
Altitude :	166.800	Slope :	41
Aspect:	Southern	Legal Status:	Reserve forest
Land Use :	Dense forest	General topography:	Hilly
Rock and geology:	Alluvial	Soil data:	Texture- Forest & hill soil, Depth permeability- Moderate
Soil erosion :	Moderate	Crop composition:	Sal 55 %, Asan 10%, Mahula 15%, Dhaura 5%, Sirisa 5%, Jamu 10%
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Damage by natural calamities
Grazing incidence :	Moderate	Presence of bamboos:	Nil
Presence of grasses :	Scanty	Presence of weeds:	Scanty



Odisha State Forest Department

Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	due to biotic - Grazing and due to natural calamities- cyclone	Faunal sighting, if any :	No
Faunal traces of flagship species.:	No		

Tree



Odisha State Forest Department

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Pterocarpus marsupium	Piasal/ Bijasal	22.00	7.00	Sound
2	Shorea robusta	Sal	24.00	8.00	Sound
3	Shorea robusta	Sal	25.00	7.00	Sound
4	Shorea robusta	Sal	18.00	5.00	Sound
5	Shorea robusta	Sal	17.00	6.00	Sound
6	Shorea robusta	Sal	36.00	8.00	Sound
7	Shorea robusta	Sal	34.00	7.00	Sound
8	Shorea robusta	Sal	16.00	7.00	Sound
9	Shorea robusta	Sal	21.00	7.00	Sound
10	Shorea robusta	Sal	20.00	6.00	Sound
11	Shorea robusta	Sal	38.00	7.00	Sound
12	Shorea robusta	Sal	36.00	6.00	Sound
13	Shorea robusta	Sal	18.00	5.00	Sound
14	Shorea robusta	Sal	18.00	7.00	Sound
15	Shorea robusta	Sal	17.00	7.00	Sound
16	Shorea robusta	Sal	16.00	6.00	Sound
17	Shorea robusta	Sal	18.00	7.00	Sound
18	Shorea robusta	Sal	25.00	8.00	Sound
19	Shorea robusta	Sal	18.00	7.00	Sound
20	Shorea robusta	Sal	19.00	7.00	Sound
21	Shorea robusta	Sal	18.00	8.00	Sound
22	Shorea robusta	Sal	18.00	8.00	Sound
23	Shorea robusta	Sal	20.00	7.00	Sound
24	Shorea robusta	Sal	15.00	6.00	Sound
25	Shorea robusta	Sal	20.00	6.00	Sound
26	Shorea robusta	Sal	22.00	7.00	Sound
27	Shorea robusta	Sal	17.00	5.00	Sound
28	Terminalia tomentosa	Asan/ Sahaja	15.00	5.00	Sound
29	Terminalia tomentosa	Asan/ Sahaja	16.00	5.00	Sound
30	Terminalia tomentosa	Asan/ Sahaja	15.00	5.00	Sound
31	Terminalia tomentosa	Asan/ Sahaja	14.00	6.00	Sound
32	Madhuca indica	Mahula	15.00	6.00	Sound
33	Madhuca indica	Mahula	17.00	7.00	Sound
34	Madhuca indica	Mahula	15.00	6.00	Sound
35	Madhuca indica	Mahula	16.00	5.00	Sound
36	Buchanania lanzan	Char	14.00	6.00	Sound
37	Syzigium cumini	Jamu	17.00	6.00	Sound
38	Syzigium cumini	Jamu	15.00	5.00	Sound
39	Anogeissus latifolia	Dhaura	14.00	5.00	Sound
40	Anogeissus latifolia	Dhaura	16.00	7.00	Sound
41	Michelia champaca	Champa	12.00	5.00	Sound
42	Albizia lebbek	Siris	22.00	7.00	Sound
43	Albizia lebbek	Siris	16.00	7.00	Sound
44	Diospyros melanoxylon	kendu	14.00	5.00	Sound



Odisha State Forest Department

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)																														
Botanical Name	10-20		20-30		30-40		40-50		50-60		60-70		70-80		80-90		90-100		100-110		110-120		120-130		130-140		140-150		>150	
Albizzia Lebbeck	1	7.00	1	7.00																										
Anogeissus Latifolia	2	6.00																												
Buchanania Lanzan	1	6.00																												
Diospyros Melanoxylon	1	5.00																												
Madhuca Indica	4	6.00																												
Michelia Champaca	1	5.00																												
Pterocarpus Marsupium			1	7.00																										
Shorea Robusta	14	6.44	8	7.17	4	7.00																								
Syzigium Cumini	2	5.50																												
Terminalia Tomentosa	4	5.33																												

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs



Odisha State Forest Department

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
1	SE	Diospyros melanoxylon	Kendu	5.60	2.00	165.00	Scanty
2	NW	Shorea robusta	Sal	4.80	2.00	158.00	Scanty
3	NE	Buchanania lanzan	Char	7.00	4.00	185.00	Scanty
4	SW	Lannea coromandelica	Mai	6.40	3.00	168.00	Scanty
5	NW	Syzigium cumini	Jamu	4.30	2.00	147.00	Moderate

Herbs

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
1	SE	Curculigo orchiodes	Talmuli	56.00	Scanty
2	SE	Careya arborea	Kumbhi	60.00	Scanty

Approval Details

Current Status :	DFO Approved	User Level :	Division

	Range	Division	Circle	State
Status	Approve	Approve	Provisional	Provisional
Approved Date	15-10-2019	18-10-2019		
Approved By	Sudhansu Sekhar Panda	DFO Nayagarh		

Surveyor Details



Odisha State Forest Department

Name :	sudhakar saho	Designation :	Forest Guard	Mobile :	9668809938

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Mahipur	Section :	Mahipur
Beat :	Sampada	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Chandrapur
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	865733029240017
Data Capture Time :		Data Insert Time :	07-06-2017 11:37:58
Data Update Time :	15-10-2019 18:30:23		

Working Plan Base Information

Unique Id :	NY533	Division :	NAYAGARH
Latitude :	20.1987157	Longitude :	84.9810458

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.1987383	Longitude :	84.9810500
Altitude :	132.100	Accuracy Horizontal :	10.00
Accuracy Vertical :	0.00	Time :	06-06-2017 18:37:23

General Information			
Data Collection Date & Time :	06-06-2017 18:37:23	Forest Canopy Status :	40-70%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	5.00
Remarks :			

Plot Approach Information			
Range :	Mahipur	Block and/or beat:	Maichheli-sampada RF/Sampada Beat
Compartment :	2	Grid:	F45S16
Latitude :	20.1987383	Longitude :	84.9810500
Journey/approach to the plot :	Started journey from beat head quarter via high school field over 500 mtr by foot and reached at MS RF boundary line. then walked over 100 mtr inside MS RF arrived at grid point.	Ocular stock assessment:	MDF
General observational information :	Configuration- Plain with small hill lock Aspect- Northern -eastern Slope-0-5 degree , Drainage-well drainage , Rock- Ancient Granite Soil- Sandy loam Soil Water resource- Nil, Under wood-Chara, Karada, Kalachua , Under growth- Ranikathi, dhatiki,	Conspicuous features:	Nil



Odisha State Forest Department

Removal of fuel wood and fodder :	Appx 30 kg FW		

Plot Description Information

Range :	Mahipur	Block and or beat:	Maichheli-sampada RF/Sampada Beat
Compartment :	1	Grid:	F45S16
Latitude :	20.1987383	Longitude :	84.9810500
Altitude :	132.100	Slope :	5
Aspect:	North-Eastern	Legal Status:	Reserve forest
Land Use :	Open forest	General topography:	Flat
Rock and geology:	Granite	Soil data:	Loamy and sandy soil
Soil erosion :	Mild	Crop composition:	Sal 40 %, Bhalia 20 %,Bahada 10 %,Dhaura 20 %,Mai 10%
Regeneration status :	Moderate	Injury/ damage to crop,if any :	insect attack & natural cvalamity
Grazing incidence :	Light	Presence of bamboos:	No
Presence of grasses :	Moderate	Presence of weeds:	scanty
Plantation status :	No	Water bodies:	No
Drivers of degradation:	Grazing	Faunal sighting, if any :	Monkey
Faunal traces of flagship species.:	No		

Tree



Odisha State Forest Department

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Shorea robusta	Sal	32.00	5.00	Sound
2	Shorea robusta	Sal	33.00	7.00	Sound
3	Shorea robusta	Sal	34.00	6.00	Sound
4	Shorea robusta	Sal	42.00	7.00	Sound
5	Shorea robusta	Sal	49.00	6.00	Sound
6	Shorea robusta	Sal	18.00	9.00	Sound
7	Shorea robusta	Sal	35.00	5.00	Sound
8	Shorea robusta	Sal	15.00	6.00	Sound
9	Shorea robusta	Sal	18.00	7.00	Sound
10	Shorea robusta	Sal	16.00	6.00	Sound
11	Shorea robusta	Sal	48.00	5.00	Sound
12	Shorea robusta	Sal	16.00	6.00	Sound
13	Shorea robusta	Sal	15.00	5.00	Sound
14	Semecarpus anacardium	Bhalia	44.00	4.00	Sound
15	Semecarpus anacardium	Bhalia	39.00	5.00	Sound
16	Semecarpus anacardium	Bhalia	17.00	4.50	Sound
17	Shorea robusta	Sal	23.00	8.00	Sound
18	Lannea coromandelica	Mai	26.00	8.00	Sound
19	Shorea robusta	Sal	35.00	8.00	Sound
20	Shorea robusta	Sal	32.00	7.00	Sound
21	Shorea robusta	Sal	32.00	6.00	Sound
22	Semecarpus anacardium	Bhalia	31.00	9.00	Sound
23	Shorea robusta	Sal	45.00	8.00	Sound
24	Shorea robusta	Sal	42.00	8.00	Sound



Odisha State Forest Department

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)																												
Botanical Name	10-20		20-30		30-40		40-50		50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150									
Lannea Coromandelica			1	8.00																								
Semecarpus Anacardium	1	4.50			2	7.00	1	4.00																				
Shorea Robusta	6	6.50	1	8.00	7	6.38	5	6.63																				

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs



Odisha State Forest Department

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
1	NW	Shorea robusta	Sal	5.00	2.00	160.00	Moderate
2	NE	Shorea robusta	Sal	6.00	3.00	168.00	Moderate
3	SW	Shorea robusta	Sal	4.80	2.00	154.00	Abundant
4	NE	Diospyros melanoxylon	Kendu	5.00	2.00	160.00	Moderate
5	NW	Diospyros melanoxylon	Kendu	4.00	2.00	158.00	Moderate
6	NE	Lannea coromandelica	Mai	4.00	2.00	158.00	Abundant
7	NE	Emblica officinalis	Amla	5.00	2.00	160.00	Moderate
8	NE	Morinda tinctoria	Achhu	4.00	2.00	150.00	Moderate
9	NE	Dalbergia paniculata	Barabakulia Sataparadia	5.50	3.00	165.00	Moderate
10	SE	Madhuca indica	Mahula	6.00	2.00	155.00	Moderate
11	NW	Ixora parviflora	Telkoruan	4.60	0.00	60.00	Moderate

Herbs



Odisha State Forest Department

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
1	NW	Shorea robusta	Sal	60.00	Abundant
2	NW	Andrographis paniculata	Bhuinimba	60.00	Abundant
3	SE	Andrographis paniculata	Bhuinimba	55.00	Moderate
4	SW	Hemidesmus indicus	Anantamula	60.00	Abundant
5	SE	Hemidesmus indicus	Anantamula	50.00	Moderate
6	NW	Phoenix dantyliferas	Khajuri	56.00	Scanty
7	NW	Gardenia turgida	Kharal	60.00	Moderate

Approval Details

Current Status :	DFO Approved	User Level :	Division

	Range	Division	Circle	State
Status	Approve	Approve	Provisional	Provisional
Approved Date	15-10-2019	18-10-2019		
Approved By	Sudhansu Sekhar Panda	DFO Nayagarh		

Surveyor Details

Name :	RAMESH MALLIK	Designation :	Forest Guard	Mobile :	9437104169

Surveyor Photo	Surveyor Team Photo

Images



Odisha State Forest Department

Actual MidPoint Images

Sample Area Images



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Mahipur	Section :	Gumi
Beat :	Centeri Dimiria	Forest Block:	Non-Forest Block
District :	Nayagarh	CD Block :	Nuagaon
Tehsil :	Nuagaon	Gram Panchayat :	Forest
Village :	Forest(Forest)	Parliament Constituency :	Kandhamal
Assembly Constituency :	Daspalla		

Data Capture Information

Captured On :	GPS PDA	Device :	SxT510318020741
Data Capture Time :		Data Insert Time :	19-11-2018 17:59:36
Data Update Time :	15-10-2019 17:46:32		

Working Plan Base Information

Unique Id :	NY620	Division :	NAYAGARH
Latitude :	20.1972732	Longitude :	84.8680607

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.1972273	Longitude :	84.8681887
Altitude :	242.500	Accuracy Horizontal :	18.00
Accuracy Vertical :	0.00	Time :	19-11-2018 10:52:30

General Information			
Data Collection Date & Time :	19-11-2018 10:52:30	Forest Canopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	40.00
Remarks :			

Plot Approach Information			
Range :	Mahipur	Block and/or beat:	Palva RF/Dimiria Beat
Compartment :	3	Grid:	F45S16
Latitude :	20.1972273	Longitude :	84.8681887
Journey/approach to the plot :	Started journey from my beat house to near village Dimiria by motorcycle about 4 km. then walked to Palva RF over 5 km to reach on grid point. on the way we saw dhaura,giringa,karada, etc.	Ocular stock assessment:	Moderate dense forest



Odisha State Forest Department

General observational information :	Hilly area of slope 40 degree and above. aspect is northern, rock is granite, soil is forest & hill soil, water resources nalas, under wood seen like Dhaura,katakala,halada and under growth seen Giringa,Karada & dhaura.	Conspicuous features:	Hilly area
Removal of fuel wood and fodder :	15 kg firewood may obtain from plot		

Plot Description Information			
Range :	Mahipur	Block and or beat:	Palva RF/Dimiria Beat
Compartment :	3	Grid:	F45S16
Latitude :	20.1972273	Longitude :	84.8681887
Altitude :	242.500	Slope :	40
Aspect:	Northern	Legal Status:	Reserve forest
Land Use :	Dense forest	General topography:	Hilly
Rock and geology:	Granite	Soil data:	Forest & hill soil
Soil erosion :	Mild	Crop composition:	Dhaura, giringa, halda
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Light
Grazing incidence :	No	Presence of bamboos:	No
Presence of grasses :	moderate	Presence of weeds:	Moderate
Plantation status :	No	Water bodies:	No
Drivers of degradation:	Cyclone	Faunal sighting, if any :	No



Odisha State Forest Department

Faunal traces of flagship species.:	no		

Tree



Odisha State Forest Department

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Anogeissus latifolia	Dhaura	15.00	5.00	Sound
2	Anogeissus latifolia	Dhaura	20.00	5.00	Sound
3	Pterospermum heyneanum	Giringa	18.00	5.00	Sound
4	Pterospermum canescens	Giringa	20.00	6.00	Sound
5	Pterospermum canescens	Giringa	28.00	8.00	Sound
6	Pterospermum canescens	Giringa	33.00	8.00	Sound
7	Hymenodictyon excellsum	Kansa	40.00	8.00	Sound
8	Cleistanthus collinus	Karada	30.00	4.00	Sound
9	Strychnos potatorum	Katakala	32.00	6.00	Sound
10	Pterospermum heyneanum	Giringa	19.00	5.00	Sound
11	Anogeissus latifolia	Dhaura	45.00	8.00	Sound
12	Anogeissus latifolia	Dhaura	34.00	6.00	Sound
13	Hymenodictyon excellsum	Kansa	18.00	5.00	Sound
14	Anogeissus latifolia	Dhaura	13.00	5.00	Sound
15	Anogeissus latifolia	Dhaura	20.00	5.00	Sound
16	Pterospermum heyneanum	Giringa	21.00	5.00	Sound
17	Pterospermum canescens	Giringa	18.00	5.00	Sound
18	Diospyros montana	Halda	14.00	5.00	Sound
19	Pterospermum heyneanum	Giringa	13.00	5.00	Sound
20	Cleistanthus collinus	Karada	14.00	4.00	Sound
21	Anogeissus latifolia	Dhaura	30.00	7.00	Sound
22	Pterospermum canescens	Giringa	22.00	5.00	Sound
23	Pterospermum canescens	Giringa	22.00	4.00	Sound
24	Pterospermum canescens	Giringa	24.00	5.00	Sound
25	Pterospermum heyneanum	Giringa	20.00	5.00	Sound



Odisha State Forest Department

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20		20-30		30-40		40-50		50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150
Anogeissus Latifolia	2	5.00	2	5.00	2	6.50	1	8.00											
Cleistanthus Collinus	1	4.00			1	4.00													
Diospyros Montana	1	5.00																	
Hymenodictyon Excellsum	1	5.00					1	8.00											
Pterospermum Canescens	1	5.00	5	5.88	1	8.00													
Pterospermum Heyneanum	3	5.00	2	5.00															
Strychnos Potatorum					1	6.00													

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
1	SE	Diospyros melanoxylon	Kendu	7.00	4.00	186.00	Scanty
2	SE	Cleistanthus collinus	Korada	4.00	2.00	160.00	Scanty
3	SE	Albizia lebback	Sirisa	5.80	2.00	150.00	Moderate
4	NW	Anogeissus latifolia	Dhaura	5.00	2.00	156.00	Scanty

Herbs



Odisha State Forest Department

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
1	SE	Andrographis paniculata	Bhuinimba	35.00	Scanty
2	NE	Andrographis paniculata	Bhuinimba	35.00	Scanty
3	SE	Diospyros melanoxylon	Kendu	40.00	Moderate
4	NE	Diospyros melanoxylon	Kendu	42.00	Scanty
5	SW	Woodfordia fruticosa	Dhatiki	40.00	Scanty

Approval Details

Current Status :	DFO Approved	User Level :	Division

	Range	Division	Circle	State
Status	Approve	Approve	Provisional	Provisional
Approved Date	15-10-2019	18-10-2019		
Approved By	Sudhansu Sekhar Panda	DFO Nayagarh		

Surveyor Details

Name :	SUDIPTA KUMAR SAHOO	Designation :	Forest Guard	Mobile :	9438311665

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images



Odisha State Forest Department

Sample Area Images

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Mahipur	Section :	Mahitama
Beat :	Khalamada	Forest Block:	Non-Forest Block
District :	Nayagarh	CD Block :	Nuagaon
Tehsil :	Nuagaon	Gram Panchayat :	Forest
Village :	Forest(Forest)	Parliament Constituency :	Kandhamal
Assembly Constituency :	Daspalla		

Data Capture Information

Captured On :	GPS PDA	Device :	865733029240017
Data Capture Time :		Data Insert Time :	12-12-2018 17:52:05
Data Update Time :	25-09-2019 13:34:33		

Working Plan Base Information

Unique Id :	NY756	Division :	NAYAGARH
Latitude :	20.2568520	Longitude :	84.8909515

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint

Latitude :	20.2568822	Longitude :	84.8914365
Altitude :	215.600	Accuracy Horizontal :	11.00
Accuracy Vertical :	0.00	Time :	12-12-2018 12:39:59

General Information

Data Collection Date & Time :	12-12-2018 12:39:59	Forest Canopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	40.00
Remarks :			

Plot Approach Information

Range :	Mahipur	Block and/or beat:	Ragadimada RF , Khalamada Beat

Compartment :	5	Grid:	F45S15
Latitude :	20.2568822	Longitude :	84.8914365
Journey/approach to the plot :	Travelling by motor cycle from khalamada beat house to Tokada village about 8 km . then walking about 2 km inside RM RF,C/5 and on the way to grid point i saw different type of trees such as dhaura,asan jari etc. then i reached on the grid point.	Ocular stock assessment:	MDF
General observational information :	Configuration- Hilly, Aspect- Western, Slope-40 degree , Drainage-well drainage, Rock- Granite Soil-Sandy loam , Water resource- Nil, Density- 40-70, Under growth- Jhatiki, kanteikoli	Conspicuous features:	Nil
Removal of fuel wood and fodder :	Quantity of head loads of fuel woods removal-15 Kg approximately Quantity of fodder removal- NIL		

Plot Description Information

Range :	Mahipur	Block and or beat:	Ragadimada RF , Khalamada Beat
Compartment :	5	Grid:	F45S15
Latitude :	20.2568822	Longitude :	84.8914365
Altitude :	215.600	Slope :	40
Aspect:	Southern-eastern	Legal Status:	Reserve forest
Land Use :	Dense forest	General topography:	Hilly
Rock and geology:	Granite	Soil data:	Texture- Forest & hill soil, Depth permeability- Moderately
Soil erosion :	Moderate	Crop composition:	Asan 20%, Dhaura 30%, Kendu 10%, Bamboo 40%
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Damage by natural calamities
Grazing incidence :	Light	Presence of bamboos:	Yes
Presence of grasses :	Scanty	Presence of weeds:	Moderate
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Grazing	Faunal sighting, if any :	No
Faunal traces of flagship species.:	No		

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Terminalia tomentosa	Asan/ Sahaja	16.00	20.00	Sound

1/2/2021

Database Error

2	Emblica officinalis	Amla	15.00	15.00	Sound
3	Bridelia retusa	Kasi	17.00	11.00	Sound
4	Anogeissus latifolia	Dhaura	30.00	7.00	Sound
5	Lannea coromandelica	Mai	16.00	8.00	Sound
6	Alangium lamarkii	Ankula	16.00	9.00	Sound
7	Lannea coromandelica	Mai	18.00	8.00	Sound
8	Shorea robusta	Sal	25.00	11.00	Sound
9	Diospyros montana	Halda	20.00	9.00	Sound
10	Emblica officinalis	Amla	30.00	5.00	Sound
11	Anogeissus latifolia	Dhaura	31.00	6.00	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Nayagarh	Section :	Nayagarh
Beat :	Ara	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Gudari
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	868324022886670
Data Capture Time :		Data Insert Time :	23-06-2017 13:10:05
Data Update Time :	15-10-2019 11:29:31		

Working Plan Base Information

Unique Id :	NY35	Division :	NAYAGARH
Latitude :	20.1469395	Longitude :	85.0995709

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.1469355	Longitude :	85.0996037
Altitude :	134.200	Accuracy Horizontal :	3.40
Accuracy Vertical :	0.00	Time :	19-06-2017 10:08:43

General Information			
Data Collection Date & Time :	19-06-2017 10:08:43	Forest Cannopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	0.00
Remarks :			

Plot Approach Information			
Range :	Nayagarh	Block and/or beat:	Balaram RF,Ara Beat
Compartment :	c-1	Grid:	F45T04
Latitude :	20.1469355	Longitude :	85.0996037
Journey/approach to the plot :	I started my journey from beat to exercise the working plan point NY-35 rushed to approach the plot by my bike via Division office,Barapalli village.Then i found the pillar No-37 and navigate to the point NY-35 by PDA and i.e 200 mtr west from pillar no-37	Ocular stock assessment:	MDF



Odisha State Forest Department

General observational information :	By follow the navigation of PDA .I recached NY-35 .Which is towards west aspect of Balaram RF. There is slope 35 degree towards west with a little soil erosion. There is a WHS (Chatia khal) at a distance 100 mtr towards west from the point. The species Kusum, Char, Kaluchua with well regeneration.	Conspicuous features:	On the way i face rocky patches and a water body.
Removal of fuel wood and fodder :	Nil		

Plot Description Information

Range :	Nayagarh	Block and or beat:	Balaram RF, Ara Beat
Compartment :	c-1	Grid:	F45T04
Latitude :	20.1469355	Longitude :	85.0996037
Altitude :	134.200	Slope :	35
Aspect:	Southern	Legal Status:	RF
Land Use :	Scrub	General topography:	Hilly
Rock and geology:	Laterite	Soil data:	Not available
Soil erosion :	Moderate	Crop composition:	Most dominant-Kusum Pre dominant-Char, Kaluchua
Regeneration status :	Moderate	Injury/ damage to crop, if any :	Damage by natural calamities
Grazing incidence :	Moderate	Presence of bamboos:	Nil
Presence of grasses :	30%	Presence of weeds:	40%



Odisha State Forest Department

Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Fire	Faunal sighting, if any :	Nil
Faunal traces of flagship species.:	Nil		

Tree					
Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Albizzia lebbek	Siris	40.00	10.00	Sound
2	Terminalia tomentosa	Asan/ Sahaja	10.00	5.00	Sound
3	Terminalia tomentosa	Asan/ Sahaja	15.00	4.00	Sound
4	Lannea coromandelica	Mai	16.00	6.00	Sound
5	Lannea coromandelica	Mai	21.00	7.00	Sound
6	Terminalia tomentosa	Asan/ Sahaja	31.00	6.00	Sound
7	Terminalia tomentosa	Asan/ Sahaja	31.00	5.00	Sound
8	Scheichera oleosa	Kusum	17.00	6.00	Sound
9	Lannea coromandelica	Mai	17.00	4.00	Sound
10	Lannea coromandelica	Mai	13.00	5.00	Sound
11	Pongamia pinnata	Karanj	40.00	6.00	Sound
12	Albizzia lebbek	Siris	40.00	8.00	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)



Odisha State Forest Department

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150
Albizia Lebbek				2	9.00										
Lannea Coromandelica	3	5.00	1	7.00											
Pongamia Pinnata				1	6.00										
Scheichera Oleosa	1	6.00													
Terminalia Tomentosa	2	4.50		2	5.50										

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)

No Records Found...

Shrubs

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
1	NE	Buchanania lanzan	Char	6.00	2.00	155.00	Scanty
2	NE	Bridellia retusa	Kasi	7.00	3.00	186.00	Scanty

Herbs

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
1	NE	Emblica officinalis	Amla	60.00	Scanty
2	NE	Grewia hirsuta	Kukurabicha	55.00	Scanty

Approval Details



Odisha State Forest Department

Current Status :	DFO Approved	User Level :	Division

	Range	Division	Circle	State
Status	Approve	Approve	Provisional	Provisional
Approved Date	15-10-2019	16-10-2019		
Approved By	Forest Range Officer	DFO Nayagarh		

Surveyor Details

Name :	Sumanta paikira Biswal	Designation :	Forest Guard	Mobile :	9777579734

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Nayagarh	Section :	Khedapada
Beat :	Jogiapali	Forest Block:	Non-Forest Block
District :	Nayagarh	CD Block :	Khandapara
Tehsil :	Khandpada	Gram Panchayat :	Gunthuni
Village :	Barbankkhesra(Barabankakhesera)	Parliament Constituency :	Cuttack
Assembly Constituency :	Khandapada		

Data Capture Information

Captured On :	Mobile	Device :	869041023619319
Data Capture Time :		Data Insert Time :	20-11-2018 12:14:38
Data Update Time :	09-03-2019 14:16:43		

Working Plan Base Information

Unique Id :	NY77	Division :	NAYAGARH
Latitude :	20.1968788	Longitude :	85.1579748

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint



Odisha State Forest Department

Latitude :	20.1968000	Longitude :	85.1580000
Altitude :	106.000	Accuracy Horizontal :	5.00
Accuracy Vertical :	0.00	Time :	20-11-2018 12:05:08

General Information

Data Collection Date & Time :	20-11-2018 12:05:08	Forest Canopy Status :	0-10%
Forest Undergrowth Status :	Dense	Average slope in degree-decimal :	40.00
Remarks :			

Plot Approach Information

Range :	Nayagarh	Block and/or beat:	Barabanka PRF, Jogiapalli Beat
Compartment :	c-1	Grid:	F45T04
Latitude :	20.1968000	Longitude :	85.1580000
Journey/approach to the plot :	I reached to the Raghunathpur village by my bike then started the PDA navigation follow the direction it is only 500 mtr towards west from the village.	Ocular stock assessment:	It is a scrub forest
General observational information :	The point NY-77 is at the eastern aspect of the Barabanka PRF with a slope of 40 % towards east. Mild soil erosion has been found as it covered by weeds like eupatorium and climbers with a 80% under growth.	Conspicuous features:	Scanty to a scrub forest



Odisha State Forest Department

Removal of fuel wood and fodder :	Nil		

Plot Description Information

Range :	Nayagarh	Block and or beat:	Barabanka PRF,Jogiapalli Beat
Compartment :	c-1	Grid:	F45T04
Latitude :	20.1968000	Longitude :	85.1580000
Altitude :	106.000	Slope :	35
Aspect:	Eastern	Legal Status:	PRF
Land Use :	MDF	General topography:	Moderate
Rock and geology:	Hilly soil	Soil data:	Not available
Soil erosion :	Mild	Crop composition:	Scanty with well regenerated of neem and bel
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Nil
Grazing incidence :	Nil	Presence of bamboos:	Nil
Presence of grasses :	Nil	Presence of weeds:	Nil
Plantation status :	Bald hill plantation 50 Ha 2018-19	Water bodies:	a small pond present towards 200 mtr east from the point
Drivers of degradation:	Fire	Faunal sighting, if any :	Nil
Faunal traces of flagship species.:	Nil		

Tree



Odisha State Forest Department

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Madhuca indica	Mahula	14.00	5.00	
2	Aegle marmelos	Bela	11.00	6.00	

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)																
Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150	
Aegle Marmelos	1	6.00														
Madhuca Indica	1	5.00														

Bamboo							
Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs							
Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
1	NE	Anogeissus latifolia	Dhaura	5.00	2.00	167.00	

Herbs					
Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
1	NE	Aegle marmelus	Bela	50.00	Scanty

Approval Details



Odisha State Forest Department

Current Status :	DFO Approved	User Level :	Division

	Range	Division	Circle	State
Status	Approve	Approve	Provisional	Provisional
Approved Date	09-03-2019	27-04-2019		
Approved By	Range Officer Nayagarh	DFO Nayagarh		

Surveyor Details

Name :	Sumanta Kumar Parida	Designation :	Forester	Mobile :	9583689000

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Nayagarh	Section :	Khedapada
Beat :	Khadagaprasad	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Chandrapur
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	868324020333519
Data Capture Time :		Data Insert Time :	12-07-2017 11:25:20
Data Update Time :	15-10-2019 11:25:33		

Working Plan Base Information

Unique Id :	NY454	Division :	NAYAGARH
Latitude :	20.2244522	Longitude :	85.0903760

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint

Latitude :	20.2244298	Longitude :	85.0903797
Altitude :	147.100	Accuracy Horizontal :	3.80
Accuracy Vertical :	0.00	Time :	12-07-2017 09:46:23

General Information

Data Collection Date & Time :	12-07-2017 09:46:23	Forest Canopy Status :	40-70%
Forest Undergrowth Status :	Scanty	Average slope in degree-decimal :	0.00
Remarks :			

Plot Approach Information

Range :	Nayagarh	Block and/or beat:	Hatimunda RF,Khadagaprasad Beat

Compartment :	C-10	Grid:	F45T04
Latitude :	20.2244298	Longitude :	85.0903797
Journey/approach to the plot :	Reached near the bottom of the Reserve forest near Kaudia Andharkani forest road by bike and follow the direction of PDA towards west about 400 mtr on foot path	Ocular stock assessment:	Open Forrest to a moderate forest
General observational information :	From the ground forest road it is a plain land with a slope of 10 degree and it is the eastern aspect of Hatimunda RF C-10	Conspicuous features:	Moderate dense forest with average regeneration
Removal of fuel wood and fodder :	Nil		

Plot Description Information

Range :	Nayagarh	Block and or beat:	Hatimunda RF,Khadagprasad Beat
Compartment :	c-10	Grid:	F45T04
Latitude :	20.2244298	Longitude :	85.0903797
Altitude :	147.100	Slope :	5
Aspect:	Eastren	Legal Status:	RF
Land Use :	Moderate dense forest	General topography:	Plain land gentle rolling
Rock and geology:	Loomy sandy soil	Soil data:	Not availble
Soil erosion :	Nil	Crop composition:	Dominant-Sal Pre Dominant-Char
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Nil
Grazing incidence :	Nil	Presence of bamboos:	Yes 2 Clumps as per wp code-Coupe B(Sulia)
Presence of grasses :	Nil	Presence of weeds:	20%
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Fire and some biotic interference	Faunal sighting, if any :	Nil
Faunal traces of flagship species.:	Nil		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Shorea robusta	Sal	14.00	12.00	Sound
2	Shorea robusta	Sal	21.00	11.00	Sound
3	Shorea robusta	Sal	12.00	10.00	Sound
4	Shorea robusta	Sal	15.00	8.00	Sound

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			Database Error		
5	Shorea robusta	Sal	14.00	7.00	Sound
6	Shorea robusta	Sal	19.00	9.00	Sound
7	Shorea robusta	Sal	20.00	8.00	Sound
8	Shorea robusta	Sal	18.00	7.00	Sound
9	Shorea robusta	Sal	14.00	8.00	Sound
10	Shorea robusta	Sal	20.00	9.00	Sound
11	Shorea robusta	Sal	14.00	10.00	Sound
12	Shorea robusta	Sal	17.00	11.00	Sound
13	Shorea robusta	Sal	24.00	10.00	Sound
14	Shorea robusta	Sal	17.00	13.00	Sound
15	Shorea robusta	Sal	16.00	12.00	Sound
16	Shorea robusta	Sal	25.00	11.00	Sound
17	Shorea robusta	Sal	16.00	13.00	Sound
18	Shorea robusta	Sal	23.00	12.00	Sound
19	Shorea robusta	Sal	19.00	11.00	Sound
20	Pterocarpus marsupium	Piasal/ Bijasal	33.00	10.00	Sound
21	Shorea robusta	Sal	16.00	11.00	Sound
22	Shorea robusta	Sal	26.00	12.00	Sound
23	Shorea robusta	Sal	13.00	10.00	Sound
24	Shorea robusta	Sal	15.00	9.00	Sound
25	Shorea robusta	Sal	12.00	7.00	Sound
26	Buchanania lanzan	Char	10.00	5.00	Sound
27	Shorea robusta	Sal	29.00	10.00	Sound
28	Shorea robusta	Sal	19.00	6.00	Sound
29	Shorea robusta	Sal	23.00	8.00	Sound
30	Shorea robusta	Sal	14.00	7.00	Sound
31	Shorea robusta	Sal	19.00	10.00	Sound
32	Shorea robusta	Sal	13.00	8.00	Sound
33	Shorea robusta	Sal	23.00	9.00	Sound
34	Shorea robusta	Sal	18.00	12.00	Sound
35	Shorea robusta	Sal	17.00	10.00	Sound
36	Shorea robusta	Sal	19.00	11.00	Sound

37	Shorea robusta	Sal	14.00	7.00	Sound

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Database Error

38	Shorea robusta	Sal	15.00	10.00	Sound
39	Shorea robusta	Sal	27.00	8.00	Sound
40	Anogeissus latifolia	Dhaura	15.00	10.00	Sound
41	Shorea robusta	Sal	15.00	8.00	Sound
42	Shorea robusta	Sal	20.00	11.00	Sound
43	Shorea robusta	Sal	13.00	10.00	Sound
44	Shorea robusta	Sal	21.00	8.00	Sound
45	Shorea robusta	Sal	18.00	14.00	Sound
46	Shorea robusta	Sal	15.00	10.00	Sound
47	Shorea robusta	Sal	15.00	12.00	Sound
48	Shorea robusta	Sal	23.00	9.00	Sound
49	Shorea robusta	Sal	23.00	8.00	Sound
50	Shorea robusta	Sal	13.00	10.00	Sound
51	Shorea robusta	Sal	13.00	5.00	Sound
52	Shorea robusta	Sal	17.00	15.00	Sound
53	Semecarpus anacardium	Bhalia	14.00	5.00	Sound
54	Shorea robusta	Sal	21.00	11.00	Sound
55	Shorea robusta	Sal	24.00	12.00	Sound
56	Shorea robusta	Sal	12.00	10.00	Sound
57	Shorea robusta	Sal	28.00	9.00	Sound
58	Shorea robusta	Sal	26.00	7.00	Sound
59	Shorea robusta	Sal	13.00	6.00	Sound
60	Shorea robusta	Sal	11.00	8.00	Sound
61	Shorea robusta	Sal	13.00	8.00	Sound
62	Shorea robusta	Sal	23.00	10.00	Sound
63	Shorea robusta	Sal	18.00	11.00	Sound
64	Shorea robusta	Sal	16.00	12.00	Sound
65	Shorea robusta	Sal	10.00	6.00	Sound
66	Shorea robusta	Sal	16.00	11.00	Sound
67	Pterocarpus marsupium	Piasal/ Bijasal	30.00	10.00	Sound
68	Shorea robusta	Sal	15.00	8.00	Sound

69	Shorea robusta	Sal	10.00	6.00	Sound
70	Shorea robusta	Sal	16.00	9.00	Sound

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Database Error

71	Terminalia tomentosa	Asan/ Sahaja	17.00	10.00	Sound
72	Shorea robusta	Sal	22.00	8.00	Sound
73	Shorea robusta	Sal	19.00	7.00	Sound
74	Terminalia tomentosa	Asan/ Sahaja	16.00	8.00	Sound
75	Shorea robusta	Sal	22.00	10.00	Sound
76	Shorea robusta	Sal	11.00	5.00	Sound
77	Shorea robusta	Sal	21.00	13.00	Sound
78	Shorea robusta	Sal	24.00	11.00	Sound
79	Shorea robusta	Sal	13.00	8.00	Sound
80	Shorea robusta	Sal	20.00	12.00	Sound
81	Shorea robusta	Sal	14.00	10.00	Sound
82	Shorea robusta	Sal	23.00	12.00	Sound
83	Shorea robusta	Sal	18.00	11.00	Sound
84	Shorea robusta	Sal	19.00	10.00	Sound
85	Shorea robusta	Sal	17.00	8.00	Sound
86	Shorea robusta	Sal	15.00	12.00	Sound
87	Shorea robusta	Sal	16.00	10.00	Sound
88	Shorea robusta	Sal	17.00	11.00	Sound
89	Shorea robusta	Sal	11.00	8.00	Sound
90	Shorea robusta	Sal	24.00	13.00	Sound
91	Shorea robusta	Sal	15.00	11.00	Sound
92	Shorea robusta	Sal	16.00	10.00	Sound
93	Shorea robusta	Sal	15.00	8.00	Sound
94	Shorea robusta	Sal	19.00	9.00	Sound
95	Shorea robusta	Sal	17.00	7.00	Sound
96	Shorea robusta	Sal	18.00	10.00	Sound
97	Shorea robusta	Sal	21.00	7.00	Sound
98	Shorea robusta	Sal	26.00	12.00	Sound
99	Shorea robusta	Sal	18.00	11.00	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40- 50	50- 60	60- 70	70- 80	80- 90	90- 100	100- 110	110- 120	120- 130	130- 140	140- 150	>150

[illegible]

Database Error

Bamboo



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Nayagarh	Section :	Nayagarh
Beat :	Bhatasahi	Forest Block:	Non-Forest Block
District :	Nayagarh	CD Block :	Nayagarh
Tehsil :	Nuagaon	Gram Panchayat :	Forest
Village :	Forest(Forest)	Parliament Constituency :	Puri
Assembly Constituency :	Nayagarh		

Data Capture Information

Captured On :	GPS PDA	Device :	868324020333519
Data Capture Time :		Data Insert Time :	16-11-2018 08:37:28
Data Update Time :	11-03-2019 12:13:51		

Working Plan Base Information

Unique Id :	NY894	Division :	NAYAGARH
Latitude :	20.1111977	Longitude :	85.0396473

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.1112112	Longitude :	85.0396443
Altitude :	228.800	Accuracy Horizontal :	3.80
Accuracy Vertical :	0.00	Time :	15-11-2018 10:27:07

General Information			
Data Collection Date & Time :	15-11-2018 10:27:07	Forest Canopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	25.00
Remarks :			

Plot Approach Information			
Range :	Nayagarh	Block and/or beat:	Bhatasahi
Compartment :	Sulia III	Grid:	F45T04
Latitude :	20.1112112	Longitude :	85.0396443
Journey/approach to the plot :	I started my journey from the Bhatasahi village and reached at the pillar No. 233 then I navigate the point Ny-894 by PDA and 1.5 Km western from pillar No. 233 then I navigate to the point Ny-894 by PDA and i.e. 1.5 Km western from pillar No. 233	Ocular stock assessment:	Mixed Forest



Odisha State Forest Department

General observational information :	By following the navigation of PDA I reached Ny-894 it is a - hilly-land north and western aspect with a 25 degree slope. mixed deciduous Forest 50% Density. The Principal species Mai, Dhaura, etc.	Conspicuous features:	hilly land
Removal of fuel wood and fodder :	NIL		

Plot Description Information

Range :	Nayagarh	Block and or beat:	Bhatasahi
Compartment :	Sulia III	Grid:	F45T04
Latitude :	20.1112112	Longitude :	85.0396443
Altitude :	228.800	Slope :	40
Aspect:	North western	Legal Status:	RF
Land Use :	Close Forest	General topography:	Hilly
Rock and geology:	Forest and hilly	Soil data:	Not available
Soil erosion :	Mild	Crop composition:	Mixed Forest
Regeneration status :	Mai	Injury/ damage to crop,if any :	Fire
Grazing incidence :	Light	Presence of bamboos:	NIL
Presence of grasses :	10%	Presence of weeds:	20%
Plantation status :	NIL	Water bodies:	NIL
Drivers of degradation:	Fire and M idle degraded	Faunal sighting, if any :	NIL



Odisha State Forest Department

Faunal traces of flagship species.:	NIL		

Tree					
Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Dalbergia latifolia	Sisoo	67.00	10.00	Unsound
2	Lagerstroemia speciosa	Patuli	32.00	8.00	Unsound
3	Mallotus philipinensis	Kamalagundi	40.00	8.00	Unsound
4	Cassia fistula	Sunari	21.00	6.00	Sound
5	Aegle marmelos	Bela	42.00	7.00	Unsound
6	Casearia elliptica	Khakada	26.00	6.00	Sound
7	Anogeissus latifolia	Dhaura	27.00	10.00	Sound
8	Dalbergia paniculata	Barabakulia	55.00	11.00	Sound
9	Madhuca indica	Mahula	62.00	13.00	Sound
10	Lannea coromandelica	Mai	66.00	15.00	Sound
11	Lannea coromandelica	Mai	50.00	10.00	Unsound
12	Lannea coromandelica	Mai	55.00	10.00	Unsound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)



Odisha State Forest Department

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150
Aegle Marmelos				1	7.00										
Anogeissus Latifolia		1	10.00												
Casearia Elliptica		1	6.00												
Cassia Fistula		1	6.00												
Dalbergia Latifolia						1	10.00								
Dalbergia Paniculata					1	11.00									
Lagerstroemia Speciosa			1	8.00											
Lansea Coromandelica					2	10.00	1	15.00							
Madhuca Indica						1	13.00								
Mallous Philipinensis				1	8.00										

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)

No Records Found...

Shrubs

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
1	NW	Lansea coromandelica	Mai	6.00	2.00	172.00	Moderate
2	NW	Acacia catechu	Khaira	6.00	2.00	183.00	Moderate

Herbs



Odisha State Forest Department

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
1	NW	Diospyros melanoxylon	Kendu	58.00	Moderate
2	NW	Diospyros melanoxylon	Kendu	60.00	Moderate

Approval Details

Current Status :	DFO Approved	User Level :	Division

	Range	Division	Circle	State
Status	Approve	Approve	Provisional	Provisional
Approved Date	11-03-2019	28-04-2019		
Approved By	Range Officer Nayagarh	DFO Nayagarh		

Surveyor Details

Name :	GOPINAT MALLICK	Designation :		Mobile :	933729224

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images



Odisha State Forest Department

Sample Area Images

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Nayagarh	Section :	Nayagarh
Beat :	Machipada	Forest Block:	Non-Forest Block
District :	Nayagarh	CD Block :	Nayagarh
Tehsil :	Nuagaon	Gram Panchayat :	Forest
Village :	Forest(Forest)	Parliament Constituency :	Puri
Assembly Constituency :	Nayagarh		

Data Capture Information

Captured On :	GPS PDA	Device :	868324020333519
Data Capture Time :		Data Insert Time :	14-11-2018 09:16:56
Data Update Time :	20-03-2019 13:26:56		

Working Plan Base Information

Unique Id :	NY899	Division :	NAYAGARH
Latitude :	20.0985431	Longitude :	85.0263210

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint

Latitude :	20.0985250	Longitude :	85.0262533
Altitude :	236.100	Accuracy Horizontal :	4.50
Accuracy Vertical :	0.00	Time :	12-11-2018 11:25:55

General Information

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Database Error

Data Collection Date & Time :	12-11-2018 11:25:55	Forest Cannopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	30.00
Remarks :			

Plot Approach Information

Range :	Nayagarh	Block and/or beat:	Sulia RF,Machhipada Beat
Compartment :	4(p)	Grid:	F45T04
Latitude :	20.0985250	Longitude :	85.0262533
Journey/approach to the plot :	I started my jouney from Machhipada,Raghunathpur,Sialikhal ,barapalla and reached pillar No-218 of Sulia RF.Then i navigate to the point NY-899 by PDA i.e 1.4 Km southren from pillar No-218	Ocular stock assessment:	MDF
General observational information :	By following the navigation of PDA i reached NY-899 which is towards southren aspect of Sulia RF C/4.There is a slope about 30 degree towards south aspect with a moderate ,soil erosion.There is a nala(Sulia Nala) ata a distance of 50 mtr toeards south turn the point.The crop density is 4%.The principal specise ,Dhaura with well regeneration,Salia Bamboo also present there.	Conspicuous features:	On the way i faced plantation and nala
Removal of fuel wood and fodder :	Nil		

Plot Description Information

Range :	Nayagarh	Block and or beat:	Sulia RF,Machhipada Beat
Compartment :	4(p)	Grid:	F45T04
Latitude :	20.0985250	Longitude :	85.0262533
Altitude :	236.100	Slope :	20
Aspect:	Southren	Legal Status:	Sulia RF

Land Use :	Close Forest	General topography:	Hilly
Rock and geology:	25	Soil data:	Not Available
		Database Error	
Soil erosion :	Moderate	Crop composition:	Most dominant-Dhaau Predominant- Karada,Kendu
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Fire
Grazing incidence :	Light	Presence of bamboos:	Yes- Clump-3 Nos as per WP CODE-Coupe-A
Presence of grasses :	15%	Presence of weeds:	20%
Plantation status :	Nil	Water bodies:	seasonaly(Nala)
Drivers of degradation:	Fire	Faunal sighting, if any :	Nil
Faunal traces of flagship species.:	Nil		

1/1/2021

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
No Records Found...					

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10- 20	20- 30	30- 40	40- 50	50- 60	60- 70	70- 80	80- 90	90- 100	100- 110	110- 120	120- 130	130- 140	140- 150	>150

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Odagaon	Section :	Bahadjhola
Beat :	Bahadjhola	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Tentulikhunti
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	868324020337866
Data Capture Time :		Data Insert Time :	18-06-2017 16:37:20
Data Update Time :	15-10-2019 11:14:44		

Working Plan Base Information

Unique Id :	NY16	Division :	NAYAGARH
Latitude :	20.0615704	Longitude :	84.8994036

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.0614968	Longitude :	84.8994410
Altitude :	159.500	Accuracy Horizontal :	5.60
Accuracy Vertical :	0.00	Time :	18-06-2017 10:00:23

General Information			
Data Collection Date & Time :	18-06-2017 10:00:23	Forest Canopy Status :	40-70%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	0.00
Remarks :			

Plot Approach Information			
Range :	Odagaon	Block and/or beat:	Bahadajhola R.F. /Bahadajhola
Compartment :	NA	Grid:	F45S16
Latitude :	20.0614968	Longitude :	84.8994410
Journey/approach to the plot :	Travelling from Bahadajhola Beat to the sample point by root over a distance 3000 mtr. showed by the PDA.	Ocular stock assessment:	MDF
General observational information :	By following the navigation of PDA, I reached NY 16 which is Southern aspect. Slope is about 3 degree with a moderate soil erosion. Small Nala is present here. Crop density is about 70%. Principal species is Sal with well regeneration.	Conspicuous features:	On the way I faced Moderate dense forest



Odisha State Forest Department

Removal of fuel wood and fodder :	No firewood has been extracted from that point at the forest.		

Plot Description Information

Range :	Odagaon	Block and or beat:	Bahadajhola R.F. /Bahadajhola
Compartment :	NA	Grid:	F45S16
Latitude :	20.0614968	Longitude :	84.8994410
Altitude :	159.500	Slope :	0
Aspect:	Plain	Legal Status:	RF
Land Use :	Moderate dense forest	General topography:	Flat
Rock and geology:	Sandy soil	Soil data:	Depth-1'
Soil erosion :	Mild	Crop composition:	Most dominate-Sal 80%, Predominate-Asan 20%
Regeneration status :	Moderate	Injury/ damage to crop,if any :	No damage
Grazing incidence :	Light	Presence of bamboos:	Nil
Presence of grasses :	Nil	Presence of weeds:	30%
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Fire, Biotic-interference	Faunal sighting, if any :	Nil
Faunal traces of flagship species.:	Nil		



Odisha State Forest Department

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Shorea robusta	Sal	20.00	9.50	Sound
2	Shorea robusta	Sal	18.00	10.00	Sound
3	Shorea robusta	Sal	21.00	10.00	Sound
4	Shorea robusta	Sal	18.00	9.00	Sound
5	Shorea robusta	Sal	20.00	9.00	Sound
6	Shorea robusta	Sal	22.00	10.50	Sound
7	Shorea robusta	Sal	23.00	11.00	Sound
8	Shorea robusta	Sal	19.00	9.00	Sound
9	Shorea robusta	Sal	20.00	9.50	Sound
10	Shorea robusta	Sal	21.00	8.00	Sound
11	Shorea robusta	Sal	22.00	9.50	Sound
12	Shorea robusta	Sal	21.00	8.50	Sound
13	Shorea robusta	Sal	18.00	7.50	Sound
14	Shorea robusta	Sal	20.00	8.00	Sound
15	Shorea robusta	Sal	30.50	8.50	Sound
16	Shorea robusta	Sal	18.00	6.50	Sound
17	Shorea robusta	Sal	21.30	7.50	Sound
18	Shorea robusta	Sal	23.00	10.50	Sound
19	Shorea robusta	Sal	21.30	8.50	Sound
20	Shorea robusta	Sal	21.00	7.50	Sound
21	Shorea robusta	Sal	17.00	6.50	Sound
22	Shorea robusta	Sal	21.00	8.00	Sound
23	Shorea robusta	Sal	16.00	6.00	Sound
24	Shorea robusta	Sal	15.00	6.00	Sound
25	Shorea robusta	Sal	19.00	7.50	Sound
26	Shorea robusta	Sal	21.00	6.50	Sound
27	Shorea robusta	Sal	22.00	10.00	Sound
28	Shorea robusta	Sal	23.00	10.50	Sound
29	Shorea robusta	Sal	19.00	9.00	Sound
30	Shorea robusta	Sal	17.00	8.00	Sound
31	Shorea robusta	Sal	15.00	6.50	Sound
32	Shorea robusta	Sal	19.00	7.50	Sound
33	Shorea robusta	Sal	21.00	8.00	Sound
34	Shorea robusta	Sal	20.00	9.00	Sound
35	Shorea robusta	Sal	21.50	10.00	Sound
36	Shorea robusta	Sal	29.00	8.50	Sound
37	Shorea robusta	Sal	20.00	10.00	Sound
38	Shorea robusta	Sal	20.00	9.50	Sound
39	Shorea robusta	Sal	22.00	10.00	Sound



Odisha State Forest Department

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150
Shorea Robusta	13	7.20	25	9.21	1	8.50									

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
1	NE	Flacourtia indica	Baincha	6.00	2.00	135.00	Scanty
2	NW	Manilkara hexandra	Khirkoli	8.00	3.00	140.00	Scanty

Herbs

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
1	NE	Urginea indica	Banpiaja	10.00	Scanty

Approval Details

Current Status :	DFO Approved	User Level :	Division

Range	Division	Circle	State
Status	Approve	Approve	Provisional



Odisha State Forest Department

Approved Date	15-10-2019	16-10-2019		
Approved By	R.O.Odagaon	DFO Nayagarh		

Surveyor Details

Name :	Dharanidhar Nayak	Designation :	Forest Guard	Mobile :	9556693959

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Odagaon	Section :	Bahadjhola
Beat :	Balisinsa	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Chandrapur
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	868324020337866
Data Capture Time :		Data Insert Time :	13-06-2017 14:36:14
Data Update Time :	24-09-2019 17:57:08		

Working Plan Base Information

Unique Id :	NY37	Division :	NAYAGARH
Latitude :	20.0520528	Longitude :	84.8598851

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint

Latitude :	20.0519903	Longitude :	84.8597435
Altitude :	156.100	Accuracy Horizontal :	6.00
Accuracy Vertical :	0.00	Time :	13-06-2017 09:07:58

General Information

Data Collection Date & Time :	13-06-2017 09:07:58	Forest Canopy Status :	40-70%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	0.00
Remarks :			

Plot Approach Information

Range :	Odagaon	Block and/or beat:	Balisinsa-Badhulipur R.F. /Balisinsa
Compartment :	NA	Grid:	F45S16
Latitude :	20.0519903	Longitude :	84.8597435

Journey/approach to the plot :	I started journey towards Balisinsa-Badhulipur R.F. from Balisinsa Beat by motor cycle over 3 Km. by navigating GPS PDA to the sample point NY 37.	Ocular stock assessment:	MDF

12/31/2020

Database Error

General observational information :	I moved forest footpath. The total path was plain forest ground. Slope-2 degree, Sandy soil. Regeneration species Sal, Asan, Mahula etc. Herb - Satabari, Bana Kolatha. TFP- Sal leaf, Mahula, Adunga.	Conspicuous features:	Terran- Plain land
Removal of fuel wood and fodder :	No firewood has been extracted from that point at the forest.		

Plot Description Information

Range :	Odagaon	Block and or beat:	Balisinsa-Badhulipur R.F. /Balisinsa
Compartment :	NA	Grid:	F45S16
Latitude :	20.0519903	Longitude :	84.8597435
Altitude :	156.100	Slope :	2
Aspect:	Western	Legal Status:	R.F.
Land Use :	Dense forest	General topography:	Flat
Rock and geology:	Sandy soil	Soil data:	Depth-1'
Soil erosion :	Mild	Crop composition:	Sal-20%, Asan-20%, P.Sal-10%, Giringa-10%, Kendu-20%, Dhaura-20%
Regeneration status :	Poor	Injury/ damage to crop,if any :	By biotic-interference
Grazing incidence :	Nil	Presence of bamboos:	Nil
Presence of grasses :	Nil	Presence of weeds:	Nil
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Biotic-interference`	Faunal sighting, if any :	Nil
Faunal traces of flagship species.:	Nil		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Shorea robusta	Sal	51.00	12.00	Sound
2	Shorea robusta	Sal	59.00	18.00	Sound
3	Shorea robusta	Sal	52.00	16.00	Unsound
4	Shorea robusta	Sal	51.00	10.00	Sound
5	Shorea robusta	Sal	50.00	11.00	Unsound
6	Shorea robusta	Sal	47.00	18.00	Sound
7	Shorea robusta	Sal	20.00	10.00	Sound
8	Shorea robusta	Sal	16.00	11.00	Sound
9	Shorea robusta	Sal	48.00	9.00	Sound

10	Shorea robusta	Sal	35.00	7.00	Sound
11	Shorea robusta	Sal	42.00	8.00	Sound
12	Shorea robusta	Sal	46.00	8.50	Sound
13	Shorea robusta	Sal	21.00	10.00	Sound

2/31/2020

Database Error

14	Mangifera indica	Amba	19.00	7.50	Sound
15	Terminalia tomentosa	Asan/Sahaj	55.00	7.00	Sound
16	Shorea robusta	Sal	48.00	11.00	Sound
17	Terminalia tomentosa	Asan/Sahaj	42.00	8.50	Sound
18	Terminalia tomentosa	Asan/Sahaj	32.00	8.00	Sound
19	Terminalia belerica	Bahada	17.00	9.00	Sound
20	Bridelia retusa	Kasi	16.00	10.00	Sound
21	Bridelia retusa	Kasi	42.00	8.00	Sound
22	Bridelia retusa	Kasi	36.00	9.00	Sound
23	Albizzia lebbek	Siris	21.00	12.00	Sound
24	Albizzia lebbek	Siris	42.00	10.00	Sound
25	Albizzia lebbek	Siris	48.00	9.00	Sound
26	Pongamia pinnata	Karanj	42.00	11.00	Sound
27	Lannea coromandelica	Mai	21.00	10.00	Sound
28	Phoenix sylvastris	Khajuri	23.00	15.00	Sound
29	Phoenix sylvastris	Khajuri	21.00	4.00	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60- 70	70- 80	80- 90	90- 100	100- 110	110- 120	120- 130	130- 140	140 150

Actual MidPoint			
Latitude :	19.9773327	Longitude :	84.9608857
Altitude :	0.000	Accuracy Horizontal :	0.00
Accuracy Vertical :	0.00	Time :	15-11-2018 16:31:57

General Information			
Data Collection Date & Time :	15-11-2018 16:31:57	Forest Canopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	40.00
Remarks :			

Plot Approach Information

Range :	Odagaon	Block and/or beat:	Gayalasingh R.F. / Odagaon
Compartment :	1	Grid:	E45A13
Latitude :	19.9773327	Longitude :	84.9608857

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Database Error

Journey/approach to the plot :	Travelling from Odagaon Beat to Nottarpalli village Casew field by vehicle and then on foot to the sample point over a distance 1300 mtr. showed by the PDA.	Ocular stock assessment:	MDF
General observational information :	By following the navigation of PDA reached NY 316 which is northern aspect. Slope is about 40 degree with a mild soil erosion. Crop density is about 45%. Principal species is Sissoo with well regeneration. Salia bamboo are present.	Conspicuous features:	On the way I faced Moderate dense forest
Removal of fuel wood and fodder :	No firewood has been extracted from that point at the forest.		

Plot Description Information

Range :	Odagaon	Block and or beat:	Gayalasingh R.F. /Odagaon
Compartment :	1	Grid:	E45A13
Latitude :	19.9773327	Longitude :	84.9608857
Altitude :	0.000	Slope :	25
Aspect:	Northern	Legal Status:	R.F.
Land Use :	Closed forest	General topography:	Hilly
Rock and geology:	Forest and hilly soil	Soil data:	Depth-1'
Soil erosion :	Moderate	Crop composition:	Most dominate-Sissoo, Predominate-Sidha
Regeneration status :	Moderate	Injury/ damage to crop,if any :	No damage

Grazing incidence :	Nil	Presence of bamboos:	12 nos.of Salia Bamboo clumps are present there.
Presence of grasses :	Nil	Presence of weeds:	30%
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Fire	Faunal sighting, if any :	Nil
Faunal traces of flagship species.:	Nil		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Lannea coromandelica	Mai	11.00	2.50	Sound
2	Lannea coromandelica	Mai	13.00	2.50	Sound
3	Lannea coromandelica	Mai	15.00	3.00	Sound
4	Lagerstroemia parviflora	Sidha	10.00	2.00	Sound
5	Lagerstroemia parviflora	Sidha	12.00	2.50	Sound
6	Lagerstroemia parviflora	Sidha	13.00	2.50	Sound

7	Lagerstroemia parviflora	Sidha	18.00	3.50	Sound
8	Ougeinia oojeinensis	Bandhan/Tinsa	10.00	2.00	Sound
9	Ougeinia oojeinensis	Bandhan/Tinsa	10.00	2.00	Sound
10	Ougeinia oojeinensis	Bandhan/Tinsa	12.00	2.50	Sound
11	Ougeinia oojeinensis	Bandhan/Tinsa	16.00	2.50	Sound
12	Dalbergia sissoo	Sissoo	10.00	1.50	Sound
13	Dalbergia sissoo	Sissoo	11.00	2.00	Sound
14	Dalbergia sissoo	Sissoo	14.00	2.50	Sound
15	Dalbergia sissoo	Sissoo	16.00	2.50	Sound
16	Dalbergia sissoo	Sissoo	25.00	3.00	Sound
17	Grewia tiliaefolia	Dhaman	10.00	1.50	Sound
18	Grewia tiliaefolia	Dhaman	12.00	2.00	Sound
19	Grewia tiliaefolia	Dhaman	16.00	2.50	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150
Dalbergia Sissoo	4	2.13	1	3.00											
Grewia Tiliaefolia	3	2.00													
Lagerstroemia Parviflora	4	2.63													
Lannea Coromandelica	3	2.67													
Ougeinia Oojeinensis	4	2.33													

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Odagaon	Section :	Odagaon
Beat :	Chemedi	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Tentulikhunti
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	865733029197456
Data Capture Time :		Data Insert Time :	29-06-2017 17:50:01
Data Update Time :	24-09-2019 18:00:14		

Working Plan Base Information

Unique Id :	NY382	Division :	NAYAGARH
Latitude :	19.9408160	Longitude :	84.9563772

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint

Latitude :	19.9408432	Longitude :	84.9563808
Altitude :	171.600	Accuracy Horizontal :	12.00
Accuracy Vertical :	0.00	Time :	29-06-2017 10:22:56

General Information

Data Collection Date & Time :	29-06-2017 10:22:56	Forest Canopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	20.00
Remarks :			

Plot Approach Information

Range :	Odagaon	Block and/or beat:	Gochha R.F. / Chemedi
Compartment :	18	Grid:	E45A13
Latitude :	19.9408432	Longitude :	84.9563808

12/31/2020

Journey/approach to the plot :	I started to the working plan point NY-382 from Chemedi village. I followed the footpath	Ocular stock assessment:	MDF
		Database Error	
	showed by PDA. It is 1.8 Km. from Chemedi.		
General observational information :	By following the navigation of PDA I reached NY 382 which is western aspect of Chemedi. It is 8 degree sloppy with little soil erosion There is some nalas which seasonally waer resource. Crop density 70%. Principal species Asan, Char with well regeneration Kanta bamboo also present here.	Conspicuous features:	On the way I faced Moderate dense forest
Removal of fuel wood and fodder :	No firewood has been extracted from that point at the forest.		

Plot Description Information

Range :	Odagaon	Block and or beat:	Gochha R.F. /Chemedi
Compartment :	18	Grid:	E45A13
Latitude :	19.9408432	Longitude :	84.9563808
Altitude :	171.600	Slope :	15
Aspect:	Western	Legal Status:	R.F.
Land Use :	Maoderate dense forest	General topography:	Gently rolling
Rock and geology:	Cal carious soil	Soil data:	Depth-1'
Soil erosion :	Mild	Crop composition:	Most dominate-Asan, Predominate-Dhaura, Kendu
Regeneration status :	Moderate	Injury/ damage to crop,if any :	No damage
Grazing incidence :	Moderate	Presence of bamboos:	Kanta bamboo is present here, Quality-C, Density-10% Light
Presence of grasses :	Nil	Presence of weeds:	30% Nil
Plantation status :	Nil	Water bodies:	Seasonally water nalas
Drivers of degradation:	Fire, biotic-interference	Faunal sighting, if any :	Nil
Faunal traces of flagship species.:	Nil		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Grewia tiliaefolia	Dhaman	30.00	2.00	Sound
2	Spondias mangifera	Ambada	16.00	4.00	Sound
3	Buchanania lanzan	Char	15.00	4.50	Sound
4	Anogeissus latifolia	Dhaura	20.00	4.50	Sound
5	Diospyros melanoxylon	kendu	13.00	3.50	Sound
6	Ixora arborea	Telkuruma/Bhuinkuruma	12.00	2.00	Sound

7	Acacia catechu	Khair	13.30	4.00	Sound
8	Grewia tiliaefolia	Dhaman	28.00	2.50	Sound

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Database Error

9	Diospyros melanoxylon	kendu	14.00	5.00	Sound
10	Soymida febrifuga	Rohini	17.00	4.00	Sound
11	Buchanania lanzan	Char	13.30	4.00	Sound
12	Terminalia tomentosa	Asan/ Sahaja	14.00	4.50	Sound
13	Buchanania lanzan	Char	15.00	3.00	Sound
14	Anogeissus latifolia	Dhaura	13.00	4.00	Sound
15	Anogeissus latifolia	Dhaura	10.00	4.00	Sound
16	Albizzia lebbek	Siris	16.00	7.00	Sound
17	Terminalia tomentosa	Asan/ Sahaja	20.00	6.00	Sound
18	Bridelia retusa	Kasi	17.00	4.00	Sound
19	Lannea coromandelica	Mai	28.00	2.00	Unsound
20	Lannea coromandelica	Mai	17.00	2.00	Sound
21	Grewia tiliaefolia	Dhaman	17.00	7.00	Sound
22	Buchanania lanzan	Char	14.00	2.00	Sound
23	Terminalia tomentosa	Asan/ Sahaja	23.00	5.00	Sound
24	Ixora arborea	Telkuruma/Bhuinkuruma	20.00	2.50	Unsound
25	Grewia tiliaefolia	Dhaman	25.00	2.00	Unsound
26	Grewia tiliaefolia	Dhaman	13.00	5.00	Sound
27	Spondias mangifera	Ambada	20.00	3.00	Sound
28	Spondias mangifera	Ambada	21.00	5.00	Sound
29	Dalbergia paniculata	Barabakulia	27.00	7.00	Sound
30	Grewia tiliaefolia	Dhaman	12.00	2.00	Sound
31	Diospyros melanoxylon	kendu	18.00	3.00	Sound
32	Terminalia tomentosa	Asan/ Sahaja	13.00	2.00	Sound
33	Grewia tiliaefolia	Dhaman	17.00	2.00	Sound
34	Lannea coromandelica	Mai	26.00	7.00	Sound
35	Scheichera oleosa	Kusum	25.00	3.00	Sound
36	Diospyros melanoxylon	kendu	11.00	2.00	Sound
37	Diospyros melanoxylon	kendu	27.00	4.00	Sound
38	Terminalia tomentosa	Asan/ Sahaja	20.00	3.00	Sound
39	Dalbergia paniculata	Barabakulia	35.00	7.00	Sound
40	Dalbergia paniculata	Barabakulia	14.00	7.00	Sound
41	Scheichera oleosa	Kusum	31.00	2.00	Sound

42	Pterospermum canescens	Giringa	13.00	3.00	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical 10-20 20-30 30-40 40- 50- 60- 70- 80- 90- 100- 110- 120- 130- 140- >150

Bamboo

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Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Odagaon	Section :	Bahadjhola
Beat :	Makarapalli	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Chandrapur
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	868324020337866
Data Capture Time :		Data Insert Time :	22-06-2017 07:14:57
Data Update Time :	15-10-2019 11:09:29		

Working Plan Base Information

Unique Id :	NY543	Division :	NAYAGARH
Latitude :	20.0641340	Longitude :	84.8259091

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint

Latitude :	20.0641050	Longitude :	84.8258815
Altitude :	216.500	Accuracy Horizontal :	8.00
Accuracy Vertical :	0.00	Time :	21-06-2017 09:57:02

General Information

Data Collection Date & Time :	21-06-2017 09:57:02	Forest Cannopy Status :	40-70%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	30.00
Remarks :			

Plot Approach Information

Range :	Odagaon	Block and/or beat:	Makarapalii P.R.F. / Makarapalli
Compartment :	NA	Grid:	F45S16
Latitude :	20.0641050	Longitude :	84.8258815

12/31/2020

Journey/approach to the plot :	Travelling from Makarapalli Beat to Gunduribari village by motor cycle and then on foot to the sample point by root over a	Ocular stock assessment:	Moderate dense forest
	distance 1000 mtr. showed by the PDA.		
General observational information :	By following the navigation of PDA, I reached NY 543 which is Northern aspect. Slope is about 30 degree towards north. There is no water resource at the point. The crop density is about 50%. Principal species is Mai, Giringa, Gundi, Kasi, Ankula, Asan, etc.	Conspicuous features:	On the way I faced Moderate dense forest
Removal of fuel wood and fodder :	No firewood has been extracted from that point at the forest.		

Database Error

Plot Description Information

Range :	Odagaon	Block and or beat:	Makarapalii P.R.F. / Makarapalli
Compartment :	NA	Grid:	F45S16
Latitude :	20.0641050	Longitude :	84.8258815
Altitude :	216.500	Slope :	40
Aspect:	Northern	Legal Status:	PRF
Land Use :	Moderate dense forest	General topography:	Gently rolling
Rock and geology:	Loomy and sandy soil	Soil data:	Depth-1'
Soil erosion :	Moderate	Crop composition:	Most dominate-Mai, PredominateAsan
Regeneration status :	Moderate	Injury/ damage to crop,if any :	No
Grazing incidence :	Light	Presence of bamboos:	1 no. Salia bamboo clump are present
Presence of grasses :	Nil	Presence of weeds:	30%
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Fire	Faunal sighting, if any :	Nil
Faunal traces of flagship species.:	Nil		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Lannea coromandelica	Mai	19.00	8.00	Sound
2	Lannea coromandelica	Mai	18.00	10.00	Sound
3	Lannea coromandelica	Mai	13.00	9.00	Sound
4	Pterospermum canescens	Giringa	23.00	12.00	Sound
5	Pterospermum canescens	Giringa	20.00	12.00	Sound
6	Pterospermum canescens	Giringa	18.00	11.00	Dead

7	Pterospermum canescens	Giringa	21.00	12.00	Sound
8	Pterospermum canescens	Giringa	15.00	11.00	Sound
9	Pterospermum canescens	Giringa	19.00	11.00	Sound
10	Pterospermum canescens	Giringa	18.00	11.00	Sound

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Database Error

11	Pterospermum canescens	Giringa	10.00	8.00	Sound
12	Pterospermum canescens	Giringa	16.00	10.00	Sound
13	Pterospermum canescens	Giringa	20.00	12.00	Sound
14	Pterospermum canescens	Giringa	16.00	11.00	Sound
15	Mitragyna parviflora	Mundi/Mitkania	25.00	12.00	Sound
16	Mitragyna parviflora	Mundi/Mitkania	22.00	18.00	Sound
17	Mitragyna parviflora	Mundi/Mitkania	18.00	10.00	Sound
18	Bridelia retusa	Kasi	19.00	12.00	Sound
19	Bridelia retusa	Kasi	12.00	10.00	Sound
20	Bridelia retusa	Kasi	20.00	10.00	Sound
21	Alangium lamarckii	Ankula	18.00	10.00	Sound
22	Dalbergia paniculata	Barabakulia	20.00	15.00	Sound
23	Dalbergia paniculata	Barabakulia	18.00	12.00	Sound
24	Dalbergia paniculata	Barabakulia	18.00	11.00	Sound
25	Terminalia tomentosa	Asan/ Sahaja	30.00	15.00	Sound
26	Terminalia tomentosa	Asan/ Sahaja	22.00	13.00	Sound
27	Terminalia tomentosa	Asan/ Sahaja	30.00	10.00	Sound
28	Terminalia tomentosa	Asan/ Sahaja	13.00	11.00	Sound
29	Terminalia tomentosa	Asan/ Sahaja	26.00	15.00	Sound
30	Terminalia tomentosa	Asan/ Sahaja	18.00	12.00	Sound
31	Mangifera indica	Amba	34.00	15.00	Sound
32	Anogeissus latifolia	Dhaura	13.00	10.00	Sound
33	Bridelia retusa	Kasi	18.00	11.00	Sound
34	Bridelia retusa	Kasi	16.00	11.00	Sound
35	Bridelia retusa	Kasi	21.00	12.00	Sound
36	Strychnos potatorum	Katakala	20.00	15.00	Sound
37	Strychnos potatorum	Katakala	18.00	13.00	Sound
38	Grewia tiliaefolia	Dhaman	25.00	14.00	Sound
39	Adina cordifolia	Haldu (kurum)	18.00	12.00	Sound
40	Adina cordifolia	Haldu (kurum)	13.00	11.00	Sound
41	Morinda tinctoria	Anchhu	18.00	12.00	Sound
42	Morinda tinctoria	Anchhu	13.00	10.00	Sound

43	Chloroxylon swietenia	Bheru	38.00	15.00	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40- 50	50- 60	60- 70	70- 80	80- 90	90- 100	100- 110	110- 120	120- 130	130- 140	140- 150	>150

12/31/2020

[illegible]

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)

1/2/2021

Database Error

Working Plan

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Panchirida	Section :	Panchirida
Beat :	Goudaput	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Tentulikhunti

Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	868324020450644
Data Capture Time :		Data Insert Time :	10-06-2017 12:59:34
Data Update Time :	16-10-2019 12:36:06		

Working Plan Base Information

Unique Id :	NY10	Division :	NAYAGARH
Latitude :	19.9522579	Longitude :	85.0086916

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint

Latitude :	19.9523337	Longitude :	85.0085917
Altitude :	216.100	Accuracy Horizontal :	13.00
Accuracy Vertical :	0.00	Time :	10-06-2017 10:40:41

General Information

Data Collection Date & Time :	10-06-2017 10:40:41	Forest Canopy Status :	10-40%
Forest Undergrowth Status :	Scanty	Average slope in degree-decimal :	60.00
Remarks :			

Plot Approach Information

Range :	Panchirida	Block and/or beat:	Ambamundia PRF/Goudaput
Compartment :	Nil	Grid:	E45B01
Latitude :	19.9523337	Longitude :	85.0085917
Journey/approach to the plot :	I started to work the working plan	Ocular stock assessment:	Moderate Forest

1/2/2021

Database Error

	exercise for the point NY-10. Rushed to approach the point by my bike to Saliyahari village. Then I followed the foot path shown by PDA. It is 1km distance towards western from Saliyahari village.		

General observational information :	By Following the Navigation of PDA I reached at the point NY-10. It is a hilly surface and a low soil erosion. This point is 60 degree slope towards Northen aspect. There is no water source and the density of canopy is 10-40.	Conspicuous features:	It is a hilly surface and covered with siali and danteri climber
Removal of fuel wood and fodder :	Nil		

Plot Description Information

Range :	Panchirida	Block and or beat:	Ambamundia PRF/Goudaput
Compartment :	Nil	Grid:	E45B01
Latitude :	19.9523337	Longitude :	85.0085917
Altitude :	216.100	Slope :	60
Aspect:	Northern	Legal Status:	PRF
Land Use :	Open Forest	General topography:	Hilly
Rock and geology:	Granite	Soil data:	Forest & Hilly
Soil erosion :	Low	Crop composition:	Kusuma, Giringa, simili, karada, kasi,Jamu,dhaman,Anchhu, Mai
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Nil
Grazing incidence :	Nil	Presence of bamboos:	Yes Kanta Baunsa
Presence of grasses :	Moderate	Presence of weeds:	Moderate
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Browsing Fire	Faunal sighting, if any :	Nil
Faunal traces of flagship species.:	Nil		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Scheichera oleosa	Kusum	15.00	12.00	Unsound
2	Pterospermum canescens	Giringa	31.00	11.00	Sound
3	Pterospermum canescens	Giringa	13.00	12.00	Sound
4	Pterospermum heyneanum	Giringa	20.00	13.00	Sound
5	Mangifera indica	Amba	37.00	14.00	Sound
6	Cleistanthus collinus	Karada	30.00	14.00	Sound
7	Bridelia retusa	Kasi	17.00	9.00	Dead
8	Pterospermum heyneanum	Giringa	20.00	7.00	Sound

9	Syzgium cumini	Jamu	23.00	9.00	Sound
10	Grewia tiliaefolia	Dhaman	30.00	15.00	Sound
11	Pterospermum heyneanum	Giringa	28.00	10.00	Sound
12	Grewia tiliaefolia	Dhaman	20.00	18.00	Sound
13	Bridelia retusa	Kasi	23.00	10.00	Sound
14	Scheichera oleosa	Kusum	46.00	13.00	Sound
15	Scheichera oleosa	Kusum	28.00	15.00	Sound
16	Scheichera oleosa	Kusum	20.00	14.00	Unsound
17	Pterospermum canescens	Giringa	26.00	10.00	Unsound
18	Morinda tinctoria	Anchhu	29.00	11.00	Sound
19	Lannea coromandelica	Mai	30.00	13.00	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150
Bridelia Retusa	1	9.00	1	10.00											
Cleistanthus Collinus				1	14.00										
Grewia Tiliaefolia			1	18.00	1	15.00									
Lannea Coromandelica				1	13.00										
Mangifera Indica				1	14.00										
Morinda Tinctoria			1	11.00											
Pterospermum Canescens	1	12.00	1	10.00	1	11.00									
Pterospermum Heyneanum			3	10.00											
Scheichera Oleosa	1	12.00	2	14.50		1	13.00								
Syzgium Cumini			1	9.00											

Bamboo



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Panchirida	Section :	Panchirida
Beat :	Panchirida	Forest Block:	Non-Forest Block
District :	Nayagarh	CD Block :	Odagaon
Tehsil :	Odagaon	Gram Panchayat :	Forest
Village :	Forest(Forest)	Parliament Constituency :	Puri
Assembly Constituency :	Nayagarh		

Data Capture Information

Captured On :	GPS PDA	Device :	868324020426354
Data Capture Time :		Data Insert Time :	15-11-2018 18:53:04
Data Update Time :	16-10-2019 12:09:33		

Working Plan Base Information

Unique Id :	NY45	Division :	NAYAGARH
Latitude :	19.9723543	Longitude :	85.0337587

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	19.9723852	Longitude :	85.0336428
Altitude :	196.700	Accuracy Horizontal :	3.70
Accuracy Vertical :	0.00	Time :	15-11-2018 08:40:06

General Information			
Data Collection Date & Time :	15-11-2018 08:40:06	Forest Canopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	15.00
Remarks :			

Plot Approach Information			
Range :	Panchirida	Block and/or beat:	Panchirida
Compartment :	Near village Guanda	Grid:	E45B01
Latitude :	19.9723852	Longitude :	85.0336428
Journey/approach to the plot :	To reach NY-54, i started my journey from Range Office head quarter by my Motor cycle for 7KM. Then i proceeded 1.5KM on foot and reached their by navigate the point.	Ocular stock assessment:	Moderate Dense Forest



Odisha State Forest Department

General observational information :	I navigated the Grid point at PDA and reached the exact point NY45 which is southern side aspect at Banijhari PRF. The slope of the area is near about 15 degree towards North with a little soil erosion. There is no water resources at the point. The crop density is about 0.4 . The Principal species is Sana Chakunda.	Conspicuous features:	On the way to the point I faced the moderate dense forest.
Removal of fuel wood and fodder :	No fuel wood has been collected from the part of the forest.		

Plot Description Information

Range :	Panchirida	Block and or beat:	Panchirida
Compartment :	Near village Guanda	Grid:	E45B01
Latitude :	19.9723852	Longitude :	85.0336428
Altitude :	196.700	Slope :	15
Aspect:	Southern	Legal Status:	Banijhari PRF
Land Use :	MDF	General topography:	Hilly
Rock and geology:	Loomy and clayey	Soil data:	Depth 1'
Soil erosion :	Mild	Crop composition:	0.4
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Damaged by natural calamities
Grazing incidence :	Lite	Presence of bamboos:	Nil
Presence of grasses :	20%	Presence of weeds:	40%



Odisha State Forest Department

Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	biotic interference and natural calamities.	Faunal sighting, if any :	Nil
Faunal traces of flagship species.:	Nil		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Cassia siamea	Chakundi	39.00	15.00	Sound
2	Cassia siamea	Chakundi	40.00	14.00	Sound
3	Cassia siamea	Chakundi	30.00	5.00	Sound
4	Cassia siamea	Chakundi	32.00	7.00	Sound
5	Cassia siamea	Chakundi	45.00	5.00	Sound
6	Syzigium cumini	Jamu	36.00	4.00	Sound
7	Anogeissus latifolia	Dhaura	27.00	5.00	Sound
8	Anogeissus latifolia	Dhaura	34.00	5.00	Sound
9	Madhuca indica	Mahula	51.00	5.00	Sound
10	Bridelia retusa	Kasi	27.00	6.00	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150
Anogeissus Latifolia		1 5.00	1 5.00												
Bridelia Retusa		1 6.00													
Cassia Siamea			3 9.00	2 9.50											
Madhuca Indica					1 5.00										
Syzigium Cumini			1 4.00												



Odisha State Forest Department

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
1	NE	Pogostemon benghalensis	Poksunga	8.00	2.50	150.00	Moderate
2	NE	Diospyros ferrea	Guakuli	7.00	2.00	130.00	Scanty
3	NE	Caesalpinia decapetala	Gila	7.00	2.00	200.00	Scanty
4	NE	Phoenix sylvestris	Bankhajuri/Pinokhajuri	4.00	2.00	120.00	Scanty

Herbs

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
1	NE	Ocimum basilicum	Bantulasi	60.00	Scanty
2	NE	Alangium salvifolium	Ankula	30.00	Scanty

Approval Details

Current Status :	DFO Approved	User Level :	Division

Range	Division	Circle	State



Odisha State Forest Department

Status	Approve	Approve	Provisional	Provisional
Approved Date	16-10-2019	17-10-2019		
Approved By	Range Officer Panchirida	DFO Nayagarh		

Surveyor Details

Name :	prakash ch pal	Designation :	Forest Guard	Mobile :	9437867525

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images



Odisha State Forest Department

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Panchirida	Section :	Godipada
Beat :	Tulubi	Forest Block:	Non-Forest Block
District :	Sambalpur	CD Block :	Gunupur
Tehsil :		Gram Panchayat :	
Village :		Parliament Constituency :	
Assembly Constituency :			

Data Capture Information

Captured On :	GPS PDA	Device :	868324020426354
Data Capture Time :		Data Insert Time :	13-11-2017 16:29:49
Data Update Time :	17-03-2019 17:57:40		

Working Plan Base Information

Unique Id :	NY505	Division :	NAYAGARH
Latitude :	20.0222364	Longitude :	85.2052323

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete



Odisha State Forest Department

Actual MidPoint			
Latitude :	20.0222345	Longitude :	85.2052252
Altitude :	117.000	Accuracy Horizontal :	5.50
Accuracy Vertical :	0.00	Time :	12-11-2017 09:19:53

General Information			
Data Collection Date & Time :	12-11-2017 09:19:53	Forest Canopy Status :	40-70%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	30.00
Remarks :			

Plot Approach Information			
Range :	Panchirida	Block and/or beat:	TUlubi
Compartment :	Khatia Damasahi RF-1	Grid:	F45T04
Latitude :	20.0222345	Longitude :	85.2052252
Journey/approach to the plot :	By bike from Damasahi to Ladukishorprasad village then to khatia damasahi RF patch-1 kept bike inside the RF then walked along with team through the RF which is mixed species found to see. Then 1nala arrives then moved to the grid point by crossing the forest then another Nala comes then findly we reached in the grid point NY 505	Ocular stock assessment:	MDF



Odisha State Forest Department

General observational information :	Inside RF 1st patch is purely sal, then mixed forest then we come across one nala with perennial water source, then some patches of bamboo found, then Sirisa, weeds like eupatorium, lantana, atendi etc found.	Conspicuous features:	Terrain is plane but somewhere khondalite rocks found to see in scattered manner.
Removal of fuel wood and fodder :	Nil		

Plot Description Information			
Range :	Panchirida	Block and or beat:	Tulubi
Compartment :	1	Grid:	F45T04
Latitude :	20.0222345	Longitude :	85.2052252
Altitude :	117.000	Slope :	30
Aspect:	no aspect -plane	Legal Status:	RF
Land Use :	Dense Forest	General topography:	Flat
Rock and geology:	Khondalite	Soil data:	5'
Soil erosion :	Moderate	Crop composition:	sal-58% char-4% Asan-10%
Regeneration status :	Moderate	Injury/ damage to crop, if any :	Funga infestation
Grazing incidence :	None	Presence of bamboos:	Nil
Presence of grasses :	5-10%	Presence of weeds:	5%
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	biotic interference and natural calamities like fire	Faunal sighting, if any :	Nil



Odisha State Forest Department

Faunal traces of flagship species.:	NII		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Shorea robusta	Sal	30.00	3.00	Sound
2	Shorea robusta	Sal	20.00	3.00	Unsound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150	>150
Shorea Robusta		1 3.00	1 3.00												

Bamboo

Sl. No.	Local Name	Clump Dia in cm	Total Green Sound Clumps	No. of Green (damaged/twisted)	No. of Dry culms (Sound)	No. of Dry culms (damaged/twisted)	Remarks (Tree Condition)
No Records Found...							

Shrubs



Odisha State Forest Department

Sl. No.	Quadrant	Botanical Name	Local Name	Collar dia at Base in cm	DBH(OB) in cm	Height(cm)	Remarks (Condition of Shrub Vegetation)
1	NW	Emblica officinalis	Amla	7.00	2.50	160.00	Scanty
2	NW	Terminalia chebula	Harida	7.00	2.50	180.00	Scanty
3	NW	Terminalia chebula	Harida	7.00	2.00	160.00	Scanty
4	SE	Diospyros melanoxylon	Kendu	9.00	3.00	135.00	Scanty

Herbs

Sl. No.	Quadrant	Botanical Name	Local Name	Height(cm)	Remarks (Condition of Herbal Vegetation)
1	SW	Andrographis paniculata	Bhuinimba	30.00	Scanty
2	NE	Emblica officinalis	Amla	28.00	Scanty

Approval Details

Current Status :	DFO Approved	User Level :	Division

	Range	Division	Circle	State
Status	Approve	Approve	Provisional	Provisional
Approved Date	17-03-2019	01-05-2019		
Approved By	Range Officer Panchirida	DFO Nayagarh		

Surveyor Details



Odisha State Forest Department

Name :	Suryakant Maharana	Designation :	Forester	Mobile :	8763418685

Surveyor Photo	Surveyor Team Photo

Images

Actual MidPoint Images

Sample Area Images

1/2/2021

Database Error

Working Plan

GIS Area Information

Circle :	Bhubaneswar	Division :	Nayagarh
Range :	Panchirida	Section :	Darpanarayanpur
Beat :	D.N Pur	Forest Block:	Non-Forest Block
District :	Nayagarh	CD Block :	Ranapur
Tehsil :	Ranpur	Gram Panchayat :	Forest
Village :	Forest(Forest)	Parliament Constituency :	Puri

Assembly Constituency :	Ranpur		

Data Capture Information

Captured On :	GPS PDA	Device :	868324020450644
Data Capture Time :		Data Insert Time :	04-11-2018 18:18:37
Data Update Time :	25-09-2019 13:15:58		

Working Plan Base Information

Unique Id :	NY679	Division :	NAYAGARH
Latitude :	20.0475618	Longitude :	85.2517842

Status

Plot Approach Form :	Complete	Plot Description Form :	Complete
Sample Area Image :	Complete	Midpoint Image :	Complete

Actual MidPoint

Latitude :	20.0477465	Longitude :	85.2516552
Altitude :	135.300	Accuracy Horizontal :	24.00
Accuracy Vertical :	0.00	Time :	04-11-2018 09:34:57

General Information

Data Collection Date & Time :	04-11-2018 09:34:57	Forest Canopy Status :	10-40%
Forest Undergrowth Status :	Moderate	Average slope in degree-decimal :	40.00
Remarks :			

Plot Approach Information

Range :	Panchirida	Block and/or beat:	Darpanarayanpur
Compartment :	4	Grid:	F45T08
Latitude :	20.0477465	Longitude :	85.2516552
Journey/approach to the plot :	To reach NY 679, I started my	Ocular stock assessment:	MDF

1/2/2021

Database Error

	journey from D.N.Pur beat house by my motor cycle for 4kms. Then i Proceeded 650mtr on foot and reached there by navigate,		
General observational information :	I Navigate the grid point at PDA and reached the exact point aspect at Patharaganda RF. The slop of the area is 40 degree to wards south with little soil erosion. There is no water resource at this point. The crop density is 0.4. The Principal species Kumbhi	Conspicuous features:	On the way to the point I faced the Moderate dense forest
Removal of fuel wood and fodder :	No fuel wood has been collected from this part of the forest.		

Range :	Panchirida	Block and or beat:	Darpanarayanpur
Compartment :	4	Grid:	F45T08
Latitude :	20.0477465	Longitude :	85.2516552
Altitude :	135.300	Slope :	40
Aspect:	Northen	Legal Status:	RF
Land Use :	Moderate Dense	General topography:	Hilly
Rock and geology:	Loomy and Claye	Soil data:	1'
Soil erosion :	Moderate	Crop composition:	0.4
Regeneration status :	Moderate	Injury/ damage to crop,if any :	Damaged by Natural Calamities
Grazing incidence :	light	Presence of bamboos:	Nil
Presence of grasses :	15%	Presence of weeds:	35%
Plantation status :	Nil	Water bodies:	Nil
Drivers of degradation:	Biotic interference and natural calamities	Faunal sighting, if any :	Nil
Faunal traces of flagship species.:	Nil		

Tree

Sl. No.	Botanical Name	Local Name	DBH(OB) in cm	Height (M)	Remarks (Tree Condition)
1	Diospyros montana	Halda	30.00	5.00	Unsound
2	Emblca officinalis	Amla	49.00	10.00	Sound
3	Anogeissus latifolia	Dhaura	60.00	7.00	Sound
4	Cassia fistula	Sunari	60.00	7.00	Sound
5	Tectona grandis	Saguan	50.00	4.00	Unsound
6	Lagerstroemia speciosa	Patuli	21.00	7.00	Sound
7	Aegle marmelos	Bela	45.00	10.00	Sound
8	Careya arborea	Kumbhi	50.00	6.00	Sound
9	Careya arborea	Kumbhi	45.00	8.00	Sound

1/2/2021

Database Error

10	Semecarpus anacardium	Bhalia	26.00	10.00	Sound
11	Aegle marmelos	Bela	40.00	6.00	Sound
12	Careya arborea	Kumbhi	44.00	4.00	Sound
13	Bridelia retusa	Kasi	53.00	10.00	Sound
14	Dalbergia paniculata	Barabakulia	56.00	12.00	Sound
15	Anogeissus latifolia	Dhaura	22.00	11.00	Sound
16	Bridelia retusa	Kasi	22.00	8.00	Sound

17	<i>Semecarpus anacardium</i>	Bhalia	41.00	3.00	Unsound
18	<i>Semecarpus anacardium</i>	Bhalia	52.00	4.00	Sound
19	<i>Semecarpus anacardium</i>	Bhalia	23.00	4.00	Sound
20	<i>Semecarpus anacardium</i>	Bhalia	57.00	4.00	Sound
21	<i>Lannea coromandelica</i>	Mai	52.00	8.00	Sound
22	<i>Lannea coromandelica</i>	Mai	56.00	8.00	Sound
23	<i>Tectona grandis</i>	Saguan	49.00	3.00	Unsound
24	<i>Albizzia lebbek</i>	Siris	31.00	12.00	Sound
25	<i>Scheichera oleosa</i>	Kusum	42.00	4.00	Sound
26	<i>Scheichera oleosa</i>	Kusum	44.00	6.00	Sound
27	<i>Tectona grandis</i>	Saguan	41.00	4.00	Unsound
28	<i>Aegle marmelos</i>	Bela	36.00	3.00	Unsound
29	<i>Bridelia retusa</i>	Kasi	22.00	8.00	Sound
30	<i>Scheichera oleosa</i>	Kusum	49.00	4.00	Sound
31	<i>Buchanania lanzan</i>	Char	59.00	12.00	Sound
32	<i>Buchanania lanzan</i>	Char	24.00	8.00	Sound
33	<i>Buchanania lanzan</i>	Char	53.00	8.00	Sound
34	<i>Buchanania lanzan</i>	Char	60.00	15.00	Sound
35	<i>Tectona grandis</i>	Saguan	45.00	6.00	Sound
36	<i>Tectona grandis</i>	Saguan	46.00	8.00	Sound
37	<i>Syzigium cumini</i>	Jamu	26.00	5.00	Sound
38	<i>Tectona grandis</i>	Saguan	49.00	8.00	Sound
39	<i>Tectona grandis</i>	Saguan	51.00	4.00	Sound
40	<i>Pterocarpus marsupium</i>	Piasal/ Bijasal	52.00	6.00	Sound
41	<i>Pterocarpus marsupium</i>	Piasal/ Bijasal	25.00	11.00	Sound
42	<i>Anogeissus latifolia</i>	Dhaura	22.00	12.00	Sound
43	<i>Scheichera oleosa</i>	Kusum	37.00	3.00	Sound
44	<i>Tectona grandis</i>	Saguan	36.00	3.00	Unsound

45	Albizzia lebbek	Siris	29.00	8.00	Sound
46	Albizzia lebbek	Siris	25.00	6.00	Sound
47	Albizzia lebbek	Siris	22.00	5.00	Sound

Tree Enumeration :- Diameter class in cm. (Number & Average height in each class)

Botanical Name	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	120-130	130-140	140-150
Aegle Marmelos			1	3.00	2	8.00								
Albizzia Lebbek		3	6.33	1	12.00									
Anogeissus Latifolia		2	11.50				1	7.00						
Bridelia Retusa		2	8.00			1	10.00							
Buchananian Lanzan		1	8.00			2	10.00	1	15.00					
Careya Arborea				2	6.00	1	6.00							
Cassia Fistula						1	7.00							
Dalbergia Paniculata					1	12.00								
Diospyros Montana			1	5.00										
Emblica Officinalis				1	10.00									
Lagerstroemia Speciosa		1	7.00											
Lannea Coromandelica					2	8.00								
Pterocarpus Marsupium		1	11.00			1	6.00							
Scheichera Oleosa			1	3.00	3	4.67								
Semecarpus Anacardium		2	7.00		1	3.00	2	4.00						
Syzigium Cumini		1	5.00											
Tectona Grandis			1	3.00	5	5.88	2	4.00						

GOVERNMENT OF ODISHA
FOREST AND ENVIRONMENT DEPARTMENT

NOTIFICATION

Dated Bhubaneswar the 14.12.18

No.8F(WL)15/2018-2085. The State Government in exercising the powers conferred by sub-section-18 of the Wildlife (Protection) Act, 1972 (53 of 1972), had declared Satkosia Gorge Sanctuary over an area of 795.52 sq km, situated in Angul, Cuttack, Boudh & Nayagarh District vide Notification No. 4F(W)-33/70, 12727/FFAH dated 19 May, 1976.

Whereas, under section 19 to 25 of the said Act, the Collector and District Magistrate, Angul, Cuttack, Boudh and Nayagarh District have enquired into and determined the existence, nature and extent of rights of persons within the limits of the said Sanctuary. Necessary permission from National Tiger Conservation Authority, New Delhi and on recommendation of the National Board for Wildlife is communicated vide letter No.F.No.6-159/2017 WL-dated 09.08.2017 of MoEF & CC (Wildlife Division) Govt. Of India, the alteration of boundary of Satkosia Gorge Sanctuary is hereby made.

Now in exercise of the powers conferred under section 26A of the Wildlife (Protection) Act, 1972 (53 of 1972) and in supersession of erstwhile FF & AH Department Notification No. 4F(W)-33/70, 12727/FFAH dated 19th May, 1976, the State Government do hereby declare the area, limits of which are in more detail described in the schedules A, B, C & D below including the entire bed of river Mahanadi, contained between Kusumkuburi Nala under PS:- Athmalik in the sub-division of Athmalik in the district of Angul and Barjor Nala under PS:- Harahlanga in the sub-division of Boudh in the district Boudh at the northern ends and Orasinga Nala (Suagi nala) under PS:- Narasinghpur in the Athgarh sub-division in the district of Cuttack and Brutanga Nala under PS:- Gania in the sub-division of Nayagarh in the district of Nayagarh at the southern ends to be a sanctuary to be known as Satkosia Gorge Sanctuary over an area of 968.35 sq km for the purpose of protecting, propagating and developing wild life.

SCHEDULE-A

• **Location :-** 20° 36' 00" N 20° 47' 40" N Latitude
84° 38' 40" E 85° 10' 36" E Longitude

Satkosia Gorge Sanctuary shall cover the parts of Angul, Dhenkanal, Cuttack, Boudh and Nayagarh District with an area of 968.35 sq km and the existing 104 villages situated inside the sanctuary covering an area of 186.96 sq km are excluded from the Sanctuary limits as described below.

Sl No.	Name of District	Name of the Village	Total Area of the Village (Acre)
1	2	3	4
1	Angul	Katranga(Bada)	981.91
2		Hatibari	692.73
3		Karadapada	374.08
4		Ramimunda	1274.29
5		Badakheta	322.58
6		Salor	307.95
7		Purunakote	885.77
8		Gopalpur	349.21
9		Chhotkei	580.78
10		Tolka	502.43
11		Pampasar	466.70
12		Hinsirda	377.04
13		Jaganathpur	1653.60
14		Takarsinga	853.255
15		Jokub	477.93
16		Kulangi	437.10
17		Katranga(Sana)	116.96
18		Goindi	204.70
19		Majhipada	952.72
20		Beherasahi	594.68
21		Tikarpada	375.77
22		Nuabhuin	284.92
23		Karadabani Jungle	264.44
24		Mahulia	192.54
25		Bhagamunda	101.89
26		Talisara	910.30
27		Labangi	568.26

28		Talsasanga	882.01
29		Nikamara	135.840
30		Kodasinga	135.340
31		Malisahi	208.450
32		Jamedoli	590.850
33		Dolamundi	221.340
34		Karadasinga	191.900
35		Nimbadihi	402.380
36		Tentulipadar	415.125
37		Daraha	517.800
38		Bada Dhudhianali	86.710
39		Kosasinga	96.060
40		Talbijpur	128.400
41		Kutulusinga	269.960
42		Najhara	114.200
43		Jharapoda	405.640
44		Kainpokhari	487.07
45		Regeda	455.65
46		Mandania	790.03
47		Chikankhandi	348.35
48		Talasahi	446.53
49		Nungoan	1015.01
50		Satyajaypur	1716.17
51		Dhanurjaypur	1597.41
52		Kunjabanpur	101.74
53	Cuttack	Kamaladiha	550.19
54		Baipur	498.4
55		Ranibhuin	473.29
56		Prikaregeda	1872.15
57		Kaintara	420.62
58		Panchama	2354.68
59		Busantpur	126.46
60		Sanagoan	542.91
61		Jayamangalpur	152.08

62		Jaganathpur	160.39
63		Hinjalkhola	138.41
64		Jayamangalpur 'Ka'	81.47
65		Mahigarh	249.69
66		Janisahi	301.85
67		Shyampur	553.56
68		Dhanadhipa	2587.63
69		Badagoan	334.11
70		Badhia Regeda	149.57
71		Malisahi	198.90
72		Badamul	719.95
73		Bethiasahi	166.45
74		Muduligadia	862.79
75		Khandha jillinda	849.84
76		Chhamundia	1018.66
77		Haripur	387.36
78		Kanipokhari	470.23
79		Bentapada	534.32
80		Iswarpur	501.06
81	Nayagarh	Maskajholi	103.60
82		Raigadia	84.18
83		Mahanpada	188.36
84		Jasipur	88.86
85		Raingi	172.40
86		Dhobaberei	125.00
87		Kimbhirakhani	279.09
88		Badamul Patna	42.08
89		Ranikhol	689.30
90		Barapalli	175.46
91		Kumari	1838.50
92		Hatigarh	223.18
93	Boudh	Bhabapur	525.04
94		Budhaamba	192.45
95		Ghungorupada	351.45

96		Norapada	259.46
97		Semiganta	117.38
98		Stripaju	326.31
99		Geredisahi	367.26
100		Hinjai	274.40
101		Satakhandra	962.05
102		Kutibari	352.11
103		Atalsara	1055.18
104		Badanandagadu	408.75
		Total	53497.73 Ac or 216.59 sq km
(_) River Area			29.63 sq km
Net Area of 104 villages excluded			186.96 sq km

The areas of the adjoining Reserved Forest and PRF of following forest divisions located in different districts covering an area of 359,799 Sq Kms is now included in Satkosia Gorge Sanctuary as detailed below.

Name of Forest Division	District	Name of RF	Total area of R.F. in Sq.km.	Area of R.F. proposed to be included in the Sanctuary area in sq km	Compartment No.
1	2	3	4	5	6
Athamallik	Angul	Hatidhara RF (North)	66.83	66.8363	1 to 22
		Hatidhara RF (South)	74.22	74.2234	28 to 50
Angul	Angul	Nukheta RF	29.1785	29.1785	1 to 9
		Balanga RF	31.506	18.8583	5,6,7,8,9,10,13
Boudh	Boudh	Hatidhara RF	62.775	46.9100	5(Part),6,7,8(Part) excluding village area Burhuri,10 excluding village area Godhirha, 11, 12, 13, 14, 15, 16, 17, 18 & 19
Dhenkanal	Dhenkanal	Nandinia RF	5.277	5.2771	1
Athagarh	Cuttack	Nuagarh RF	42.6958	42.6958	1 to 10
		Sardhapur RF	5.7062	5.7062	---
		Balikiary RF	55.2415	55.2415	1 to 13
		Barakhola RF	12.3838	12.3838	1 to 03
		Balikiary PRF	2.4889	2.4889	---
Total			388.3027	359.7998	

For addition of this additional area (Area included - Area excluded) to the tune of 172.83 sq kms, approval has been accorded vide L. No. 15-1018/2015/NH.A dated 26.12.2016 at N.H.A New Delhi and also has been approved by the Standing Committee of National Board for Wildlife communicated by MoEF & CC (Wildlife Division) Govt. of India vide letter No.F.No.6-159/2017-WL- dated 09/08/2017

SCHEDULE-B

The Govt of Odisha in F & E Department have notified two contiguous wildlife Sanctuaries, namely Satkosia Gorge Sanctuary and the Baisipalli Sanctuary as the Satkosia Tiger Reserve over an area of 963.87 sq km in exercise of the powers conferred by Section 38-V of Chapter IVB of the Wildlife (Protection) Act, 1972 and with prior in principle approval of National Tiger Conservation Authority vide Notification No. 8F(S)-32/2006/2080/F&E dated 31st December, 2007

After alteration of boundary and change of forest area of Satkosia Gorge Sanctuary, the area of the Satkosia Tiger Reserve shall be 1136.70 sq km as detailed below.

	Name of the Sanctuary	Area in Sq Km
1.	Baisipalli Wildlife Sanctuary	168.35
2.	Satkosia Gorge Sanctuary	968.35
	Satkosia Tiger Reserve	1136.70

SCHEDULE-C

DESCRIPTION OF BOUNDARY OF SATKOSIA GORGE SANCTUARY

Basing on rationalization of boundary, Satkosia Gorge Sanctuary has 18768 nos of boundary pillars which have been marked with GPS Coordinates as indicated below.

Sl No.	Name of Division	Pillar No.
1	Dhenkanal	1 to 33
2	Athgarh	33 to 14865
3	Satkosia (WL) (P)	14865 to 15210
4	Mahanadi (WL)	15210 to 16469
5	Satkosia (WL) (P)	16469 to 16528
6	Athmallik	16528 to 18110
7	Satkosia (WL) (P)	18110 to 18333
8	Angul	18333 to 18768

The GPS Coordinates of pillars from 1 to 18768 (277 Sheets) is uploaded in this Department Website.

SCHEDULE-D

The map of the Satkosia Gorge Sanctuary after rationalization of boundary is modified accordingly as annexed herewith.

This Notification will come into effect from the date of publication in Odisha Gazette.
Order:- Ordered that this Notification will be published in extra ordinary issue of Odisha Gazette.

By Order of the Governor

ADDL. CHIEF SECRETARY TO GOV
F & E DEPARTMENT, GOVT OF ODISHA

Memo No. 7 / F & E, Dt. 14.12.18

Copy forwarded to the Director, Printing & Stationery, Odisha, Cuttack for information and necessary action. He is requested to publish the Notification in the extra ordinary issue of Odisha Gazette and furnish 100 copies to this Department for reference.

Special Secretary to Government

Memo No. 8 / F & E, Dt. 14.12.18

Copy forwarded to the P.S. to Chief Minister / P.S. to Minister, F & E for kind information of Hon'ble Chief Minister / Hon'ble Minister, Forest & Environment respectively.

Special Secretary to Government

Memo No. 26760 / F & E, Dt. 14.12.18

Copy forwarded to the OSD to Chief Secretary, Odisha / PS to DC-cum-ACS for kind information of Chief Secretary / DC-cum-ACS respectively.

Special Secretary to Government

Memo No. 26771 / F & E, Dt. 14.12.18

Copy forwarded to the P.S. to Additional Chief Secretary to Government, Special Secretary to Govt. (DB), Forest & Environment Department for kind information of Additional Chief Secretary to Government / Special Secretary to Govt. (DB)

Special Secretary to Government

Memo No. 26770 / F & E, Dt. 14.12.18

Copy forwarded to all Departments of Government for information.

Special Secretary to Government

Memo No. 26871 / F & E, Dt. 14.12.18

Copy forwarded to the RDC, Central Division/ Northern Division / the Collector, Angul / Cuttack / Nayagarh / Boudh for information and necessary action.

Special Secretary to Government

Memo No. 26872 / F & E, Dt. 14.12.18

Copy forwarded to all PCCF, Odisha / Director, Environment / all RCCF / Managing Director, OFDC Ltd. all DFOs for information and necessary action.

Special Secretary to Government

Memo No. 26873 / F & E, Dt. 14.12.18

Copy forwarded to Diversion Section / Protection Section, F & E Department for information.

Special Secretary to Government

Memo No. 26874 / F & E, Dt. 14.12.18

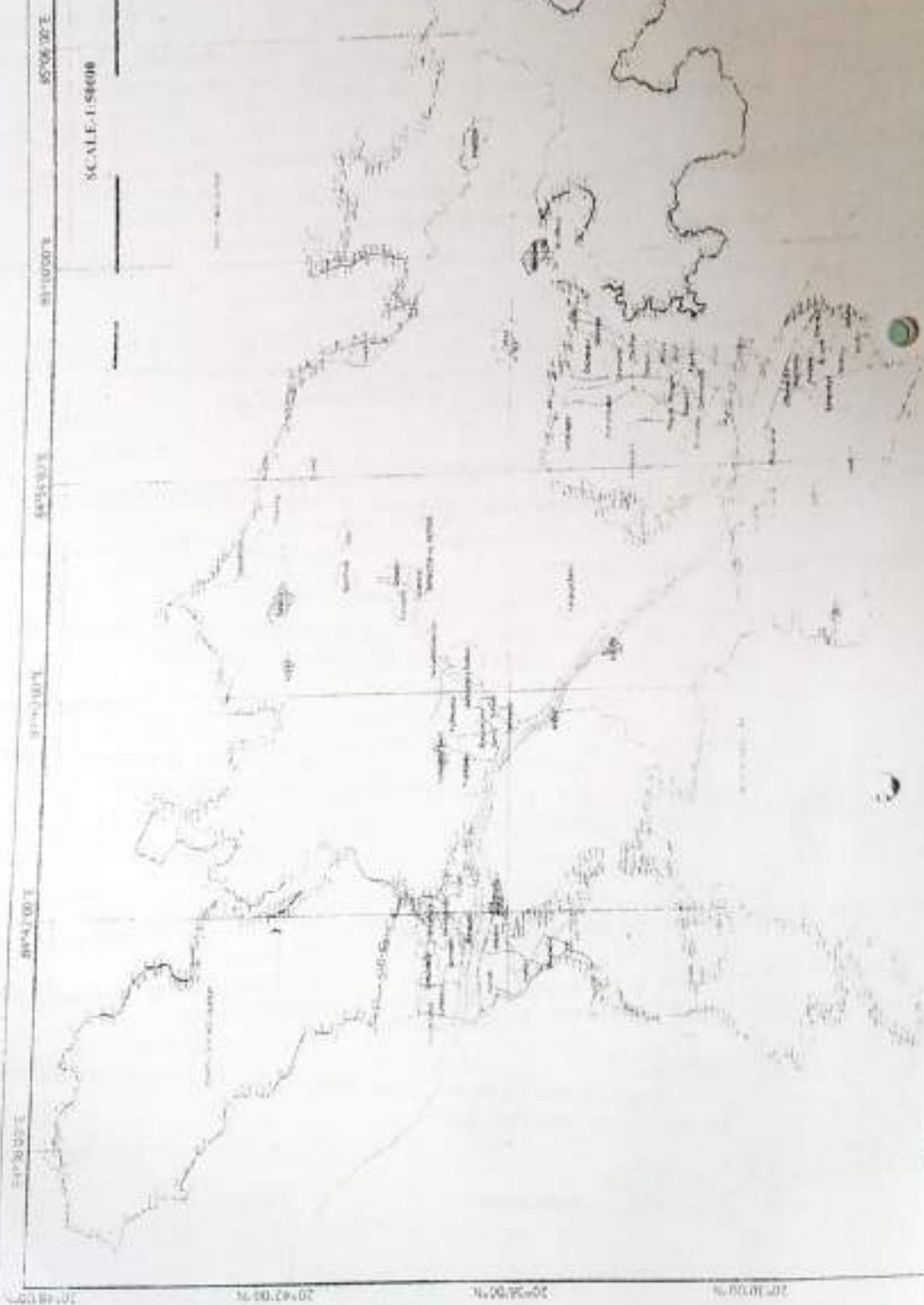
Copy forwarded to the Head, State Portal, IT Department, Secretariat, Bhubaneswar for information and necessary action.

Special Secretary to Government

(Guard files 10 spare copies)

SCHEDULE D

MAP OF NEW SATKOSIA GORGE SANCTUARY



LEGEND

Government of Orissa
Forest and Environment Department

NOTIFICATION

Dated Bhubaneswar the 19th June, 2002

No. SF(W) 17/02. 10162/P.R., Where as the State Government after careful consideration had proposed for setting up of an Elephant Reserve, comprising the area described in the schedule below under the scheme "Project Elephant" and where as the Government of India vide letter No. F.No. 7-2/00 (P.E) dated 01.05.2002 have communicated their consent for establishment of the said Elephant Reserve comprising the said territory.

Now the State Government, therefore, are pleased to declare the area described in the schedule below as an "Elephant Reserve" under the Central Scheme "Project Elephant".

SCHEDULE-A

A location of the Area: District: Portions of Angul, Boudh, Cuttack and Nayagarh,

84°49' to 84°32' East longitude

20°46' to 20°17' North Latitude.

Forest Division: Portions of Angul, Athagarh, Boudh, Nayagarh, Satyabadi and Mahanadi Wildlife Division.

Name :- NAHANADI ELEPHANT RESERVE.

Area :- Core : 351.14 Sq. Km.

Buffer : 687.16 Sq. Km.

TOTAL: 1038.30 Sq. Km.

SCHEDULE-B

Boundary Description:

Core Area: The core boundary starts from the point where Ramkutu Nallah meets river Mahanadi and follows Ramkutu nallah till Katrang village ring line. The boundary then follows the same ringline along Tikepara Reserve Forest boundary and Katrang Reserve Forest boundary till Katrang-Chhotked forest road. The boundary then follows compartment line (a path also) of Katrange compartment 8/9 upto pillar No. 239. It then coincides with the inter district boundary line of Angul / Cuttack district upto Satidhara nallah. This Satidhara nallah

Contd...2.

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from the boundary up to Tulke village ring line which runs on the side of Tulke compartment 9,7,6,2,3,4 and 12 in that sequence up to Tulke-Bhurkundi forest road which forms the boundary till it meets inter district boundary line between Angul and Cuttack after which the line forms the boundary up to pillar No. 175 where Raigoda-Narsinghpur forest road meets the boundary which also forms the boundary up to Raigoda village. Then Raigoda village ring line on the side of Raigoda compartment 6, 10 and 1 then forms the boundary after which the Raigoda-Narsinghpur road forms the core boundary up to a point where Tulke-Labangi forest road and the common boundary line of Jacob and Purunkote Reserve Forest meets. The core boundary then follows Purunkote Reserve Forest boundary common with Jacob and Takarsingha Reserve Forest till Dalpaka nallah, which then forms the core boundary up to Chhotkoi village ring line and proceeds along Purunkote compartment, 16, 14, 13, 7 in that sequence and then Purunkote Tikipara road till pillar No. 287. The core line then coincides with the Purunkote Reserve Forest boundary along compartment 7, 8, 9 and then Majhipara compartment 15, 14 and Kuru compartment 9, 7, 6 in that sequence up to the junction of Angul Tikipara road with the compartment line. It then proceeds along the road up to Barkhota village ring line and follows it along Kuru compartment No. 5 forming a loop till it meets the road again and then along the road till Tarava forest village ring line. It then proceeds along the common boundary of Kuru and Tainsi block up to the road leading to Baghamunda after which the road forms the boundary up to Baghamunda Reserve Forest. Baghamunda Reserve Forest boundary then forms the core boundary along Baghamunda compartment 9 up to the road leading to Majhipara and follows it till it meets Kaurighat nallah which then forms the boundary till Badjara nallah. Badjara Nallah then forms the boundary up to Chengudi Nallah which later becomes the core boundary up to the Reserve Forest boundary of Hatidhara Reserve Forest. The core boundary then coincides with the Reserve Forest boundary of Hatidhara Reserve Forest along the common line of compartment No. 25 and 27 and then follows Hatidhara Reserve Forest boundary line along river Mahanadi up to pillar No. 333

Contd....3.

(Compartment No. 25) and then that of Majhipara Reserve Forest boundary line pillar No. 310. The core boundary then runs in a straight line joining pillar No. 310 with 272 of Majhipara Reserve Forest after which Tikarpura Reserve Forest boundary forms the core boundary till it meets river Mahanadi after which it proceeds upstream along the river bank up to Binkel Temple. The core line then crosses River Mahanadi in a straight line joining Binkel Temple on the Northern bank and Kankel Temple on the Southern bank of the River. The core boundary then follows the river bank on the southern side down stream up to Malisahi village boundary after which the line crosses River Mahanadi in a North-Eastern direction joining the point in a straight line with the intersection point of the boundary line Jorua Reserve Forest Block-II and River Mahanadi. Then the core line follows the Northern bank of River Mahanadi upstream up to the confluence of Ramkuta Nallah with River Mahanadi i.e. the starting point.

Buffer Zone (Which also includes the core) : The boundary line in the south-east starts from the junction point of Tuluka Reserve Forest compartment No. 12 of Angul District and Balikiri Reserve Forest boundary of Cuttack District on the inter district boundary line, follows the inter district boundary line between Angul and Cuttack District up to village Bhurkhundi after which it coincides with the boundary line of Raigoda village up to Resanda village and then with Raigoda-Pampasar forest road up to Angul-Tikarpada F.W.D. Road which then forms the boundary up to Jagannethpur and further up to the boundary line of Tainsi Reserve Forest. This Reserve Forest line and then Baghamunda Reserve Forest line forms the Reserve boundary up to Chenagudi nallah which then forms the boundary till Majhipada Reserve Forest boundary line and runs in a south-western direction up to Doruha - Athemallik Panchayat road. This road then forms the boundary line till it meets Kusum Kuhari nallah. The Kusum Kuhari Nallah which runs in a southernly direction forms the boundary line till it reaches Mahanadi river on its southern side at the junction point of Bodejore Nala of Boudh Forest Division (Harbhajga P.S.). The boundary line coincides with this Nala

(which is the boundary line of Satkosia Gorge Sanctuary) in a south-western direction up to the boundary line of Nandagaddu P.R.F. which then runs in a western direction along Hatidhara Reserve Forest boundary line (Boudh Forest Division) up to the inter district boundary line between Boudh and Nayagarh District where it touches the Reserve Forest line of Baisipalli Reserve Forest (which is also the boundary line of Baisipalli Sanctuary). The Elephant Reserve line then runs coinciding with the Reserve Forest line proceeding up to 116th Km. point in Sil-1 (Despalla-Medhapur PWD Road) after which it proceeds almost in a Eastern direction along Baisipalli Reserve Forest (Sanctuary) Boundary till the Reserve Forest boundary touches Bhurtung Nallah near Meker Prasad village. This nallah then forms the Elephant Reserve boundary till its confluence with River Mahanadi near Mahabhadra. The line joining this point with the confluence of Suhagi Nallah and River Mahanadi near Orbisingha village (R.F. also) of Narsinghpur P.S. of Cuttack District (other side of the river) forms the boundary after which it follows Suhagi Nala in a North, North Eastern direction till it touches the inter district boundary line between Cuttack and Angul i.e. the starting point.

- NORTH :** Kumeri Reserve Forest, Krishnachakra Reserve Forest, Balang Reserve Forest and Nuekhatu Reserve Forest.
- SOUTH :** Bankamunda Reserve Forest, Chhadash and Central Reserve Forest.
- EAST :** Nuagarh Reserve Forest, Balikiary Reserve Forest and Sardhapur Reserve Forest.
- WEST :** Mundeswar Reserve Forest, Arkhapadar Reserve Forest and Hatidhara Reserve Forest.

BY ORDER OF GOVERNOR

L. Khadanga

ADDITIONAL SECRETARY TO GOVERNMENT

Contd....5.

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ME
Memo No. 10163/F&E., dated the 19th June, 2002

Copy forwarded to the Director, Printing, Stationery and Publication, Orissa, Cuttack with a request to publish the Notification in the next issue of Orissa Gazette.

500 copies of the Gazette Notification may please be sent to this Department for reference and use.

ON
Additional Secretary to Government.

Memo No. 10164/F&E., dated the 19th June, 2002

Copy forwarded to the Principal Chief Conservator of Forests, Orissa/Chief Conservator of Forests (WL) and Chief Wildlife Warden, Orissa/Conservator of Forests, Angul/Borhampur/ Divisional Forest Officers, Angul/ Athagarh/ Dhenkanal/Nayagarh/ Boudh/ Satkosia (Wildlife) Division.

ON
Additional Secretary to Government

Memo No. 10165/F&E., dated the 19th June, 2002

Copy forwarded to Shri S.S. Bist, Inspector General of Forests and Director (P.E.), Ministry of Environment and Forests, Govt. of India, C.G.O. Complex, Lodhi Road, New Delhi-110 003 for favour of information with reference to his letter No.7-2/00(P.E.) dated 01.05.02.

ON
Additional Secretary to Government

Memo No. 10166/F&E., dated the 19th June, 2002

Copy forwarded to all Departments/ Revenue Divisional Commissioner (Central Division), Cuttack/ (Southern Division) Borhampur/ Collectors, Angul/ Dhenkanal/ Cuttack/ Boudh/ Nayagarh for favour of information.

ON
Additional Secretary to Government

Memo No. 10167/F&E., dated the 19th June, 2002

Copy to all Sections/ Guard File (10 copies) for information.

ON
Additional Secretary to Government

H
Ojha.

Dr No 8246 152
4.12.07

Government of Orissa
Forest and Environment Department

-0-
CORRIGENDUM

No: SF(W)-42/2001/18639/F&E. The total area mentioned against the item, 'Area' under schedule 'A' (Location of the area etc.) appearing in the Forest & Environment Department Notification No. 15806/F&E., Dated 29.9.2001 may be corrected and read as 7043.74 Sq.Kms. instead of 3213.81 Sq.Kms.

By Order of the Governor

A.S.Surangi,
Principal Secretary to Government.

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29/11
D.No. 18640/F&E., Dated- 28.11.2001

Copy forwarded to the Director, Printing, Stationery & Publication, Orissa, Cuttack with reference to this department Memo No. 15807/F&E., dt. 29.9.2001 for publication of the Corrigendum in the next issue of Orissa Gazette, and will bear S.R.O. Number. 500 copies of the Gazette Corrigendum may please be sent to this department for reference and use.

M/112
D.No. 18641/F&E., Dated- 28.11.2001 Joint Secretary to Government.

Copy forwarded to the Pr. Chief Conservator of Forest, Orissa/Chief Conservator of Forest (UL) & U.W.L.W., Orissa/Director, U.W.P., Orissa/U.W.P. (KL), Orissa/All Conservator of Forests/All Divisional Forest Officers for information & necessary action with reference to this department M.No. 15808/F&E., dt. 29.9.2001.

D.No. 18642/F&E., Dated- 28.11.2001 Joint Secretary to Government.

Copy forwarded to Sri S.S. Bist, I.C. of Forest-Director (PB), Ministry of Environment & Forests, Govt. of India, CGO Complex, Lodhi Road, New Delhi-03 for/favour of information with reference to this Deptt. M.No. 15809/F&E., dt. 29.9.2001.

D.No. 18643/F&E., Dated- 28.11.2001 Joint Secretary to Government.

Copy forwarded to all Departments of Govt./All Heads of Departments/All Revenue Divisional Commissioners/All Collectors for favour of information with reference to this Deptt. M.No. 15810/F&E., dt. 29.9.01.

D.No. 18644/F&E., Dated- 28.11.2001 Joint Secretary to Government.

Copy to all sections/Guard File (100 copies) for information.

Joint Secretary to Government

Table No 3.8 Water Bird's Census data.

Table No 3.8 Water Bird's Census data.																																		
Sl. No.	Species observed	Name of the Wet land																																Number of Birds counted/ Estimated
		Dhulepatkars Dam (Phalgudi)	Bighda Dam (Bakhar)	Bighda Bartha (Solent)	Pencolhala Dam (Bakhar)	Adwa Dam (Bakhar)	Belafer Pond (Makhar)	Korajhar Dam	Belafer Pond (Makhar)	Mohagur Dam	D.N. Pur Dam	Bhulhar Bartha	Korajhar Dam	Damodar Dam	Tumkarpalli Pm	Alwarbartha Sam	Sunamli MI Project	Borogam Pm	Sahadala	Muramba Pond	Audhian Pond	Mohisani Dam	Hagan Dam	Kurani Dam	Lokharan Pond	Dangada Dam	Pangya Dam	Bolagali	Koska Dam	Fulacuran	Batala	Gajara Dam		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	
1	Little Cormorant	17	8	10	8	48	17	0	0	30	31	43	40	21	400	400	100	400	4	0	2	0	0	0	4	15	5	0	8	10	0	0	1621	
2	Asian Cormorant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	
3	White heron	20	12	0	25	11	24	0	1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1392	
4	Greylag goose	0	31	5	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65	
5	Water hen	0	18	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	
6	Grey Crane	12	8	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55	
7	Kingfisher	55	20	2	10	5	8	0	7	0	0	0	0	0	0	0	0	0	0	0	0	15	14	0	0	0	0	0	0	0	0	0	136	
8	Sand piper	0	32	10	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
9	Eurasian Coot	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150	0	0	0	0	0	1000	0	0	0	0	0	0	0	0	1172	
10	Quail	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
11	Pond Hen	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	
12	Black Drongo	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	135	
13	Dobchuck	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
14	Indian Pond heron	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2120	
15	Greater cormorant	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
16	Asian openbill	0	0	0	0	0	0	15	15	40	24	7	8	0	150	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	372
17	Hansarali	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	
18	Indian Shag	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	
19	Kapalpani	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	
20	Great egret	0	0	0	0	0	0	0	0	10	1	12	15	2	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50
21	Intermediate egret	0	0	0	0	0	0	0	0	40	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	54
22	Little egret	0	0	0	0	0	0	0	0	12	18	24	25	48	20	0	0	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	355
23	Cattle egret	0	0	0	0	0	0	0	0	18	4	29	45	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	117	
24	White breasted water hen	0	0	0	0	0	0	0	0	25	38	52	32	45	0	700	0	0	0	0	0	0	50	50	0	0	0	0	0	0	0	0	0	992
25	Yellow wattle lapwing	0	0	0	0	0	0	0	0	15	26	38	30	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	148
26	Small blue kingfisher	0	0	0	0	0	0	0	0	18	44	17	18	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	120
27	Black Drongo	0	0	0	0	0	0	0	0	120	85	5	5	207	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	425

GOVERNMENT OF ODISHA
FOREST AND ENVIRONMENT DEPARTMENT

Letter No 21103 /F&E
ENV-I- 57/2018

dated: 29th Septer, 2018

ORDER

Whereas, plastics are non-biodegradable and cause threat to the ecological system as they reduce the fertility of soil and thereby hamper the growth of plants, choke drains and sewer resulting in overflowing gutters and if swallowed by cattle, they may cause death by obstructing their intestine;

And whereas, the colour pigments contaminate food products wrapped in them and cause health hazards and some of it are even carcinogenic;

And whereas, plastic products take hundreds of years for degradation, as they are not biodegradable like paper bags, they also block the rainwater infiltrating into the soil hindering recharge of ground water;

And whereas, the plastic bags when discarded can get filled with rainwater offering ideal breeding ground for vector borne diseases like malaria and burning of plastics also releases most carcinogenic and toxic substances like dioxins, furans and hydrogen cyanide, which pollute air as well as cause severe and chronic health problems;

And whereas, Government of India in the Ministry of Environment, Forest and Climate Change have made the Plastic Waste Management Rules, 2016 under the Environment (Protection) Act, 1986 (29 of 1986) vide Notification No G.S.R 320(E), dated the 18th March, 2016 restricting the use of certain plastic carry bags and containers and its management;

And whereas, in the past, the State Pollution Control Board and the State Environment Department also took certain steps to restrict the indiscriminate use and littering of polythene carry bags;

And whereas, it is felt necessary that certain stringent steps are needed not only in regard to regulating the use of polythene bags but also restricting the use of thermocol and similar plastic products;

And whereas, the State Government have decided to restrict the indiscriminate use of certain types of plastic products in the territorial jurisdiction of 5 Municipalities and Municipal Corporations like; Bhubaneswar, Cuttack, Berhampur, Rourkela and Sambalpur and in famous place of pilgrimage and tourist destination at Puri with effect from the 2nd October, 2018;

And whereas, the draft of certain directions which the State Government proposed to issue in exercise of the powers conferred by section 5 of the Environment (Protection) Act, 1986 (29 of 1986), read with the notification of the Government of India in the Ministry of Environment and Forests (Department of Environment, Forests and Wild Life) No. SO-152 (E), dated the 10th February, 1988 and rule 4 of the Environment (Protection) Rules, 1986, was published in the extraordinary issue No. 1674 of the Odisha Gazette, dated the 5th September, 2018 under the Order of the Government of Odisha in the Forest and Environment Department No 19374/F&E, dated the 4th September, 2018 inviting objections and suggestions from all persons likely to be affected thereby, till the expiry of a period of fifteen days from the date of publication of the said Order in the Odisha Gazette;

And whereas copies of the said Gazette were made available to the public on the 5th September, 2018;

And whereas the objections and suggestions received during the period so specified above from the public in respect of the said draft Order have been duly considered by the State Government;

NOW, therefore, in exercise of the powers conferred by section 5 of the Environment (Protection) Act, 1986 (29 of 1986), read with the notification of the Government of India in the Ministry of Environment and Forests (Department of Environment, Forests and Wild Life) No. SO-152 (E), dated the 10th February, 1988 and

rule 4 of the Environment (Protection) Rules, 1986., and in supersession of the Order of the Government of Odisha in the Forest and Environment Department No 1321/F&E, dated the 20th January, 2004, the State Government do hereby issue the following directions, namely:

1. (a) No person, by himself or through another, shall knowingly or otherwise, sell, trade, manufacture, import, store, carry, transport, use or distribute the following within the municipal limits or as the case may be within the Municipal Corporation Units of Bhubaneswar, Cuttack, Berhampur, Rourkela, Sambalpur and Puri, namely:
 - (i) Polythene carry bags of any shape, thickness and size (excluding 90cm x 50cm);
 - (ii) Low density polyethylene Terephthalate (PET/PETE) bottles of less than 20mm x 10mm;
 - (iii) Single use disposable cutleries made up of thermocol (polystyrene), polyurethane and the like; or plastic such as dish, spoon, cup, plate, glass, fork, bowl, pouch to store liquid and container etc. of any size and shape excepting for packing and selling of milk and other ancillary milk products; and
 - (iv) Thermocol decorative materials (flowers and the like);
- Note: Compostable plastics shall conform to the Indian Standard IS 11088:2008. The manufacturers or seller of compostable plastic carry bags shall obtain a certificate from the Central Pollution Control Board before marketing or selling.
- (b) Vendors shall not be allowed to use polythene sheets of less than 50 micron thickness for storing, transporting, dispensing or packaging of any article or commodity or food items, consumables, packaging of milk and milk products and edible oil in sealed manner. This excludes any plastic for carrying and transporting garbage and containers like cup for milk products including curd and icecream etc., polythene packaging materials used in plant nurseries, horticulture, agriculture and healthcare sector like medicines, blood transportation bags,

syringe, sample or specimen bags, re-sealable bags, medical instruments and accessories etc. and packing materials used for wrapping of any item at manufacturing stage;

Note: The expression 'vendor' shall mean any person who seUs articles or commodities specified under this Order.

- (c) No person shall knowingly or otherwise, litter any public place with any plastic item allowed under this Order.
- 2. The authorities or owners of places of religious worship or institutions, hotels and restaurants, cafe, mobile food counters or vans, caterers and other such places like marriage or party halls, offices or institutions and the outdoor event managers located at the places mentioned in sub-Para (a) of para 1 shall be responsible for ensuring strict compliance of the aforesaid directions and they shall provide space for collection of plastic waste within their campus and returning the same to the concerned manufacturer or retailers or supplier.
- 3. Manufacturers or Producers of Polyethylene Terephthalate (PET/PETE) bottles for bottled drinking water and soft drinks shall take back the Polyethylene Terephthalate (PET/PETE) bottles and plastic waste respectively through the same retail sales network under mutually agreed terms and conditions based on Extended Producer's Responsibility.
- 4. The Municipal Commissioners or the Executive Officers of Urban Local Bodies and other concerned officers or agencies as nominated, shall make wide publicity of all provisions of this Order through Press and electronic media.
- 5. The Municipal Commissioner or the Executive Officer shall take adequate steps to implement the restrictions specified under this Order and shall make suitable arrangements for collection and disposal or recycling of any type of plastics item within their jurisdiction.

6. District Collector, Sub-Divisional Magistrate, Member-Secretary of State Pollution Control Board, who are empowered to take cognizance of offence under the Environment (Protection) Act, 1986 shall enforce the provisions of this Order in their respective jurisdiction.

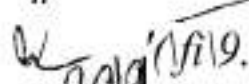
District Collector shall involve Additional District Magistrate> Superintendent of Police, Divisional Forest Officer, Tahasildar, Regional officer of State Pollution Control Board, officers of Municipal Corporation/Municipality and any other officer nominated by him/her, for enforcing the Order.

7. The Cinema Hall owners or proprietors shall exhibit slides in their halls regarding the restriction of plastic use in the State for a period of one year from the date of issue of this Order.
8. The State Pollution Control Board shall ensure closure of the industries producing plastic products which are not conforming to the stipulations of this Order within the 6 above Municipal Corporations/Municipalities.
9. Centre for Environmental Studies, Odisha shall make necessary public awareness campaign regarding consequences of indiscriminate use and littering of plastics and restrictions imposed under this Order through Non-Government Organizations and Eco clubs.

Note: Any person including the vendor possessing any materials, which are prohibited under this Order, shall dispose of those articles within 1 month from the date of publication of the Order.

By order of the Governor

!!



Additional Chief Secretary

Government

Memo No. \is /F&E., dated the 29th September, 2018

Copy forwarded to Director of Printing, Stationery and Publication, Madhupatna, Cuttack with a request to publish the Resolution in an extraordinary issue of the Odisha Gazette and supply 100 copies of the order to this Department

/s/ [Signature]

Director, Environment-cum-Special Secretary

Memo No. \CJS /F&E., dated the 29th September, 2018

Copy forwarded to AU Departments/ All heads of the Departments/ All Revenue Divisional Commissioners for information and necessary action. All Departments are requested to circulate copies of the order among all State Public Sector Undertakings/ Corporations/ All Local Bodies under their administrative jurisdiction to comply with the direction.

[Signature]

Director, Environment-cum-Special Secretary

Memo No. \O, /F&E., dated the 29th September, 2018

Copy forwarded to AU Collectors/ All S.P.s for information and necessary action. They are also requested to circulate copies of the order among the Administrator of temples and owners of cinema halls/TV channels operating under their jurisdictions for strictly complying with the directions.

[Signature]

Director, Environment-cum-Special Secretary

Memo No. \O 7 /F&E., dated the 29th September, 2018

Copy forwarded to Director, Doordarshan Bhubaneswar/ All India Radio, Cuttack/ OTV Bhubaneswar / ETV Bhubaneswar for information with a direction to broadcast the direction as mentioned in the order, during prime time.

19-13-18

Director, Environment-cum-Special Secretary

Memo No. \O fr /F&E., dated the 29th September, 2018

Copy forwarded to P.S. to Chief Minister, Odisha /P.S. to Minister, Forest & Environment/ P.S. to Chief Secretary/P.S. to Agriculture Production Commissioner-cum-Additional Chief Secretary/ P.S. to Additional Chief Secretary to Govt. Forest & Environment Department for kind information of Chief Minister/Minister, Forest & Environment/ Chief Secretary/ A.P.C-cum-A.C.S./Additional Chief Secretary, Forest & Environment Department respectively

[Signature]

Director, Environment-cum-Special Secretary

Annexure-IX

Girth Class	Length Class	Sal, Kasi, Panas	Mehogani Teak, Sisoo (Rose Wood)	Bija, Kendu (With black portion) Haldu/Kurum	Gambhari, Champa	Bandhan, Bali sisoo, Accacia, Tendra, Sirish, Kangada & Mitikina	Asan, Jamu, Neem, Kendu (Without Black portion)	Dhaura, Neem, Kendu, (without black portion)	Harida, Bahada, Mango, Mahula, Kusum, Veru, Sunari, Chakhunda, Mangium and other hard wood	Euclayptus, Simili, Rai, Mai, Salai, Chatiana & other softwood
45 to 59cm	Below 2m	To be sold as poles	12626	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles
	2m to under 3.74m	To be sold as poles	16821	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles
	3.74m to under 5m	To be sold as poles	23132	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles
	5mt & above	To be sold as poles	29404	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles	To be sold as poles
60 to 74cm	Below 2m	12571	26399	16342	15085	11314	8800	5986	4789	3592
	2m to under 3.74m	16353	34341	21259	19624	14718	11447	7787	6230	4672
	3.74m to under 5m	20432	42907	26562	24518	18389	14302	9730	7784	5838
	5mt & above	24510	51471	31863	29412	22059	17157	11672	9337	7003
75 to 89cm	Below 2m	16353	34341	21259	19624	14718	11447	7787	6230	4672
	2m to under 3.74m	20432	42907	26562	24518	18389	14302	9730	7784	5838
	3.74m to under 5m	24510	51471	31863	29412	22059	17157	11672	9337	7003
	5mt & above	28181	59180	36635	33817	25363	19727	13420	10736	8052
90 to 119cm	Below 2m	23928	45681	28279	26104	19578	15227	10118	8094	6071
	2m to under 3.74m	30597	58412	36160	33378	25034	19471	12643	10114	7586
	3.74m to under 5m	36707	70077	43381	40044	30033	23359	15168	12134	9101
	5mt & above	41259	78767	48760	45010	33757	26256	17446	13956	10467
120 to 149cm	Below 2m	31107	59386	36763	33935	25451	19795	13153	10522	7892

	2m to under 3.74m	39783	75949	47016	43399	32549	25316	16439	13151	9863
	3.74m to under 5m	47731	91123	56410	52070	39053	30374	19724	15779	11834
	5mt & above	53662	102446	63419	58541	43906	34149	22690	18152	13614
150 to 179cm	Below 2m	38878	74222	45947	42413	31810	24741	16439	13151	9863
	2m to under 3.74m	45764	87368	54085	49925	37444	29123	18911	15129	11347
	3.74m to under 5m	50337	96098	59489	54913	41185	32033	20801	16640	12480
	5mt & above	54121	103322	63961	59041	44281	34441	22884	18307	137330
180cm & above	Below 2m	41768	79739	49362	45565	34174	26580	18082	14465	10849
	2m to under 3.74m	47022	89769	55571	51296	38472	29923	19883	15906	11930
	3.74m to under 5m	51741	98778	61148	56444	42333	32926	21878	17502	13127
	5mt & above	55595	106136	65703	60649	45487	35379	24067	19254	14440

Girth Class	Specification	Length Class	Sal, Kasi, Panas	Mehogani Teak, Sisoo (Rose Wood)	Bija, Kendu (With black portion) Haidu/kurum	Gambhari, Champa	Bandhan, Bali sisoo, Accacia, Tentra, Sirish, Kangada & Mitikina	Asan, Jamu, Neem, Kendu (Without Black portion)	Dhaura, Neem , Kendu, (without black portion)	Harida , Bahada, Mango, Mahula, Kusum, Veru, Sunari, Chakhunda, Mangium and other hard wood	Euclayptus, Simili, Rai, Mai, Salai, Chatiana & other softwood
Reapers	5cm x 1.3cm,	Below 1m	7115	14230	9250	8538	6404	4981	3558	2806	2135
	5cmx2.5cm, 2.5cm	1m to under 1.5m	8894	17788	11562	10673	8005	6226	4448	3568	2658
	x2.5cm, 2.5cm	1.5m to under 2.5m	12533	25066	16293	15040	11280	8773	6267	5003	3760
	x3.8cm & 2.5cm x 1.3cm	2.5m to under 5m	12936	25872	16817	15523	11642	9055	6468	5174	3881
		5M & above	13350	26700	17355	16020	12015	9345	6675	5310	4005
Battens		Below 1m	8894	17788	11562	10673	8005	6226	4447	3558	2668
	5cm x 5cm, 5cmx3.75cm,	1m to under 1.5m	16170	32340	21021	19404	14553	11319	8085	6468	4851
	7.5cm x2.5cm,	1.5m to under 2.5m	17787	35574	23123	21344	16008	12451	8891	7215	5336
	7.5cm x3.5cm	2.5m to under 5m	20213	40426	26277						
		5M & above	22970	45940	29861						
Scantling		Below 1m	17163	34326							
		1m to under 1.5m	27043	54086							
	8cm x 8cm, 6cmx5cm, 6cm x6cm	1.5m to under 2.5m	32245	64490							
		2.5m to under 5m	36925	73850							
		5M & above	42279	84558							
Scantling	10cm x 5cm,	Below 1m	22156	40284							

	10cmx6cm, 10cm x8cm, 10cm x10cm	1m to under 1.5m	40718	74032							
		1.5m to under 2.5m	46709	84926							
		2.5m to under 5m	51498	93632							
		5M & above	57724	104958							
Scantling & Beam up to 200 sqcm	13cm x 8cm, 13cmx6cm, 13cm x5cm	Below 1m	25769	46858							
		1m to under 1.5m	44347	80630							
		1.5m to under 2.5m	50339	91526							
		2.5m to under 5m	56331	102420							
		5M & above	62253	113188							
Beam	200 to u/336 sqcm	Below 1m	30874	61748							
		1m to under 1.5m	46311	92622							
		1.5m to under 2.5m	49397	98794							
		2.5m to under 5m	57630	115260							
		5M & above	59698	119396							
Beam	330 sqcm & Up	Below 1m	36514	73028							
		1m to under 1.5m	51550	103100							
		1.5m to under 2.5m	59070	118140							
		2.5m to under 5m	64437	128874							
		5M & above	71475	142950							

NTFP policy of 2000

For quite some time NTFP trade was monopolized mostly by private business houses that were granted lease on a long term basis to procure specific forest produces from specific forest divisions. Such monopoly trade arrangement created problems of low payment to tribal, erratic and arbitrary procurement, and revenue loss to the state. Therefore, in order to streamline the system of collection and disposal of NTFP, which are major source of livelihood of the rural poor, especially women, the State Govt came out with a new policy guideline on 31.03.2000. This gives ownership rights to the Gram Panchayat (village councils - lowest unit of local self governance) not only in scheduled areas but also in the entire State. The policy had become over due after promulgation of PESA and subsequent state confirmatory act, Orissa Gram Panchayat Act in 1997.

The policy of March 2000 tried to regularize procurement and trade of NTFP as well as abolish monopoly lease in interest of proper price realization by primary gatherers. However, the most prominent feature of the new policy is the transfer of ownership rights over MFP to Gram Panchayats (GP). This policy introduced many things for the first time. It is for the first time that the State Government recognized importance of MFP in forest dweller's life as well as demonstrated a strong political will to strike a balance between state revenue and protection of livelihood which in the past favored the former. Secondly, it initiated a process of transfer of ownership over MFP from the FD to the GPs. Thirdly, it introduced multiple buyers doing away with monopoly trade arrangement that had restricted primary collectors' choice as regards sale, store and market. Fourthly, the policy decentralized and de-bureaucratized, as far as possible, the trading arrangements to encourage and motivate producer's co-operatives, primary groups, people's organizations to get into processing and trading at the local level.

With this, GPs were entrusted with the responsibility of facilitating and supervising MFP trade in their territorial jurisdiction, i.e., within the revenue boundary of the GPs. Business houses and Govt corporations who earlier controlled the trade would now operate as traders provided they get themselves registered with the concerned GPs as traders for particular MFP items for a particular season.

On 26th May 2000, Panchayat raj Department, in exercise of power under section 152 of the OGP Act, issued an administrative order prescribing the manner in which the

rights transferred to the GPs shall be dealt with. Since royalty was withdrawn a token amount of Rs. 100/ was fixed as registration fee per each produce that is to be given to the GP in which the traders intend to procure. There is no restriction on the traders on number and volume of produces that they want to trade and transact provided they pay the registration fee. It specified the way registration would be done, keep a record of monthly transaction and most importantly the way the quasi-judicial power of reprimanding unscrupulous traders will be carried out. As per the policy, the GPs cannot use their discretion in registering the traders though they can always reprimand unscrupulous ones involved in low payment, irregular procurement etc.

Other salient features of the Policy are –

- ✓ Abolition of royalty system
- ✓ Abolition of transit permit system inside the state
- ✓ In matters of collection, primary gatherers will be subject to reasonable control by the Divisional Forest Officer through imposition of temporary ban if collection method is found to be harmful.
- ✓ The DFO reserves the right to set a minimum target for procurement for respective items for the dealer(s).
- ✓ VSS will continue to enjoy rights of ownership over MFP and NTFP in reserve forest areas.
- ✓ After some uncertainty, it was decided that a district level committee would decide the prices of NTFP till the time PRIs were empowered to do the same.

The Orissa Gazette

EXTRAORDINARY
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No. 2176, CUTTACK, THURSDAY, SEPTEMBER 22, 2011/ BHADRA 31, 1933

[No. 16524-IF-Affn.17/2011/F.& E.]

FOREST & ENVIRONMENT DEPARTMENT

RESOLUTION

The 9th September, 2011

Sub: Joint Forest Management Resolution, 2011

1. Introduction:

Forests are one of the complex eco-systems of our planet. The role of forests in conservation of environment and economic prosperity of mankind is well established. Economic growth and environment protection are inextricably linked. For surviving on the earth human beings will have to live in harmony with nature. The need for conservation of environment and protection of forests and wildlife has been enshrined in our Constitution. Orissa has 61018 Sq. kms of forest area which is 39.18% of the geographical area of the State. The existing forest cover of 31.38 % of its geographical area plays a very significant role in the socio-economic and cultural life of the people of the State. However, over the past few decades, the forests of Orissa are under heavy biotic pressure. The rich bio-diversity of the State faces the risk of depletion. Man-animal conflict is on the rise. Hence, conservation and development of the forest eco-systems of Orissa is a priority of the State Government.

The National Forest Policy, 1988 envisaged co-operation of the people in conservation and development of forests. In keeping with this policy Government of Orissa adopted the Joint Forest Management (JFM) approach and sought community participation for protection, regeneration and management of the forest wealth. JFM has not only been a tool for forest regeneration, but also a means of employment generation and social empowerment of the forest-fringe dwellers.

The State Government enacted the Orissa Village Forest Rules, 1985 which envisaged preparation of a Management Plan for every village forest and sought co-operation of the community in protection of these forests. In 1988, the

State Government passed a resolution to formally introduce a Scheme of Protection of peripheral Reserve Forest areas with participation of the adjoining villagers by forming a Village Level Forest Protection Committee. The scope of this resolution was enlarged in 1990 to include the Protected Forests. To make the forest-people interface more effective, the Government of Orissa in Forest & Environment Department issued a Resolution dated 3.7.1993. This resolution dealt, in a fairly exhaustive manner, the involvement of all local communities in protection of adjoining forests, formation of Van Samrakshyana Samiti (V.S.S.), duties and responsibilities of the V.S.S. and their Executive Committees and the role of Forest Department and Gram Panchayats, preparation of Joint Forest Management plans, usufruct benefits for the V.S.S. and provisions of MoU etc. Since these Resolutions in the past did not cover the Mangrove Wetlands and the Protected Areas (PA) of the State, i.e. National parks and Sanctuaries, and participatory modes of management are needed there too, the 2008 Resolution was issued to extend the participatory approach to all types of forests. Eco-development was adopted as a strategy in order to improve the livelihood of local people and thereby secure their support for conservation.

Participatory Forest Management in JFM mode is an evolving concept encompassing ecological socio-cultural and economic dimensions. People have played an important role in protection and regeneration of forests all over the state of Orissa. Villagers have either formed V.S.Ss as per JFM Resolution or Community Forest Management Groups outside the existing JFM framework. It is desirable that associations of people, whether formed under Government resolutions, or by peoples' own initiative, with the forest conservation as the principal and core objective, are allowed to function smoothly.

Panchayat Extension to Scheduled Area (PESA) Act, 1996, which is applicable to scheduled areas, lays down as follows: "Every Gram Sabha shall be competent to safeguard and preserve the traditions and customs of the people, their cultural identity, community resources and the customary mode of dispute resolution; Every Gram Sabha shall approve the plans, programmes and projects for social and economic development before such plans, programmes and projects are taken up for implementation by the Panchayat at the village level and be responsible for the identification or selection of persons as beneficiaries under the poverty alleviation and other programmes." This Act vests the ownership of Minor Forest Produce (MFP) on Gram Panchayats in Scheduled areas. The decision of Government of Orissa to do away with the monopolies in collection and trading in 69 items of MFP is in consonance with the spirit of PESA Act.

The community forest resource has been defined under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (popularly known as Forest Rights Act). As per the said Act, community forest resource means customary common forest land within the traditional and customary boundary of the village and seasonal use of the landscape in case of pastoral communities etc. The Minor forest produce has been defined under the Forest Rights Act which includes all non-timber forest produce of plant origin such as bamboo, brushwood, stumps, cane, tassar, cocoons, honey, wax, lac, tendu or kenduleaf, medicinal plants and herbs, roots, tubers and the like. It may be mentioned here that in case of Kendu Leaf, the current policy of Government is to discharge certain responsibilities with a view to protecting the livelihood of forest-dependent communities while providing management inputs to facilitate a scale of operation required for adequate value realization and sustainable management process.

Under the Forest Rights Act, the Gram Sabha is to initiate the process of determining the individual and community forest right. Therefore the enactment of FRA provides an opportunity not only to strengthen the existing Participatory Forest conservation and management initiatives but to promote such initiatives in the areas which are devoid of such institutional arrangements. With the changing scenario of Forest Management, increasing awareness among people and experiences gained from the past management practices; it is now felt necessary that the resolution on Joint Forest Management, 2008 is revised.

2. Selection of Area:

(i) The forests of the State to be covered under this Resolution shall be grouped into the following two categories:

- (a) Reserved Forests, Protected forests, Village forests, Revenue forests etc. not covered under Protected Areas.
- (b) Protected Areas (National Park and Sanctuaries) excluding Core Areas, and Mangrove Wetlands.

The Committee constituted for the first category of forests will be known as Vana Suraksha Samiti (VSS) while the Committee constituted for the second category will be known as Eco-development Committee (EDC).

(ii) While deciding the extent of area to be assigned, the Palli Sabha shall consult the Forest Range Officer concerned and take into account the area customarily being protected and used by the community, the number of adjacent villages, their claims, if any, and users' regime. In case a group of villages decide to constitute one VSS jointly, they

may do so. The local Forester will provide the technical input and facilitate the process of identification of the forest area to be managed by the committee.

(iii) In case any change is required in the extent of forest area assigned to the existing VSS formed under the JFM Resolution, 2008, the same can be done in consultation with the village community and the local forest department officials not below the rank of a Forest Range Officer.

3. Constitution of VSS/EDC:

(i) Ordinarily there will be one VSS/EDC for a single village. One VSS may also cover more than one village or there may be more than one committee in a village especially large in size. Other Forest Protection groups, if any would also be covered under this Resolution.

(ii) All adults of the village will be the members of the VSS/EDC. They may pay an enrolment fee determined by the General Body (GB) of VSS/EDC.

(iii) The Pali Sabha shall send its Resolution to the Range Officer concerned regarding constitution of VSS / EDC for his record and communication to the DFO concerned for registration at the Division level.

4. Constitution of the Executive Committee (EC):

(i) The Pali Sabha shall elect the Chairperson, the Vice-Chairperson, the Secretary and the Treasurer and a minimum of other 11 (eleven) members to constitute the Executive Committee. At least 50% of the members of the EC shall be women. The number of SC & ST members in the Executive Body shall be in proportion to their membership in VSS / EDC. There should also be representation from the group of community, who do not have any livelihood support other than depending on the forests.

(ii) Either the Chairperson or Vice-Chairperson shall be a woman.

(iv) The composition of the EC shall be as follows:

1. Chairperson	1	Elected Member
2. Vice-Chairperson	1	Elected Member
3. Secretary	1	Elected Member
4. Treasurer	1	Elected Member
5. Ward Member (s) concerned		<i>Ex officio</i> Member (s)
6. Members	11	Elected Members
7. Local Forest Guard	1	<i>Ex officio</i> Member

(iv) The Range Officer concerned will act as the Returning Officer for conducting the election of the EC. It shall be the responsibility of the Returning Officer to ensure that the representation in the EC is in accordance with reservation specified in Para-i above.

(v) The EC will have tenure of 3 years at a time.

5. Meeting:

(i) General Body (GB)

- (a) The GB meeting of the VSS / EDC shall be held at least once in every six months. It can also be called as and when required.
- (b) The Secretary with the approval of the Chairperson will convene the meeting of the GB. Ordinarily a 15 days' notice would be necessary for convening the meeting. A copy of the notice will be sent to the Gram Panchayat.
- (c) The Chairperson and in his absence the Vice-Chairperson shall preside over the meetings.
- (d) 50% of the members of the VSS / EDC will constitute the quorum for the GB. At least one third of the members present should be women.
- (e) Under special circumstances, a special meeting of the VSS/EDC can be convened provided at least one third of the members agree to convene such a meeting and make such a request to the Chairperson in writing. Where the Chairperson does not convene the meeting, the Secretary shall convene the GB meeting with the approval of the Vice-Chairperson. In all such cases, a 3 days' notice would be necessary indicating the purpose of the said meeting. The decision in such meeting shall be taken by a minimum of 2/3rd members of VSS / EDC.
- (f) The Secretary shall record the proceedings and get them approved by Chairperson. A copy of the proceedings would be either pasted in a register or preserved in a guard file. A copy of the Resolution will be forwarded to the Forest Range Office and the Gram Panchayat under the signature of the Secretary.
- (g) The Executive Committee shall be elected by GB at least one month before expiry of its tenure.

(ii) Executive Committee (EC)

- (a) EC would meet as often as possible and necessary, but not less than once in two months.
- (b) The meeting will be presided over by the Chairperson and in his absence by the Vice- Chairperson.

- (c) The quorum for any meeting of the EC shall be 50% of its membership, out of which at least one-third shall be women.

6. Duties and responsibilities of VSS / EDC:

(i) The members of the VSS / EDC shall individually and collectively protect the forest, wildlife and biodiversity.

(ii) The VSS / EDC shall put in necessary efforts so that adjoining catchments area, water resources and other ecologically sensitive areas are protected.

(iii) The VSS/ EDC shall place adequate emphasis on plantation of indigenous medicinal and NTFP species in the forests as well as outside the forest area adjoining the village.

(iv) The VSS / EDC shall ensure that the decisions taken in the Palli Sabha to regulate access to community forest resources and stop any activity which adversely affects the wildlife, forests and the biodiversity, are complied with.

(v) The General Body of the VSS /EDC shall have the powers to remove and/or substitute any elected member of the EC by a two third majority of the members if the concerned member does not discharge his/her duties satisfactorily.

7. Duties and responsibilities of the Executive Committee (EC):

(i) The EC shall carry out the day-to-day business of the VSS / EDC as per provisions of the Resolution. The EC shall prepare the Micro Plan and Annual Work Plan for the assigned forest area and integrate other developmental activities outside the forest area associated with the forest based livelihood system and get it approved by the VSS / EDC after technical scrutiny by the Forest Range Officer concerned. The EC shall be responsible for managing and implementing the Micro Plan and Annual Plan and other decisions of the General Body of VSS / EDC.

(ii) The EC shall be responsible for protection of the forests assigned to the VSS / EDC and extend their assistance to the Forest Department for apprehending the offenders who commit forest offences. If the members of the VSS / EDC play a significant role in detection of forest offence and seizure of the forest produce within their village limits, they will be entitled for a fixed percentage of the value of the forest produce (except in case of WL Trophies) so seized as per procedure laid down in Para. - 11(iii).

(iii) The EC in consultation with the GB shall evolve methodology on all issues relating to membership, conflict resolution, prevention of encroachment, exercise of customary rights and use of the permissible forest resources such as NTFP including Bamboo.

(iv) The EC shall be responsible to account for and manage the funds and other resources received from the Government, other agencies and funds internally generated, if any. For this purpose a joint account called VSS account/EDC account shall be opened in any commercial, rural or Co-operative Bank recognised by the RBI or in any post office, which shall be operated, jointly by the Secretary and the Treasurer of the VSS / EDC. Utilisation Certificate relating to the expenditure incurred shall be jointly signed by the Chairperson and the Secretary and submitted to the authorities concerned.

(v) The EC shall be responsible for managing funds received by VSS / EDC by maintaining and operating VSS / EDC account as per the procedure detailed in Annexure A.

(vi) The EC shall try to establish marketing linkage for various NTFP items and other micro-enterprise products for securing better returns for the members. The Forest Department will provide necessary support in this regard.

(vii) Annual account of VSS / EDC shall be placed before the GB for its approval.

8. Role of Palli Sabha:

As per the 73rd Amendment of the Constitution, certain powers and responsibilities have been vested on the PRIs. Therefore it is necessary to define the relationship between village level institution like VSS / EDC and the PRI and establish a linkage with the Palli Sabha.

(i) Regarding protection and conservation of forest, wildlife and environment, the EC shall work as a Sub-Committee of Palli Sabha.

(ii) If the work of the EC of any VSS / EDC is found to be detrimental to forest conservation and against the larger and long term interests of the people, the VSS / EDC may recommend for dissolving and reconstituting the EC. The Palli Sabha, on receipt of such recommendation may enquire into the matter and forward its findings to the Divisional Forest Officer for necessary action. The Divisional Forest Officer, after examining the merit will dissolve the EC and advise the GB of VSS / EDC for its reconstitution. Such dissolution will be formally placed by the DFO before the District Level Steering Committee in its next meeting for information.

9. Role of the Forest Department:

(i) To register the VSS / EDCs and maintain close liaison with them.

(ii) To support the VSS / EDCs in identifying and apprehending the forest offender(s).

(iii) To take action as per law in cases where VSS / EDC members have handed over the offender(s) and forest produce involved in the offence.

(iv) To assist in capacity building of VSS / EDC members on different aspects of forest management, planning, silviculture, nursery technology, forest laws, accounting, book keeping, micro-enterprise development, value addition and processing of NTFPs etc.

(v) To provide technical help to the VSS / EDCs in preparation and implementation of the Micro plan/ annual work programme.

(vi) To invite suggestion from the VSS / EDCs while preparing the Working Plan / Management Plan of the concerned Forest Area / Protected Area.

(vii) To sign Memorandum of Understanding with the VSS / EDCs and ensure sharing of benefit as per norms in vogue.

(viii) To establish co-ordination with other departments/agencies for successful implementation of the micro plans and related area development programmes.

(ix) To facilitate the process of discharging the duties and resolving the conflicts by the ECs.

10. Micro Plan:

(i) After constitution of the EC, as soon as possible, a Micro Plan shall be prepared by the members of the Committee through a participatory process involving VSS Members and with the technical input provided by the field officers of the Forest Department.

(ii) The Micro Plan shall be prepared for conservation and sustainable management of the assigned forests while integrating other developmental activities outside the forest area associated with the forest based livelihood system, with participation and involvement of line departments, wherever necessary.

(iii) The Micro Plan will primarily prescribe afforestation with priority for plantation of indigenous medicinal and NTFP species, soil and moisture conservation measures and activities to be undertaken for livelihood support of the forest dependent communities. It may also incorporate formation of SHGs and micro-enterprises that could be undertaken based on locally available resources and may include activities such as:- eco-tourism, farm forestry, Agro forestry, Silvi-pasture development, promotion of fuel-efficient devices, animal husbandry, pisciculture, bee keeping, mushroom cultivation, tassar/lac cultivation etc.

(iv) The Micro Plan shall indicate the choice of species in different plantation schemes and models. It shall contain a detailed silvicultural operations plan, which shall be consistent with the prescriptions of the overall working plan covering the area or the Wildlife Management Plan of the Protected Area.

(v) The Micro Plan so prepared shall be in consonance with the existing laws of the land.

(vi) The Micro Plan shall also detail out the various NTFP items that can be collected. This shall be done with due regard to the carrying capacity, productivity and biodiversity of the local eco-system.

(vii) The draft Micro Plan prepared by the EC, will be scrutinized by the Forest Range Officer from the technical, financial and legal point of view. After that the same shall be placed before the GB for deliberation and approval.

11. Usufruct sharing:

(i) The VSS / EDC shall be entitled to the usufructuary benefits from the assigned forests as under:—

- (a) Usufructs like fallen leaves, fodder grasses, thatch grass, broom grass, fencing materials, brushwood, fallen lops, tops and twigs to be used as fuel shall be available to the members free of cost.
- (b) All intermediate yields in the shape of small wood, poles, firewood etc as may be obtained as a result of silvicultural operations and bamboo harvested in VSS / EDC assigned area shall be made available to the VSS / EDC members in a manner as may be decided by EC. If sold at a price, the funds so obtained shall be deposited in the VSS / EDC account.
- (c) In case of Kendu leaves and specified forest produce other than bamboo, if any, the VSS will have the right to collect the same from the assigned forest but these items will be disposed of as per the prevailing provisions of Government and practices.
- (d) While maintaining the forest cover in perpetuity, if any major harvest or final felling occurs in the assigned forest, the same shall be taken up by the forest department as per the prescription of the working plan/ duly approved micro plan. In case of natural calamities, harvesting of wind-fallen trees shall be treated as final harvest. Priority will be given to the members of the VSS /EDC for salvaging and harvesting work. Valuation of the produce so obtained shall be done and information shared with the VSS /EDC and the produce will be sold / disposed of by the forest department or by agents of the forest department. The VSS / EDC will receive 50% share of the sale price after deduction of proportionate harvesting cost and this will be deposited in the "VSS account". The VSS may also opt for 50% of the forest produce so

harvested if it is for their *bonafide* domestic use and they agree to pay the proportionate cost of harvesting.

(e) In case of village woodlots created and maintained by the VSS / EDC on non forest land, all usufructs including interim and rotational harvests shall go to the VSS / EDC.

(f) In the event of a natural calamity occurring in the village there may be a demand for house building materials and other forest produce from the assigned forest. In such cases, the VSS / EDC may go for harvesting the required quantity of timber or other forest produce as a deviation to the Micro Plan, with due approval of the Divisional Forest Officer concerned.

(ii) The EC shall be responsible for the distribution of the usufructuary benefits equitably among the members of the VSS. Need of the group or community, who do not have any livelihood support other than depending on the forests, should be specially considered.

(iii) In cases where member/ a group of members of the VSS /EDC play a major role in the collection of intelligence, detection and seizure of illegal forest produce in transit the concerned VSS/EDC shall be entitled to the prescribed percentage of the sale price of the forest produce as per Rule 4 (3) of the Orissa Rewards for Detection of Forest Offences Rules, 2004. Such amount shall be deposited by the DFO in the "VSS account/EDC account" after disposal of the seized produce following due procedure of law.

12. Transit of harvested forest product:

All forest produce requiring permits for transit as per provisions of Orissa Timber and Other Produce Transit Rules, 1980 shall be removed from the assigned forest area in accordance with a permit to be issued jointly by the President and the Secretary in the prescribed format (Form-4). The permit shall be valid only within the limits of the area to which the VSS members belong. A record will be maintained to this effect by the VSS / EDC and the Secretary will keep the local Forest Range Officer informed of the same on a quarterly basis. In case of transportation outside the above limit, the permit will be issued by the competent forest officer on receipt of application from VSS / EDC.

13. Conflict Resolution:

(i) In case of intra village conflict in matters of implementation of Joint Forest Management, the Executive Committee of the VSS/ EDC shall endeavour to amicably resolve the conflict. If it fails to resolve the conflict, it shall bring the same to the notice of the Panchayat and try to sort out the issue. If the conflict still remains, the same would be

referred to the Sub Divisional Level Steering Committee formed in the line of the SDLC under FRA, 2006 and their decisions would be final.

(ii) In case of inter village conflict, the same would be referred to the Sub Divisional Level Steering Committee and their decisions would be final.

14. Memorandum of Understanding (MoU):

(i) To ensure smooth working relationship between the Forest Department and the VSS /EDC and also to bring in a sense of ownership, empowerment and accountability a MoU shall be signed between the FD and VSS / EDC delineating the duties and responsibilities of the parties concerned.

(ii) The Chairperson of the VSS will sign the MoU on behalf of the VSS while the Range Officer concerned will sign the same on behalf of Forest Department. Other members at the EC will also be signatory to the MoU as witness while the concerned local forest officials such as:— the Forester and Forest Guard will sign the MoU as witness.

(iii) The MoU shall be in the prescribed form (Form-5).

15. Steering Committee:

(i) There shall be Steering Committees at the Sub Division Level, District Level and at the State Level.

(ii) Sub Division Level Steering Committee (SDLC): This committee shall comprise of the following members:—

(a) Sub Collector	:	Chairperson
(b) Assistant Conservator of Forests	:	Member Convener
(c) An Officer of the Tribal Welfare Department : in-charge of the Sub-Division	:	Member
(d) Sub Divisional Police Officer (SDPO)	:	Member
(e) Forest Ranger concerned	:	Member
(f) Tahashildar concerned	:	Member
(g) Chairperson of the Panchayat Samiti concerned	:	Member
(h) Zilla Parishad member	:	Member
(i) Two Chairpersons/Vice-Chairpersons of VSS/EDC (to be nominated by the DFO)	:	Member

(iii) The SDLC will be responsible to resolve all cases of intra village and inter village conflicts as referred to them in regards to smooth functioning of VSS / EDC.

(iv) The SDLC will meet at least once in every quarter and shall facilitate functioning of the VSS / EDC and provide necessary support and guidance to them.

(v) The SDLC will facilitate the VSS / EDC for protection and sustainable management of forests, forest based livelihood and holistic development of the villages.

(vi) The SDLC may invite the representatives of the committees concerned and other such peoples' representatives, reputed persons / organizations working in the field of forest management to their meetings as per requirement.

(vii) District Level Steering Committee (DLSC): This committee shall comprise of the following members:—

(a) District Collector	:	Chairperson
(b) Divisional Forest Officers (Territorial and Wildlife)	:	Member
(c) ADM dealing with land matters	:	Member
(d) Deputy Director (Agriculture)	:	Member
(e) Chief District Veterinary Officer	:	Member
(f) PD, DRDA	:	Member
(g) PA, ITDA	:	Member
(h) District Welfare Officer	:	Member
(i) Deputy Director Horticulture	:	Member
(j) Soil Conservation Officer	:	Member
(k) 5 VSS (Chairperson/ Vice-Chairperson (at least 2 women) (to be nominated by the DFO)	:	Member

(viii) The DFO concerned having the jurisdiction over the district headquarters will be the Member Convener of the meetings of DLSC.

(ix) The tenure of the non-official members will be three years.

(x) The DLSC may co-opt NGOs or other experts as members with credibility and experience of working on forest related issues.

(xi) The DLSC will meet at least once in six months and shall facilitate functioning of the VSS / EDC and provide necessary support and guidance to them.

(xii) The DLSC will oversee protection and sustainable management of forests, forest based livelihood and holistic development of the villages.

(xii) State Level Steering Committee (SLSC): The constitution of the State Level Steering Committee shall be as under:—

1. Minister (Forest)	: Chairperson
2. Chief Secretary	: Vice-Chairperson
3. Principal Secretary, F & E Department	: Member
4. Principal CCF (O)	: Member
5. PCCF (WL)	: Member
6. 2 D.F.Os./One RCCF from field to be nominated by PCCF (O) on rotation basis	: Member
7. Secretary, Revenue Department	: Member
8. Secretary, Rural Development Department	: Member
9. Secretary, Home Department	: Member
10. Secretary, PR Department	: Member
11. Secretary, SC & ST Department	: Member
12. Chief Conservator of Forests (Central)	: Member
13. Director, Orissa Watershed Development Mission	: Member
14. Two representatives of Civil Society Organisations / Experts to be nominated by F&E Department	: Member
15. Special Secretary, F& E Department	: Member
16. Chairpersons of two VSS / EDC to be nominated by the PCCF (O)	: Member
17. CCF (Plan, Programme & Afforestation), Office of PCCF, Orissa	: Member-Convener

(xiv) The non-official members of the State Level Steering Committee will have tenure of three years.

(xv) The Committee shall meet at least once in a year to guide the process of participatory forest management.

(xvi) Changes in the Resolution, if any shall be placed before the SLSC for approval and recommendation to Government.

16. Repeal and Savings:

This supersedes Forest & Environment Department Resolution No.17454-1F-Affn.17/2008/F&E., dated the 22nd October, 2008. However, all VSSs already formed under provisions of Forest & Environment Department Resolutions made earlier will be treated as VSS formed under this Resolution.

ORDER

Ordered that the Resolution be published in the Extraordinary issue of the *Orissa Gazette*.

By order of the Governor

AUROBINDO BEHERA

Principal Secretary to Government

VSS / EDC Account and Procedure of Accounting

- (i) The Executive Committee (EC) of the VSS / EDC shall be responsible to account for and manage the funds and other resources received from the Government, other agencies and funds internally generated, if any. For this purpose a joint account called VSS account/EDC account shall be opened in any commercial, rural or Co-operative Bank recognised by the RBI or in any post office, which shall be operated, jointly by the Secretary and the Treasurer of the VSS / EDC. The account will be opened in the style of "(village name/any other prefix) VSS / EDC Account". All money received by the VSS / EDC either in cash or instrument shall be deposited into the account before it is used for any purpose.
- (ii) Any withdrawal from the VSS / EDC account can be done only after a specific resolution of the EC in this regard.
- (iii) The funds deposited into the VSS / EDC account shall be utilised towards the conservation, development and management of forest, development of the village or for any other purpose ancillary to the implementation of the Micro Plan.
- (iv) In case the EC decides to spend the money from the "VSS Account/EDC account" for any other purpose it shall seek the approval of the General Body of the VSS / EDC.
- (v) In case of detection of any financial irregularity the General Body may pass a resolution and freeze the VSS / EDC account for a specific period and refer the matter to the Palli Sabha. The Palli Sabha may conduct necessary enquiry and may take required action.
- (vi) The Secretary shall be fully responsible for up keeping the Monthly account and maintenance of the Cash Book of the VSS / EDC. The local Forest Officials will provide guidance to the EC, whenever necessary to maintain the account in proper form.
- (vii) A quarterly work programme may be drawn up by the EC and implemented subject to availability of funds for the purpose. Funds will be withdrawn accordingly from the VSS / EDC Account.

- (viii) All vouchers will be passed by the EC and jointly signed by the Secretary and the Treasurer and shall be retained at the VSS / EDC level. The Secretary will prepare the monthly cash account along with an abstract of receipt and expenditure by the 10th of the following month to be approved by the EC.
- (ix) Annual receipt and expenditure of the VSS / EDC shall be audited by an auditor to be appointed by the General Body of the VSS / EDC. The annual statement of receipt and expenditure of the VSS / EDC account shall be placed before the GB for its approval. Whenever funds provided by Govt. are utilized, the audited and approved abstract of annual receipt and expenditure shall be communicated by the EC to the concerned RO and DFO for record.
- (x) Utilisation Certificate relating to the expenditure incurred out of funds received from Government or any other external agency shall be prepared by the Treasurer and jointly signed by the Chairperson and the Secretary and submitted to the authorities concerned.

Form -1

RESOLUTION

We the following villagers of _____ villages (s), hereby resolve to have formed / reconstituted a Vana Surakshya Samiti (VSS) / Eco Development Committee (EDC) for the protection and management of the part/whole of _____ forest in accordance with the provisions of Para 3 i of the Orissa Joint Forest Management Resolution, 2011. The details of the area are as follows:—

1. Name of Committee:
2. Village:
3. Gram Panchayat:
4. C.D. Block:
5. Police Station:
6. Forest Beat:
7. Forest Section:
8. Forest Range:
9. Total Members (list of members enclosed):
 - (i) No. of S.T. member _____
 - (ii) No. of S.C. member _____
 - (iii) No. of Women members _____
10. Forest areas protected and managed _____ ha.
11. Name of the Forest Block _____
12. Comp. No. _____

NAME OF VILLAGERS

SINGATURE

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Form – 2

OFFICE OF THE FOREST RANGE OFFICER _____ RANGE

Memo No. _____ Date _____

FORMATION OF VSS / EDC

The villagers of _____ village (s) have formed / reconstituted the Vana Surakshya Samiti / Eco Development Committee (EDC) as per the provision of Para 3 i of the Orissa Joint Forest Management Resolution, 2011 for the protection and management of the part/whole of _____ forest. The details of the area are as follows:—

1. Name of Committee:
2. Village:
3. Gram Panchayat:
4. C.D. Block:
5. Police Station:
6. Forest Beat:
7. Forest Section:
8. Forest Range:
9. Total Members (list of members enclosed):
 - (i) No. of S.T. member _____
 - (ii) No. of S.C. member _____
 - (iii) No. of Women members _____
10. Forest areas proposed to be protected and managed _____ ha.
11. Name of the Forest Block _____
12. Comp. No. _____

The Resolution of the Pali Sabha of the village of _____ village(s) is forwarded herewith for registration of the VSS / EDC in accordance with the provision of Para 9 i of the Orissa Joint Forest Management Resolution, 2011.

Signature of Forest Range Officer

Form – 3

OFFICE OF THE DIVISIONAL FOREST OFFICER _____ DIVISION

OFFICE ORDER NO. _____ Date _____

In accordance with the provision of Para 9 i of the Orissa Joint Forest Management Resolution, 2011, the _____ Vana Surakshya Samiti / Eco Development Committee is hereby registered in this office vide Registration No. _____

Forest Area Schedule:

Extent of Forest Area: _____ ha

Description of Location: _____

DIVISIONAL FOREST OFFICER _____
FOREST DIVISION

OFFICE OF THE DIVISIONAL FOREST OFFICER _____ DIVISION

Memo No. _____ Date _____

Copy forwarded to Forest Range Officer _____ Range for information and necessary action. He is instructed to demarcate the forest area as per above schedule and depict the area in the topo sheet (1:50000 scale). A copy of the map should be available with the VSS / EDC, _____ and in the Range Office. Another copy of the map should be submitted to this office for record.

Copy forward to Sarpanch, _____ Gram Panchayat for information and necessary action.

DIVISIONAL FOREST OFFICER _____
FOREST DIVISION

Form – 4

**PERMIT UNDER THE ORISSA JOINT FOREST MANAGEMENT
RESOLUTION – 2011**

- Name of the assigned Forests _____
- Description of Forest produce Quantity
- Source of Procurement of the forest produce _____
- Name of the VSS / EDC Member _____

Date of issue:

Destination:

Valid up to:

Signature of the President

Signature of the Secretary

_____ VSS / EDC

_____ VSS / EDC

MEMORANDUM OF UNDERSTANDING

1. We the members of the Executive Committee of the Vana Surakshya Samiti /Eco Development Committee of _____ village and the Officials of _____ Forest Range under _____ Forest Division have come together to collaborate and perform the duties and shoulder the responsibilities as detailed in the Orissa Joint Forest Management Resolution, 2011, for protection, and sustainable management of the forest areas as per the schedule given hereunder.

- i. Name of the VSS / EDC
- ii. Registration N.
- iii. District _____
- iv. Forest Division _____
- v. Forest Range:
- vi. Section :
- vii. Beat:
- viii. Police Station :
- ix. Village:
- x. Name of the assigned Forest Block:
- xi. Legal status of the Forest area:
- xii. Area (Ha) of the assigned forest:
- xiii. Boundaries of the area:

North
South

East
West

- 2. It is hereby agreed by and between us to abide by the provisions of JFM Resolution, 2011.
- 3. We undertake to function in consonance with the existing laws of the land.
- 4. A copy of the aforesaid Resolution is annexed herewith duly signed by us on every page in proof/evidence of our having read/understood the same in letter and spirit. It is hereby agreed that this MoU will come into effect from _____.

Signature of the Chairperson
_____ VSS / EDC

Witnesses:

- 1.
- 2.
- 3.

Signature of R.O.

Range:
Division:
Witnesses:

- 1.
- 2.
- 3.

The Odisha Gazette

EXTRAORDINARY
PUBLISHED BY AUTHORITY

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[No. 9182—F. & E.]

GOVERNMENT OF ODISHA

FOREST & ENVIRONMENT DEPARTMENT

RESOLUTION

The 1st June 2015

SUBJECT— Amendment to Joint Forest Management Resolution, 2011.

The Provisions laid down in the Clauses (i) and (ii) 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 the 9th September 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 (*Exofficio* 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 S.C. & S.T. 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)	..	<i>Exofficio</i> Member
4. Treasurer	..	Elected Member
5. Ward Member(s) concerned	..	<i>Exofficio</i> Member(s)
6. Members	..	Elected Members

Annexure - A

VSS/EDC Account and Procedure of Accounting :

(vi) The Secretary shall be fully responsible for upkeeping the monthly account and maintenance of the Case Book of the VSS/EDC.

By order of the Governor
U. N. BEHERA
Additional Chief Secretary

GOVERNMENT OF ODISHA
FOREST & ENVIRONMENT DEPARTMENT

RESOLUTION

No. FF-PLANT-PLANT-0009-2015- 01 IF&E, Bhubaneswar, Dated-
(T/N.>T/...) 11.1.19

Sub: Amendment to Joint Forest Management Resolution, 2011.

In continuation of this Department Resolution Number-IF-Affn-17/2011-16524/F&E, Dated 09.09.2011, there shall be constituted a "Range Level VSS & EDC Forum" with the following members, role and responsibilities.

15(xvii) The forum shall comprise of the following members:

1. Range officer : Chairperson
2. Forester posted : Member Convener
at Range Hqrs.
3. Chairpersons of each VSS : Member
(in absence of Chairperson Vice- chairperson of the concerned VSS shall attend as member)
4. One additional member from each VSS who takes active interest in forest protection and development activities : Member
5. All Section Foresters and all Beat Forest Guards posted in the Range : Members
6. One active NGO or any person having deep interest & knowledge on community and working in the area, may be nominated by the DFO on the basis of recommendation of the concerned Range Officers on rotation basis for 3 year period at a time to attend the meetings as members.

15(xviii) Role and Responsibilities of the Forum:

- (a) To review the progress of functioning of VSS/EDC
- (b) To guide and provide necessary support to VSS/EDC
- (c) To maintain record of suggestions/ grievances received from VSS/EDC members on different aspects of forest management and other development works
- (d) To discuss and materialize the issues / confusion if any with respect to JFM policy, FRA, etc.
- (e) To prepare a compliance report for sending the same to DFO so as to place the same before the meeting of Sub Divisional Level Steering Committee,
- (f) To assist in capacity building of VSS/EDC members relating to forest as well as village development,
- (g) To identify the cases of conflict and resolve these cases for smooth functioning of VSS/EDC, and
- (h) To ensure effective coordination among VSS/EDC in the Range & ensure their effective functioning

15(xix) The forum shall meet atleast once in a month & keep a record of attendance of members present and decisions taken in the meeting

ORDER

Orders that the Resolution be published in the Extraordinary issue of the Odisha Gazette.

By Order of the Governor

S.C. Mahapatra

Additional Chief Secretary to Government
Forest & Environment Department

SIC

Memo no. 2-1-1 /dated, 1-1-1

Copy forwarded to the Director, Printing, Stationery and Publications, Odisha, Cuttack with a request to publish the resolution in the next issue of Odisha Gazette and supply 100 copies to this Department.

Memo No. 2-1-1 /dated 1-1-1

Additional Secretary to Government

Copy forwarded to the Commissioner-cum-Secretary to Governor, Odisha / Principal Secretary to Chief Minister, Odisha / Private Secretaries to all Hon'ble Ministers, Odisha for information and necessary action

Memo No. 2-1-1 /dated 1-1-1

Additional Secretary to Government

Copy forwarded to all Departments of Government / Accountant General (A&E), Odisha, Bhubaneswar for information and necessary action.

Additional Secretary to Government

Memo No. 2-1-1 /dated 1-1-1

Copy forwarded to the Principal Chief Conservator of Forests, Odisha / Principal Chief Conservator of Forests (WL) & Chief Wildlife Warden, Odisha / Principal Chief Conservator of Forests (KL) / Project Director, OFSDP, Ghatikia, Bhubaneswar / Managing Director, OFDC Ltd., Bhubaneswar / Managing Director, TDCC, Bhubaneswar / Project Director, OTELP, Bhubaneswar / Project Director, Western Odisha Livelihood Project / Director, Odisha Watershed Development Mission, Bhubaneswar / All Regional Chief Conservator of Forests, Odisha / All Chief Conservator of Forests, Office of the PCCF, Odisha / Chief Conservator of Forests, Wildlife, Office of the PCCF (WL), Odisha / All conservators of Forests / All RCCFs / All Divisional Forest Officers (T & WL) / All Deputy Conservators of Forests, Office of the PCCF, Odisha for their information and necessary action

Memo No. 2-1-1 /dated 1-1-1

Additional Secretary to Government

Copy forwarded to the ROC (CD), Cuttack / RDC (NO), Sambalpur / RDC (SO), Ikriampur / All Collectors for their information and necessary action

Memo No. 2-1-1 /dated 1-1-1

Additional Secretary to Government

Copy forwarded to the Private Secretaries to Hon'ble Chief Minister / Chief Secretary / Development Commissioner-cum-ACS/Agriculture Production Commissioner/ Secretaries, Finance, Home Department / Agriculture Department / Revenue & Disaster Management Department / Rural Development Department / ST & SC Development Department / Special Secretary, Forest & Environment Department / Special Secretary, P&C Department for favour of information of Hon'ble Chief Minister / Chief Secretary / Development Commissioner-cum-ACS/Agriculture Production Commissioner/ Secretaries, Finance, Home Deptt / Agriculture Deptt / Revenue & Disaster Management Deptt / Rural Development Deptt / ST & SC Development Deptt / Special Secretary, F&E Deptt / Special Secretary, P&C Deptt. for their information and necessary action

Memo No. 2-1-1 /dated 1-1-1

Additional Secretary to Government

Copy forwarded to Guard File, Plantation-& Regeneration Section of F&E Department action

Additional Secretary to Government

**INCUMBENCY CHART OF DIVISIONAL FOREST OFFICERS OF
NAYAGARH FOREST DIVISION**

Sl No.	NAME OF THE D.F.O	RANK	FROM	TO
1	2	3	4	5
1	SRI BRUNDABAN RATHA	-	AUG 1947	1950
2	SRIN.R. SANYAL	-	1950	12.10.1952
3	SRI S.B. DASH	-	13.10.52	11.08.53
4	SRIR.C. PATTANAIK	-	12.08.53	06.05.57
5	SRI B. BHOI	-	06.05.57	11.06.57
6	SRI S.C. RAUT	-	12.06.57	01.05.59
7	SRIN.C. PRADHAN	-	02.05.59	15.07.59
8	SRI S.C. RAUT	-	16.07.59	25.12.59
9	SRI B. MAHAPATRA	-	26.12.59	04.01.61
10	SRIN.C. PRADHAN	-	05.01.61	04.07.62
11	SRIM.P. DASH	-	05.07.62	01.05.63
12	SRI A.P. MAHANTY	-	02.05.63	22.05.63
13	SRIM.P. DASH	-	23.05.63	09.01.64
14	SRI A.P. MAHANTY	-	10.01.64	29.01.64
15	SRI S.MAHAPATRA	-	30.01.64	20.07.67
16	SRIP.C. MAHAPATRA	-	21.07.67	07.06.70
17	SRIM.N. MITRA	-	08.06.70	09.07.73
18	SRI T. RATHA	-	10.07.73	06.06.76
19	SRIR.L. RATHA	-	07.06.76	03.10.76
20	SRI L.K. PATTANAIK	-	04.10.76	09.11.76
21	SRIR.L. RATHA	-	10.11.76	18.06.77
22	SRI H.K. MISHRA	-	18.06.77	05.07.77
23	SRIP.K. PATTANAIK	-	06.07.77	30.10.80
24	SRIN. CHOUDHURY	A.C.F	31.10.80	05.11.80
25	SRI S.N. MOHANTY	-	06.11.80	25.04.82
26	SRI A. CHITRANSI	I.F.S	26.04.82	12.09.82
27	SRI S.S. PADHI	I.F.S.	13.09.82	31.10.83
28	SRI N.N. BISWAL	DY.C.F	01.11.83	05.03.88 A.N
29	SRI P.C. PATTANAIK	DY. C.F	05.03.88 A.N	03.04.88 A.N
30	SRIN.N. BISWAL	DY. C.F	04.04.88	10.03.89 A.N
31	SRI M.S. JENA	DY. C.F	10.03.89 A.N	05.05.91 A.N
32	SRI C.B. MOHANTY	DY. C.F	05.05.91 A.N	31.05.94 A.N
33	SRI S.K. POPLI	I.F.S	31.05.94 A.N	17.10.95 A.N
34	SRI A.K. PATTANAIK	I.F.S	18.10.95	21.11.95
35	SRI S.K. POPLI	I.F.S	21.11.95	30.11.95
36	SRI J.N. SAHOO	A.C.F	01.12.95	26.12.95
37	SRI S.K. POPLI	I.F.S	26.12.95 F.N	18.10.96 A.N
38	SRI A.K. PATTANAIK	I.F.S	18.10.96 A.N	28.11.96 A.N
39	SRI S.K. POPLI	I.F.S	28.11.96 A.N	12.10.97 A.N
40	SRI J.N. SAHOO	A.C.F	12.10.97 A.N	24.10.97 A.N
41	SRI LINGARAJ OTTA	I.F.S	24.10.97 A.N	17.05.2001 F.N
42	SRI S.K. CHADHA	I.F.S	17.05.01 F.N	12.06.01 A.N

43	SRI LINGARAJ OTTA	I.F.S	12.06.01 A.N	19.02.03 A.N
44	SRID.N. DAS	O.F.S.- II	19.02.03 A.N	18.03.03 F.N
45	SRID.B. RAY	I.F.S	18.03.03 F.N	20.07.05 A.N
46	SRI S. BEHERA	O.F.S-I	20.07.05 A.N	30.06.10 A.N
47	SRIM. BADAIAK	O.F.S-I	30.06.10 A.N	28.01.15 A.N
48	SRI L.N. BEHERA	O.F.S-I	28.01.15 A.N	06.09.17 F.N
49	SRI G. PANDA	O.F.S-I GROUP-A (SB)	06.09.17 F.N	07.11.17 A.N
50	SRI G. PANDA	O.F.S-I (SUPER TIME SCALE)	08.11.17 F.N	23.05.18 F.N
51	SRI G. PANDA	I.F.S	23.05.18 F.N	12.10.18 A.N
52	SRI A. MOHANTY	O.F.S GROUP-A (JB)	12.10.18 A.N	22.10.18 F.N
53	SRI G. PANDA	I.F.S	22.10.18 F.N	09.11.18 F.N
54	SRI G. PANDA	I.F.S, CF	09.11.18 A.N	09.11.18 A.N
55	SRI J. SETHI	O.F.S, GROUP-A (S.B)	09.11.18 A.N	21.01.18 F.N
56	SRI G. PANDA	I.F.S, CF	21.01.19 F.N	22.02.19 A.N
57	SRIDHANRAJ H.D.	I.F.S	22.02.19 A.N	14.05.2019 A.N
58	Sri SUDEEP NAYAK	O.F.S, GROUP-A (S.T.S)	14.05.19 A.N	01.06.19 F.N
59	SRIDHANRAJ H.D.	I.F.S	01.06.19 F.N	22.09.21 F.N
60	POORNIMA P.	I.F.S	22.09.21 F.N	24.12.21 F.N
61	Smt. KSHAMA SARANGI	O.F.S – I (S.A.G)	24.12.21 F.N	-

Annexure-XIII



STATE FOREST HEAD QUARTERS, ODISHA
OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS,
ARANYABHAWAN, CHANDRASEKHARPUR, BHUBANESWAR-23

Letter No. 3g._____/11F (SPM)-15/2018
Dated, Bhubaneswar, the ____th, February 2019

To

The Additional Principal Chief Conservator of Forests (Central)
Government of India, Ministry of Environment, Forest & Climate Change,
Eastern Regional Office, Chandrasekharpur, Bhubaneswar,
The Principal Chief Conservator of Forests (Wildlife)-Cuni Chief WU.nif
Warden, Odisha, Bhubaneswar.
The Special Secretary to Government of Odisha, Forest & Environment
Department, Bhubaneswar.

Subj: Consultative discussion on introduction of Development Working Circle and Forest
Forestry Working Circle in the ongoing revision of Working Plans of Forest Division
of Koraput Circle.

Sir,

I am directed to enclose herewith Proceedings of the Consultative discussion held
dated 13.02.2019 on the subject matter, mentioned above, duly approved by the Pr.CCF & HoF,
Odisha, for favour of your kind information.

Yours faithfully,

Ch. S. S. V. S. V.
Conservator of Forests
(Working Plan)

Memo No. 11/2019 dt. 13-02-2019

Copy forwarded to the Additional Principal Chief Conservator of Forests (PR
Additional Principal Chief Conservator of Forests, (PP & A)/ Chief Conservator of Forests (GIS)/
Conservator of Forests (Working Plan)/ O/o the Principal Chief Conservator of Forests, Odisha
for information.

1-01/11/19
Conservator of Forests
(Working Plan)

Memo No. 10 dt. 13-02-2019

Copy forwarded to the Regional Chief Conservator of Forests, Angul/ Baripada/
Bhadrampur/ Bhawanipatna/ Bhubaneswar/ Koraput/ Rourkela/ Sambalpur Circle for information and
necessary action.

1
Conservator of Forests
(Working Plan)

Contd.

13-02-2019

Memo No S63 / dt. ;)-b r-0):-\ \

Copy forwarded to the WPOs, Angul/Balasore/Bhawanipatna/Bhubaneswar/Keonjhar, DFO, FRS Division, Cuttack, DFOs (34 Divisions), Angul/Athgarh/ Athmallik/ Cuttack/ Balasore(WL)/ Baripada/ Karanjia/ Keonjhar(WL)/ Rairangpur/ Balliguda/ Paralakhemundi/ Phulbani/ Bolangir/ Kalahandi(N)/ Kalahandi(S)/ Khariar/ Subarnapur/Bhadrak(WL)/ City Forest/ Chilka(WL)/ (WL)/ Khordha/ Nayagarh/ Rajnagar(WL)/ Jeypore/ Koraput/ Malkangiri/Nowrangpur/ Raygada/ Bonai/ Keonjhar/ Bargarh/ Jharsuguda/ Rairakhol/ Sambalpur Divisions for information and necessary action.

Conservator of Forests
(Working Plan)

Memo No '2::(:3?:-dt./

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Copy forwarded to the Private Secretary to Principal Chief Conservator of Forests, kind information of Principal Chief Conservator of Forests and HoFF, Odisha.

Conservator of Forests
(Working Plan)

**Proceedings of the Consultative discussion held on dated 13.02.2019
under the chairmanship of Pr.CCF & Hoff, Odisha
on introduction of 'Development Working Circle' in the ongoing revision of Working
Plans of Forest Divisions of Koraput Circle
and introduction of 'Farm Forestry Working Circle'
in the ongoing revision of Working Plans of Forest Divisions of all the Circles**

The list of the Participants attending the meeting is enclosed in Annuxure-1.

1. A meeting of the Standing Consultative Committee was convened under the Chairmanship of the Principal Chief Conservator of Forests and HoFF, Odisha to discuss the scope of introducing a separate 'Development Working Circle' in the Working Plans of 4 Forest Divisions of Koraput Circle (namely, Jeypore, Koraput, Malkangiri and Raygada) whose revision is going on consequent upon approval of their Preliminary Working Plan Reports (PWPRs) and also introducing a separate 'Farm Forestry Working Circle' in the Working Plans of all the 34 Forest Divisions of the 8 Circles whose revision is going on consequent upon approval of their PWPRs.
2. Initiating the discussion, the PCCF & HoFF, Odisha told that it is complained that the existing wood-based industries are likely to close down due to dearth of raw materials and if there is dearth of raw materials inspite of good forest cover of Odisha state, new wood-based industries are also not likely to come up which will have an adverse impact on employment of people engaged in this sector.
3. PCCF & HoFF, Odisha further explained that at present there is only 2,566 Ha of existing plantation of Eucalyptus within the forest area covered under Working Plans of Koraput and Raygada Divisions of Koraput Circle and Angul Division of Angul Circle whose harvest cannot sustain the wood-based industries. As such, there is need to explore the possibility of increasing the area under commercial plantation which can be put under a separate 'Development Working Circle' for managing them on a sustained basis for production of raw materials for wood-based industries in Koraput Circle where these industries are by and large located and for this he solicited the guidance of the APCCF, MoEF&CC, ERO, Bhubaneswar.
4. In a brief presentation, the CF (WP) put forth the following points:
 - (i) Out of the Geographical Area (GA) of 1,55,707 Sq. Km of the state of Odisha, the Forest Area under Management Plans of the Forest Department (RF, PRF, DPF, UDPF) is

41,853.58 Sq. Km. (27% of GA), the recorded Revenue Forest is 16,261.34 Sq. Km. (11% of GA) and Deemed (DLC) Forest (which is the area recorded as forest but has been verified to be covered under tree growth) is 2,38.87 Sq. Km. (2% of GA) while the percentage of Non-Forest Area to Geographical Area is 60%.

- (ii) 'Farm Forestry Working Circle' is intended to provide free management in the Non-Forest Area which covers 60% of the GA under which provisions will be made for providing "Quality Planting Materials (QPM)". QPM may include Eucalyptus, Acacia & Teak for distribution to the eligible local farmers and land owners for taking up plantations with technical supports from the local Forest Officers. This will create a buffer stock in Tree Outside Forest (TOF) areas for meeting local demand and the raw material demand of local industries.

Para 27 of the National Working Plan Code-2014 also provides that the WPO may prepare a separate strategy as a new chapter, not being part of general prescription of working plan, to address the concepts and issues related to TOF.

- (iii) The object of introduction 'Development Working Circle' is to prescribe management techniques including harvest and re-forestation of the existing Commercial Plantation: (Eucalyptus & Acacia) for production of Industrial / Pulp wood raw materials in a sustained manner from within the Working Plan area.

In the outgoing / current Working Plans, Commercial Plantations over a total of 2,566 Ha, have been identified :

- (a) 510 Ha (Eucalyptus, by OFDC) in Angul Division.
- (b) 690 Ha (Eucalyptus & some Acacia) in Jeypore Division.
- (c) 1,366 Ha (Eucalyptus & some Acacia) in Koraput Division

(Mostly in Machkund Catchment area under Lamtaput and Balda Ranges)

- (iv) Circular No.1102/12 (Aff.)258/2018 dt. 04.10.18 of the PCCF & Hoff, Odisha provides:
- (a) Teak (*Tectonia grandis*), Acacia (*Acacia auriculiformis*), Sana Chakunda (*Cassia siamese*) and Eucalyptus (*E. hybrid*) may be planted in barren, refractory area outside forest land where raising of indigenous species is extremely difficult;

(b) Since Teak, Acacia and Eucalyptus are in high demand by the public due to its commercial importance, they will continue to be raised in forest department nurseries for distribution to public.

5. It was discussed whether we should take up plantation of Eucalyptus and Acacia in barren, refractory area within following categories afforest land where raising of indigenous species is extremely difficult :

(a) Revenue Forest Land

(16,261.34 Sq. Km. which makes 11% of the total Geographical Area of the State)

(b) Identified Plantable Area under Working Plans:

(668.10 Sq. Km. which makes 0.4 % of the total Geographical Area of the State)

6. After detailed deliberations on the issues involved, the Consultative Committee members unanimously arrived at following conclusions:

- (i) Instead of introducing a separate 'Development Working Circle' in the Working Plans of Forest Divisions of Koraput Circle, the plantable area (barren area devoid of root-stock) to be identified under 'Plantation Working Circle' of these Working Plans, will be segregated into two categories:

(A) Plantable area which has reasonably good soil to support plantation of indigenous species

(B) Plantable area which are refractory in nature and raising of indigenous species is extremely difficult.

Plantation of fast growing species like Eucalyptus will be suggested in the Plantable area of category (B) which will give tree cover to prevent further soil erosion, land degradation and possible encroachment. Also, the specific management of these plantations including the suitable variety of seedlings to be planted, specific years of coppicing and re-afforestation will be suggested keeping in mind the demand of local wood-based industries.

- (ii) Also, the specific management including the specific years of coppicing for harvest and re-afforestation, of the existing plantations of Eucalyptus identified under 'Plantation Working

Circle

Circle' of these Working Plans will be prescribed keeping in mind the demand of local wood-based industries.

- (ii) The above prescriptions can also be extended to the working plans of the Forest Divisions of Bhawanipatna and Berhampur Circle whose revision is going on.

Forest Divisions for which revision of Working Plan is going on. Under this Chapter, an assessment has to be made regarding the extent of recorded Non-Forest Areas, devoid of tree-cover, where plantations of species like Eucalyptus, Acacia & Teak can be raised which are in high demand by the public due to their commercial importance and so will continue to be raised in forest department nurseries for distribution to public. Accordingly, provision has to be made for providing "Quality Planting Materials (QPM)" which may include Eucalyptus, Acacia & Teak, to the eligible local farmers and land owners by utilizing the existing facilities of central nurseries and Hi-Tech nurseries for taking up plantations with technical supports from the local Forest Officers. This will create a buffer stock in Tree Outside Forest (TOF) areas for meeting local demand and the raw-material demand of local industries.

- (v) Under the chapter of 'Farm Forestry', the area of OFSDP operation in Farm Forestry plantation programmes and the existing TOF (Tree outside Forests) growing stocks in-road side/ Private land should also be assessed.

The meeting ended with a vote of thanks to the chair and all participants.

Principal Chief Conservator of Forests & Horticulture,
Odisha, Bhubaneswar

	Name of forest block	Comp. No	Area Diverted		Area Available for Management	Allotted to WC (in Ha)									
			FRA	FC Act.		SWC	RWC	PIWC	Protection	Misc WC	Bamboo(O) WC	NTPF (O) WC	WL(O) WC	JFM(O) WC	Car Timber (O) WC
	Reserved Forest														
	Daspalla Range														
1	Ambalimba		0	0	554.4190	554.4190	0.0000				554.419	554.4190	554.4190	100.0	554.4190
2	Central R.F	CI 1	0	0	999.5352	999.5352	0.0000				999.5352	999.5352	999.5352	1020	999.5352
3	Central R.F	CI 2	0	0	586.8663	576.8663	0.0000	10.0			586.8663	586.8663	586.8663	200	586.8663
4	Central R.F	CI 3	0	0	483.0487	463.0487	0.0000	20.0			483.0487	483.0487	483.0487		483.0487
5	Central R.F	CI 4	0	200	890.6640	814.6640	0.0000		76.0		890.6640	890.6640	890.6640		814.6640
6	Central R.F	CI 5	0	0	551.6211	503.6211	0.0000		48.0		551.6211	551.6211	551.6211		503.6211
7	Central R.F	CI 6	0	0	644.4631	644.4631	0.0000				644.4631	644.4631	644.4631		644.4631
8	Central R.F	CI 7	0	50.2	398.6703	366.6703	0.0000		32.0		398.6703	398.6703	398.6703	250	366.6703
9	Central R.F	CI 8	0	10	543.2473	471.2473	0.0000		72.0		543.2473	543.2473	543.2473		471.2473
10	Central R.F	CI 9	0	10	749.1270	749.1270	0.0000				749.1270	749.1270	749.1270		749.1270
11	Central R.F	CI 10	0	0	925.3559	839.3559	0.0000		86.0		925.3559	925.3559	925.3559		839.3559
12	Central R.F	CI 11	0	69.8	964.4480	898.4480	0.0000		66.0		964.4480	964.4480	964.4480		898.4480
13	Central R.F	CI 12	0	0	651.5344	587.5344	0.0000		64.0		651.5344	651.5344	651.5344		587.5344
14	Central R.F	CI 13	0	0	957.5446	847.5446	0.0000		110.0		957.5446	957.5446	957.5446		847.5446
15	Chadiapali R.F	Cp 1	0	0	419.5593	419.5593	0.0000				419.5593	419.5593	419.5593	350	419.5593
16	Chadiapali R.F	Cp 2	0	0	686.0548	686.0548	0.0000				686.0548	686.0548	686.0548	400	686.0548
17	Chadiapali R.F	Cp 3	0	0	927.0187	927.0187	0.0000				927.0187	927.0187	927.0187		927.0187
18	Chadiapali R.F	Cp 4	0	0	510.5561	408.5561	0.0000		102.0		510.5561	510.5561	510.5561		408.5561
19	Chadiapali R.F	Cp 5	0	0	483.0798	483.0798	0.0000				483.0798	483.0798	483.0798	200	483.0798
20	Chadiapali R.F	Cp 6	0	0	930.7682	930.7682	0.0000				930.7682	930.7682	930.7682		930.7682

21	Chadiapali R.F	Cp 7	0	0	947.8103	947.8103	0.0000				947.8103	947.8103	947.8103		947.8103
22	Chadiapali R.F	Cp 8	0	0	416.7687	416.7687	0.0000				416.7687	416.7687	416.7687		416.7687
23	Chadiapali R.F	Cp 9	0	0	316.8639	316.8639	0.0000				316.8639	316.8639	316.8639		316.8639
24	Chadiapali R.F	Cp 10	0	0	422.753	422.7530	0.0000				422.7530	422.7530	422.7530		422.7530
25	Chhades R.F		0	105.032	1676.447 0		1676.4470					1676.4470	1676.4470	460	1676.4470
26	Nuagaon R.F	NG-1	0	0	615.6390	615.6390	0.0000				615.6390	615.639	615.639	300	615.6390
	Nuagaon R.F	NG-2			580.1000	580.1000					580.1000	580.1	580.1	200	580.1000
27	Nasaghar R.F	Ns.1	0	50	552.8431	552.8431	0.0000				552.8431	552.8431	552.8431	0	552.8431
28	Nasaghar R.F	Ns.2	0	120	211.2504	211.2504	0.0000				211.2504	211.2504	211.2504	0	211.2504
29	Nasaghar R.F	Ns.3	0	60.25	384.9720	384.9720	0.0000				384.9720	384.972	384.972	0	384.9720
30	Nasaghar R.F	Ns.4	0	0	478.0713	478.0713	0.0000				478.0713	478.0713	478.0713	0	478.0713
31	Poibari R.F		0	0	1619.844 0		1459.8440		160.0		1619.8440	1619.844	1619.844		1459.8440
32	Pokharigochha R.F	Pg 1	0		732.1588	678.1588			54.0		732.1588	732.1588	732.1588		678.1588
33	Pokharigochha R.F	Pg 2	0	30.25	593.7644	457.7644		12.0	124.0			593.7644	593.7644		469.7644
34	Pokharigochha R.F	Pg 3	0	85	521.9499	521.9499					521.9499	521.9499	521.9499	450	521.9499
35	Pokharigochha R.F	Pg 4	0	18	728.8277	578.8277			150.0		728.8277	728.8277	728.8277	219.4	578.8277
36	Pokharigochha R.F	Pg 5	0	20.00	513.7106		491.7106		22.0			513.7106	513.7106		491.7106
37	Pokharigochha R.F	Pg 6	0	71.8	181.2128		131.2128		50.0			181.2128	181.2128	100	131.2128
38	Pokharigochha R.F	Pg 7	0	65.23	394.8244		356.8244		38.0			394.8244	394.8244	20.6	356.8244
39	Pokharigochha R.F	Pg 8	0	153.25	182.8310	182.8310						182.831	182.831		182.8310
	Daspalla Range Total		0.0000	1118.7620	25930.22 41	20518.1853	4116.0388	42.0000	1254.0000	0.0000	22387.4339	25930.2241	25930.2241	4270.0000	24676.224 1
	Gania range														0.0000
40	Bankamunda R.F	Bm 1	0	0	602.6840		442.6840	160.0			602.6840	602.6840	602.6840	515	602.6840
41	Bankamunda R.F	Bm-2	0	0	370.8514		370.8514				370.8514	370.8514	370.8514	300	370.8514
42	Bankamunda R.F	Bm-3	0	0	288.7945		288.7945					288.7945	288.7945	200	288.7945
43	Bankamunda R.F	Bm-4	0	0	597.4703		597.4703					597.4703	597.4703	221	597.4703
44	Gania R.F		0	0	342.8016		162.8016	180.0				342.8016	342.8016	308.5	342.8016

45	Matia R.F		0	0	643.6100		633.6100	10.0				643.6100	643.6100		643.6100
46	Makarprasad R.F		0	0	1157.6710		1157.6710					1157.671	1157.671		1157.6710
47	Manibhadra R.F		0	0	527.9488		517.9488	10.0				527.9488	527.9488		527.9488
Gania Range Total			0.0000	0.0000	4531.8316	0.0000	4171.8316	360.0000	0.0000	0.0000	973.5354	4531.8316	4531.8316	1544.5000	4531.8316
Khandepara Range															0.0000
48	Bandara R.F		0	0	216.6869		166.6869	50.000				216.6869	216.6869	87.8	216.6869
49	Barakhola R.F		0	0	787.6532		787.6532			787.6532		787.6532	787.6532	162.7	787.6532
50	Chadebasa R.F		0	0	92.1845		72.1845	20.000				92.1845	92.1845	80	92.1845
51	Dengabhadra R.F	Db 1	0	0	451.8845		436.8845	15.000				451.8845	451.8845	409.4	451.8845
52	Dengabhadra R.F	Db 2	0	0	320.3681		310.3681	10.000				320.3681	320.3681	220	320.3681
53	Guriabari R.F	Gb 1	0.4	0.3	353.1513		308.5313	44.620				353.1513	353.1513	250	353.1513
54	Guriabari R.F	Gb 2	0	72.08	182.4876		182.4876					182.4876	182.4876	180	182.4876
55	Hanumantia R.F		0	0	329.61	329.6100						329.6100	329.6100	300	329.6100
56	Mainsibindha R.F		0	0	637.3768		637.3768			637.3768		637.3768	637.3768	400	637.3768
57	Simlibanka R.F		0	0	216.9048		216.9048					216.9048	216.9048	200	216.9048
58	Pathara R.F		0	0	49.01665		49.01665					49.01665	49.01665	30	49.0167
59	Pithakhai R.F		0	2.5	363.1600		353.1600			10.0		363.16	363.16	300	353.1600
60	Sapura R.F	Sp 3	0.3	0	701.7006		701.7006					701.7006	701.7006	600	701.7006
61	Sapura R.F	Sp 4	0	0.4	555.9740		555.9740			555.9740		555.974	555.974	450	555.9740
62	Sapura R.F	Sp 5	0	0	805.3868		805.3868			805.3868		805.3868	805.3868	700	805.3868
63	Sapura R.F	Sp 6	0	0	725.3056		725.3056			725.3056		725.3056	725.3056		725.3056
64	Sapura R.F	Sp 7	0	0	883.4660		883.4660			883.4660		883.466	883.466		883.4660
65	Sapura R.F	Sp 8	0	0	386.2498		386.2498					386.2498	386.2498	300	386.2498
66	Sapura R.F	Sp 9	0	0	650.3146		650.3146					650.3146	650.3146		650.3146
67	Sapura R.F	Sp 10	0	0	481.2428		481.2428					481.2428	481.2428	225.614	481.2428
68	Sapura R.F	Sp 11	0	0	521.5492		511.5492	10.000		521.5492		521.5492	521.5492		521.5492
69	Sapura R.F	Sp 12	0	0	721.5915		721.5915			721.5915		721.5915	721.5915	24	721.5915

70	Sapua R.F	Sp 13	0	0	711.9831		711.9831				711.9831	711.9831		711.9831
71	Sikharpur R.F		0	24.37	1374.1130		1349.1130	25.000			1374.1130	1374.1130		1374.1130
72	Patrabani Jamubani R.F		0	2.05	210.3444		209.6394	0.705			210.3444	210.3444		210.3444
	Khandapara Range (Total)		0.7000	101.7000	12729.7058	329.6100	12214.7708	175.3250	0.0000	10.0000	5638.3031	12729.7058	12729.7058	4919.51408
	Mahipur Range													0.0000
73	Hatimunda R.F	Hm 1	0.51	0	603.1684		603.1684				603.1684	603.1684	603.1684	300
74	Hatimunda R.F	Hm 2	0	124.5	475.0121		475.0121				475.0121	475.0121	475.0121	250
75	Hatimunda R.F	Hm 3	0	120	273.4262		273.4262				273.4262	273.4262	273.4262	
76	Hatimunda R.F	Hm 4	0	77	218.0725		218.0725				218.0725	218.0725	218.0725	200
77	Hatimunda R.F	Hm 5	0	0	386.9039		386.9039				386.9039	386.9039	386.9039	300
78	Hatimunda R.F	Hm 6	0	0.854	319.8856		319.8856				319.8856	319.8856	319.8856	
79	Hatimunda R.F	Hm 7	0	10.961	478.4259		443.4259	35.0			478.4259	478.4259	478.4259	200
80	Hatimunda R.F	Hm 8	0	0	589.045		589.0450				589.0450	589.0450	589.0450	400
81	Hatimunda R.F	Hm 9	0	0	707.7462		692.7462		15.0	707.7462	707.7462	707.7462	707.7462	550
82	Hatimunda R.F	Hm 10	0	0	222.6502		222.6502				222.6502	222.6502	222.6502	200
83	Hatimunda R.F	Hm 11	0	0	461.162		451.1620	10.0			461.1620	461.1620	461.1620	360
84	Hatimunda R.F	Hm 12	0	0	498.5381		498.5381				498.5381	498.5381	498.5381	400
85	Maicheli Sampada R.F		0	44.696	284.2927	284.2927					284.2927	284.2927	284.2927	300
86	Ratadei R.F	Rd 1	0	0.595	314.8743		284.6043	30.27			314.8743	314.8743	314.8743	215
87	Ratadei R.F	Rd 2	0.378	0	655.7564	655.7564					655.7564	655.7564	655.7564	456
88	Ratadei R.F	Rd 3	0.595	0	349.6245		349.6245				349.6245	349.6245	349.6245	300
89	Ratadei R.F	Rd 4	0	0	763.7505	763.7505					763.7505	763.7505	763.7505	368
90	Palva R.F	Pb 1	0	0	461.6117	425.6117			36.0		461.6117	461.6117	461.6117	425.6117
91	Palva R.F	Pb 2	0	0	337.6271		313.6271		24.0		337.6271	337.6271	337.6271	313.6271
92	Palva R.F	Pb 3	0	0	293.4185		267.4185		26.0		293.4185	293.4185	293.4185	267.4185
93	Palva R.F	Pb 4	0	0	429.9870		403.9870		26.0		429.9870	429.9870	429.9870	403.9870
94	Palva R.F	Pb 5	0	0	440.3508	394.3508			46.0		440.3508	440.3508	440.3508	394.3508

95	Palva R.F	Pb 6	0	0	402.2832	402.2832					402.2832	402.2832		402.2832
96	Palva R.F	Pb 7	0	0	394.3466		294.3466		100.0		394.3466	394.3466		294.3466
97	Palva R.F	Pb 8	0	0	355.1275	355.1275					355.1275	355.1275		355.1275
98	Sula R.F	Sl 1	0	0	647.5751		647.5751			647.5751	647.5751	647.5751		647.5751
99	Sula R.F	Sl 2	0	0	502.3064		402.3064		100		502.3064	502.3064	502.3064	402.3064
100	Ragadimada R.F	Rm 1	0	0	403.9182		403.9182			403.9182	403.9182	403.9182		403.9182
101	Ragadimada R.F	Rm 2	0	0	661.2036		661.2036			661.2036	661.2036	661.2036	360	661.2036
102	Ragadimada R.F	Rm 3	0	0	405.1577		405.1577			405.1577	405.1577	405.1577		405.1577
103	Ragadimada R.F	Rm 4	0	0	427.5547		321.5547	20	86.0		427.5547	427.5547	427.5547	341.5547
104	Ragadimada R.F	Rm 5	0	0	727.8733	665.8733		20.0	42.0		727.8733	727.8733	727.8733	685.8733
105	Ragadimada R.F	Rm 6	0	0	481.1499		481.1499				481.1499	481.1499	481.1499	481.1499
106	Ragadimada R.F	Rm 7	0	0	544.5512		544.5512				544.5512	544.5512	544.5512	430.25
107	Ragadimada R.F	Rm 8	0	0	267.8752		201.8752		66.0		267.8752	267.8752	267.8752	201.8752
108	Ragadimada R.F	Rm 9	0	0	530.9555		530.9555				530.9555	530.9555	530.9555	145
109	Panchupandav R.F	Pp 1	0	85	324.7043		324.7043				324.7043	324.7043	324.7043	324.7043
110	Panchupandav R.F	Pp 2	0	37.08	417.0817		417.0817				417.0817	417.0817	417.0817	417.0817
	Mahipur Range (Total)		1.4830	500.6860	17058.9937	3947.0461	12429.6776	115.2700	552.0000	15.0000	12358.6348	17058.9937	17058.9937	5734.2500
	Nayagarh Range													0.0000
111	Balaram R.F		0	1.578	339.5281	0.0000	289.5281		50.0		339.5281	339.5281	320.95	289.5281
112	Hatimunda R.F	Hm 13	0	0	312.9783		312.9783				312.9783	312.9783	306	312.9783
113	Hatimunda R.F	Hm 14	0	0	338.5783		338.5783				338.5783	338.5783	330	338.5783
114	Hatimunda R.F	Hm 15	0	0	360.3932		360.3932				360.3932	360.3932	300	360.3932
115	Hatimunda R.F	Hm 16	0.854	0	200.2457		200.2457				200.2457	200.2457	130	200.2457
116	Hatimunda R.F	Hm 17	0	0	255.3059		255.3059				255.3059	255.3059	250	255.3059
117	Hatimunda R.F	Hm 18	0	0	155.5424		75.5424	80.0			155.5424	155.5424	150	155.5424
118	Hatimunda R.F	Hm 19	0	0	546.4431		546.4431				546.4431	546.4431	532.1	546.4431
119	Hatimunda R.F	Hm 20	0	0	367.5184	352.5184			15.0		367.5184	367.5184	360	352.5184
120	Rukhi R.F		0	0	220.8998		220.8998				220.8998	220.8998	200	220.8998

121	Sulia R.F	Sl 3	0	90.21	738.3452		648.3452	90.0			738.3452	738.3452	738.3452	720	738.3452
122	Sapua R.F	Sp 1	0	32.25	337.4165		337.4165				337.4165	337.4165	337.4165	269	337.4165
123	Sapua R.F	Sp 2	0	30	555.9866		555.9866				555.9866	555.9866	555.9866	580	555.9866
124	Patharakata R.F	Pk 1	0		135.0238		120.0238	15.0			135.0238	135.0238	135.0238	135	135.0238
	Nayagarh Range(Total)		0.8540	154.0380	4864.2053	352.5184	4261.6869	185.0000	0.0000	65.0000	1075.7617	4864.2053	4864.2053	4583.0500	4799.2053
	Odogaon Range														0.0000
125	Bahadajhola R.F		0	0	404.5449	204.1200	190.4249	10				404.5449	404.5449	234.5	404.5449
126	Balisinsa Badhulipur R.F	Bb 1	0	0	92.2116		92.2116					92.21163	92.21163	92	92.2116
127	Balisinsa Badhulipur R.F	Bb 2	0	4.15	313.8678		313.8678					313.8678	313.8678	300	313.8678
128	Gayalsingh R.F	Gs 1	0	0	324.3672		324.3672				324.3672	324.3672	324.3672	300	324.3672
129	Gayalsingh R.F	Gs 2	0	0	393.3122		363.3122	30			393.3122	393.3122	393.3122	350	393.3122
130	Gayalsingh R.F	Gs 3	0	0	361.3458		356.3458		5.0		361.3458	361.3458	361.3458	361	356.3458
131	Gayalsingh R.F	Gs 4	0	0	320.5606		300.5606	20			320.5606	320.5606	320.5606		320.5606
132	Gochha R.F	Gc 1	0	0	452.5743		362.5743		90.00		452.5743	452.5743	452.5743	400	362.5743
133	Gochha R.F	Gc 2	0.85	0	412.9092		330.9092		82.00		412.9092	412.9092	412.9092		330.9092
134	Gochha R.F	Gc 3	0	0	218.7219	174.7219			44.00		218.7219	218.7219	218.7219	200	174.7219
135	Gochha R.F	Gc 4	0.72	4.44	459.7796	459.7796					459.7796	459.7796	459.7796	460	459.7796
136	Gochha R.F	Gc 5	0	0	311.7409	311.7409					311.7409	311.7409	311.7409	300	311.7409
137	Gochha R.F	Gc 6	0.78	0	432.2297	346.2297			86.00		432.2297	432.2297	432.2297		346.2297
138	Gochha R.F	Gc 7	0	0	877.278		723.2780		154.00		877.2780	877.278	877.278	450	723.2780
139	Gochha R.F	Gc 8 (a)	0	0	823.0117		671.8217	1.19	150.00		823.0117	823.0117	823.0117		673.0117
140	Gochha R.F	Gc 18	0	0	396.764		296.7640	20	80.00		396.7640	396.764	396.764	157	316.7640
142	Sulia R.F	Sl 4	0	0	915.8674		905.8674	10.0			915.8674	915.8674	915.8674		915.8674
143	Sulia R.F	Sl 8	0	0	477.5446		372.5446	100.0		5.0	477.5446	477.5446	477.5446		472.5446
144	Sulia R.F	Sl 9	0	0	668.6969		648.6969	20.0				668.6969	668.6969		668.6969
	Odogaon Range (Total)		2.3500	8.5900	8657.3283	1496.5921	6253.5462	211.1900	686.0000	10.0000	7178.0071	8657.3283	8657.3283	3604.5000	7961.3283

	Panchirida Range														0.0000
145	Gochha R.F	Gc 8(b)													0.0000
146	Gochha R.F	Gc 9	0	0	956.5656		856.5656		100.0			956.5656	956.5656	856	856.5656
147	Gochha R.F	Gc 10	0	0	842.4302		754.4302		88.0		842.4302	842.4302	842.4302		754.4302
148	Gochha R.F	Gc 11	0	0	740.4688		660.4688		80.0			740.4688	740.4688		660.4688
149	Gochha R.F	Gc 12	0	0	774.6294		724.6294	50.0			774.6294	774.6294	774.6294	454	774.6294
150	Gochha R.F	Gc 13	0	0.85	447.713		447.7130					447.713	447.713		447.7130
151	Gochha R.F	Gc 14	0	0	779.5681		625.5681	70.0	74.0	10.0	779.5681	779.5681	779.5681	564	695.5681
152	Gochha R.F	Gc 15	0	0	654.5882		524.5882		130.0		654.5882	654.5882	654.5882	600	524.5882
153	Gochha R.F	Gc 16	0	0	465.5781		465.5781				465.5781	465.5781	465.5781	430	465.5781
154	Gochha R.F	Gc 17	0	0	446.5627		446.5627				446.5627	446.5627	446.5627		446.5627
155	Khatia Damsahi R.F		0	0	268.2350		223.2350	45				268.235	268.235	208	268.2350
156	Patharaganda R.F	Pd 1	0	0	316.8457		316.8457				316.8457	316.8457	316.8457	303	316.8457
157	Patharaganda R.F	Pd 2	0	0	273.4276		219.4276		54.00		273.4276	273.4276	273.4276		219.4276
158	Patharaganda R.F	Pd 3	0	0	298.5558		298.5558				298.5558	298.5558	298.5558	246	298.5558
159	Patharaganda R.F	Pd 4	0	0	394.0514		384.0514	10			394.0514	394.0514	394.0514	375	394.0514
160	Sulia R.F	Sl 6	0	0	1328.8260		1328.8260				1328.8260	1328.8260	1328.8260	909	1328.8260
161	Sulia R.F	Sl 7	0	0	885.2014		735.2014		140.0	10.0	885.2014	885.2014	885.2014		735.2014
	Panchirida Range (Total)		0.0000	0.8500	9873.2470	0.0000	9012.2470	175.0000	666.0000	20.0000	7460.2646	9873.2470	9873.2470	4945.0000	9187.2470
	Division Total		5.3870	1884.6260	83645.5358	26643.9519	52459.7989	1263.7850	3158.0000	120.0000	57071.9406	83645.5358	83645.5358	29600.8140	80367.5358
	of PRF														0.0000
	Daspalla Range														0.0000
1	Khamana (PRF)		0	0	116.8569		116.8569					116.8569	116.8569	50	116.8569
2	Boni (PRF)		0	0	79.3134		79.3134					79.3134	79.3134		79.3134
3	Gumrukholi (PRF)		0	0	270.9614		270.9614					270.9614	270.9614		270.9614
4	Pankalasahi (PRF)		0	0	68.1276		68.1276					68.1276	68.1276		68.1276
5	Baisipalli Extn-I (PRF)		0	0	73.2720		73.2720					73.272	73.272		73.2720

6	Baisipalli Extn-II (PRF)	0	38.5	71.9664	71.966					71.9664	71.9664		71.9664
7	Baisipalli Ext-III (PRF)	0	0	163.6354	163.635					163.6354	163.6354		163.6354
8	Dhundugadia PRF	0	0	756.7991		756.7991				756.7991	756.7991		756.7991
9	Nephari (PRF)	0	0	253.7985	253.799					253.7985	253.7985		253.7985
10	Gochhobari	0	0	522.0140	522.014					522.014	522.014		522.0140
11	Gambhariganda (PRF)	0	37.04	288.2498	288.250					288.2498	288.2498		288.2498
12	Baliberena (PRF)	0	0	44.5776	44.578					44.5776	44.5776		44.5776
13	Chadiapalli Extn (PRF)	0	0	378.0971	378.097					378.0971	378.0971		378.0971
14	Aranigda (PRF)	0	0	102.1612	102.161					102.1612	102.1612		102.1612
	Daspalla Range total	0	75.54	3189.8304	1824.5000	1365.3304	0.0000	0	0.000	3189.8304	3189.8304	50	3189.8304
	Gania Range												0.0000
15	Phasi Extn-I (PRF)	0	0	23.4961		23.4961				23.4961	23.4961	20	23.4961
16	Phasi Extn-II (PRF)	0	0	112.0323		112.0323				112.0323	112.0323		112.0323
17	Phasi Extn-III (PRF)	0	0	58.8719		58.8719				58.8719	58.8719	40	58.8719
18	Matia (PRF)	0	0	54.8403		54.8403	20.000			54.8403	54.8403	26	54.8403
19	Bankamunda Extn-I (PRF)	0	0	205.6272		205.6272				205.6272	205.6272		205.6272
20	Baisipalli Ext-IV	0		609.1446		489.1446		120.000		609.1446	609.1446		489.1446
21	Palava (PRF)	0	0	59.8702		59.8702				59.8702	59.8702		59.8702
22	Ragadimada (PRF)	0	0	76.8970		76.8970				76.897	76.897		76.8970
	Gania Range Total	0	0	1200.7796		1060.7796	20.00	120.000	0.000	1200.7796	1200.7796	86	1080.7796
	Odogaon Range												0.0000
23	Makarapalli (PRF)	0.51	1.398	1124.390		1104.3900	20	0.000	0	1124.39	1124.39	200	1124.3900
	Odogaon Range total	0.510	1.398	1124.390	0.000	1104.3900	20.000	0.000	0.000	1124.39	1124.39	200	1124.3900
	Panchirida Range												0.0000
24	Banijhari (PRF)	0	0	2756.617		2756.6170				2756.617	2756.617	756	2756.6170
25	Sukarmala (PRF)	0	0	2525.895		2495.8950	30.0			2525.895	2525.895	719	2525.8950
26	Ambamundia (PRF)	0	0	297.776		297.7761				297.7761	297.7761		297.7761

	Panchirida Range Total		0.000	0.000	5580.288	0.000	5550.2881	30.000	0.000	0.000		5580.2881	5580.2881	1475	5580.2881
	Nayagarh Range														0.0000
27	Barabanka (PRF)		0	3.21	579.9189		549.9189	30.0				579.9189	579.9189	200	579.9189
	Nayagarh Range Total		0	3.21	579.9189		549.9189	30.0				579.9189	579.9189	200	579.9189
	Div. Total		0.510	80.148	11675.2070	1824.500	9630.7070	100.000	120.000	0.000	0.000	11675.207	11675.207	2011.000	11555.2070
	of DPF														0.0000
	Daspalla Range														0.0000
1	Kuradinisa Ext		0	0	2615.416		2615.4160					2615.416	2615.416		2615.4160
2	Kuradinisha (DPF)		0	0	505.1108		505.1108					505.1108	505.1108		505.1108
3	Kerabari (DPF)		0	0	39.6854		39.6854					39.6854	39.6854		39.6854
4	Nandagadu (DPF)		0	0	54.477		54.4770					54.477	54.477		54.4770
5	Nuagaon (DPF)		0	0	49.451		49.4514					49.45136	49.45136		49.4514
6	Sirisabadi (DPF)		0	0	934.983		934.9828					934.9828	934.9828		934.9828
7	Sikharpanga (DPF)		0	0	87.617		87.6165					87.61654	87.61654		87.6165
8	Ranga (DPF)		0	0	305.965		305.9649					305.9649	305.9649		305.9649
9	Baijhan (DPF)		0	0	89.4322	89.4322						89.4322	89.4322		89.4322
	Daspalla Range Total		0.000	0.000	4682.137	89.432	4592.7048	0.000	0.000	0.000	0.000	4682.137	4682.137	0.000	4682.1370
	Gania Range														0.0000
10	Matia Extn (DPF)		0	0	546.15030		546.1503					546.1503	546.1503	17.5	546.1503
11	Bankamunda Extn-II (DPF)		0	0	546.62330		546.6233					546.6233	546.6233	95	546.6233
12	Arakhataila		0	0	253.32310		218.3231	35				253.3231	253.3231		253.3231
13	Ambaghati-I		0	0	1.1650		1.1650					1.165	1.165		1.1650
14	Ambaghati-II		0	0	11.8504		11.8504					11.8504	11.8504		11.8504
15	Ambaghati-III		0	0	1.9600		1.9600					1.96	1.96		1.9600
16	Ambaghati-IV		0	0	60.3667		60.3667					60.3667	60.3667		60.3667

17	Makarprasad	0	0	125.2948		125.2948					125.2948	125.2948		125.2948
	Gania Range Total	0.000	0.000	1546.7336	0.0000	1511.7336	35.0000	0.0000	0.0000	0.0000	1546.7336	1546.7336	112.500	1546.7336
	Odogaon Range													0.0000
18	Dhadi (DPF)	0	0	232.8733		232.8733					232.8733	232.8733	132	232.8733
19	Takarakhai (DPF)	0	0	78.8052		78.8052					78.8052	78.8052	56.06	78.8052
20	Kurala (DPF)	0	0	677.3515		637.3515	40				677.3515	677.3515	152	677.3515
21	Nariamba	0	0	774.0594		744.0594	30				774.0594	774.0594	112	774.0594
	Odogaon Range (Total)	0.000	0.000	1763.0894	0.000	1693.0894	70.000	0.000	0.000	0.000	1763.089	1763.089	452.060	1763.0894
	Mahipur Range													0.0000
22	Bhagabati (DPF)	0	0	62.0763		62.0763		0			62.0763	62.0763		62.0763
	Mahipur Range (Total)	0.000	0.000	62.0763	0.000	62.0763		0.000	0.000	0.000	62.076	62.076	0.000	62.0763
	Panchirida Range													0.0000
23	Binjhagiri (DPF)	0	0	250.2270		150.2270	100.0				250.227	250.227	50	250.2270
24	Netabandha (DPF)	0	0	141.5044		141.5044					141.5044	141.5044	25	141.5044
	Panchirida Range (Total)	0.000	0.000	391.7314	0.000	291.7314	100.000	0.000	0.000	0.000	391.731	391.731	75.000	391.7314
	Division Total	0.000	0.000	8445.7677	89.4322	8151.3355	205.000	0.000	0.000	0.000	8445.7677	8445.7677	639.560	8445.7677
	Of PF													0.0000
	Gania Range													0.0000
1	Arakhataila PF	0	0	95.75			95.75						95.75	0.0000
2	Bindhyagiri PF	0	0	347.87			347.87						347.87	0.0000
	Gania Range (Total)	0	0	443.62	0	0.0000	443.62	0	0	0			443.62	0.0000
	Khandapada Range													0.0000
3	Kasia			321.98			321.98						321.98	0.0000
	Khandapara Range (Total)	0	0	321.98	0	0.0000	321.98	0	0				321.98	0.0000
	Mahipur Range													0.0000

4	Badadunupa			64.58			64.58						64.58	0.0000
5	Banuasahi			40.21			40.21						40.21	0.0000
6	Bamuri			57.48			57.48						57.48	0.0000
7	Turuturi			116.58			116.58						116.58	0.0000
	Mahipur Range (Total)	0	0	278.85	0	0.0000	278.85	0	0	0			278.85	0.0000
	Odagaon Range													0.0000
8	KumbhiaPalli			62.24			62.24						62.24	0.0000
	Odagaon Range (Total)	0	0	62.24	0	0.0000	62.24	0	0	0			62.24	0.0000
	Panchiririda Range													0.0000
9	Bhandar			125.04			125.04						125.04	0.0000
10	Chhanchuria			303.51			303.51						303.51	0.0000
	Panchirida Range (Total)	0	0	428.55	0	0	428.55	0	0	0	0	0	428.55	0.0000
	Div Total	0	0	1535.24	0	0.0000	1535.24	0	0	0			1535.24	0.0000
	RF, PRF, DPF ,PF	5.8970	1964.7740	105301.7505	28557.8841	70241.8414	3104.0250	3278.0000	120.0000	57071.9406	103766.5105	103766.5105	33786.6140	100368.5105
	All VF (63 Block)			579.45			579.45							0.0000
	Div. G. Total	5.8970	1964.7740	105881.2005	28557.8841	70241.8414	3683.4750	3278.0000	120.0000	57071.9406	103766.5105	103766.5105	33786.6140	100368.5105

Annexure- XV

Divisional Area Statement – Nayagarh Division

Sl no	Name of Forest Block	Compt .No	Area in ha (GIS Area)	Working Circle Allotted	Crop Density	Growing Stock in cum	Crop Composition
	Reserve Forests (RFs)						
	Daspalla Range						
1	Ambalimba		554.4190	SWC	50%	58519	Sal with Bamboo
2	Central R.F	CI 1	999.5352	SWC	60%	926156	Sal with Bamboo
3	Central R.F	CI 2	586.8663	SWC, PLWC	45%		Sal with Bamboo
4	Central R.F	CI 3	483.0487	SWC, PLWC	45%		Sal with Bamboo
5	Central R.F	CI 4	1090.6640	SWC, PR.WC	40%		Sal with Bamboo
6	Central R.F	CI 5	551.6211	SWC, PR.WC	45%		Sal with Bamboo
7	Central R.F	CI 6	644.4631	SWC	50%		Sal with Bamboo
8	Central R.F	CI 7	448.8703	SWC, PR.WC	40%		Sal with Bamboo
9	Central R.F	CI 8	553.2473	SWC, PR.WC	40%		Sal with Bamboo
10	Central R.F	CI 9	759.1270	SWC	45%		Sal with Bamboo
11	Central R.F	CI 10	925.3559	SWC, PR.WC	50%		Sal with Bamboo
12	Central R.F	CI 11	1034.2480	SWC, PR.WC	45%		Sal with Bamboo
13	Central R.F	CI 12	651.5344	SWC, PR.WC	50%		Sal with Bamboo
14	Central R.F	CI 13	957.5446	SWC, PR.WC	50%		Sal with Bamboo
15	Chadiapalli R.F	Cp 1	419.5593	SWC	58%	604451	Sal with Bamboo
16	Chadiapalli R.F	Cp 2	686.0548	SWC	50%		Sal with Bamboo
17	Chadiapalli R.F	Cp 3	927.0187	SWC	40%		Sal with Bamboo
18	Chadiapalli R.F	Cp 4	510.5561	SWC, PR.WC	40%		Sal with Bamboo
19	Chadiapalli R.F	Cp 5	483.0798	SWC	40%		Sal with Bamboo

20	Chadiapalli R.F	Cp 6	930.7682	SWC	40%		Sal with Bamboo
21	Chadiapalli R.F	Cp 7	947.8103	SWC	40%		Sal with Bamboo
22	Chadiapalli R.F	Cp 8	416.7687	SWC	40%		Sal with Bamboo
23	Chadiapalli R.F	Cp 9	316.8639	SWC	40%		Sal with Bamboo
24	Chadiapalli R.F	Cp 10	422.7530	SWC	40%		Sal with Bamboo
25	Chhades RF		1781.4790	RWC	>40%	154383	Sal with Bamboo
26	Nuagaon R.F	NG-1	615.6390	SWC	50%	100201	Sal with Bamboo
	Nuagaon R.F	NG-2	580.1000	SWC	48%		Sal with Bamboo
27	Nasaghar R.F	Ns.1	602.8431	SWC	50%	174690	Sal with Bamboo
28	Nasaghar R.F	Ns.2	331.2504	SWC	50%		Sal with Bamboo
29	Nasaghar R.F	Ns 3	445.2220	SWC	40%		Sal with Bamboo
30	Nasaghar R.F	Ns 4	478.0713	SWC	45%		Sal with Bamboo
31	Poibari R.F		1619.8440	RWC, PR.WC	>40%	114050	Sal with Bamboo
32	Pokharigochha R.F	Pg 1	732.1588	SWC, PR.WC	40%	355733	Sal with Bamboo
33	Pokharigochha R.F	Pg 2	624.0144	SWC, PLWC, PR.WC	40%		Sal with Bamboo
34	Pokharigochha R.F	Pg 3	606.9499	SWC	40%		Sal with Bamboo
35	Pokharigochha R.F	Pg 4	746.8277	SWC, PR.WC	45%		Sal with Bamboo
36	Pokharigochha R.F	Pg 5	533.7106	RWC, PR.WC	>40%		Sal with Bamboo
37	Pokharigochha R.F	Pg 6	252.9628	RWC, PR.WC	>40%		Sal with Bamboo
38	Pokharigochha R.F	Pg 7	460.0544	RWC, PR.WC	>40%		Sal with Bamboo
39	Pokharigochha R.F	Pg 8	336.0810	SWC	40%		Sal with Bamboo
	Daspalla Range Total		27048.9861				
	Gania range						
40	Bankamunda R.F	Bm 1	602.6840	RWC, PLWC	>40%	128702	Sal Mixed
41	Bankamunda R.F	Bm-2	370.8514	RWC	>40%		Sal Mixed
42	Bankamunda R.F	Bm-3	288.7945	RWC	>40%		Sal Mixed
43	Bankamunda R.F	Bm-4	597.4703	RWC	>40%		Sal Mixed

44	Gania R.F		342.8016	RWC,PLWC	>40%	16058	Sal Mixed
45	Matia R.F		643.6100	RWC, PLWC	>40%	40272	Sal Mixed
46	Makarprasad R.F		1157.6710	RWC	>40%	81199	Sal Mixed
47	Manibhadra R.F		527.9488	RWC,PLWC	>40%	34921	Sal Mixed
	Gania Range Total		4531.8316				
	Khandapara Range						
48	Bandara R.F		216.6869	RWC,PLWC	>40%	12239	Sal Mixed
49	Barakhola R.F		787.6532	RWC	>40%	35248	Sal Mixed
50	Chadeibasa R.F		92.1845	RWC,PLWC	>40%	3529	Sal Mixed
51	Dengabahada R.F	Db 1	451.8845	RWC,PLWC	>40%	24463	Sal Mixed
52	Dengabahada R.F	Db 2	320.3681	RWC,PLWC	>40%		Sal Mixed
53	Guriabari R.F	Gb 1	353.8513	RWC,PLWC	>40%	14757	Sal Mixed
54	Guriabari R.F	Gb 2	254.5676	RWC	>40%		Sal Mixed
55	Hanumantia R.F		329.6100	swc	40%	11993	Sal Mixed
56	Mainsibindha R.F		637.3768	RWC	>40%	29198	Sal Mixed
57	Similibanka R.F		216.9048	RWC	>40%	7247	Sal Mixed
58	Pathara R.F		49.0167	RWC	>40%	1288	Sal Mixed
59	Pithakhai R.F		365.6600	RWC	>40%	14146	Sal Mixed
60	Sapua R.F	Sp 3	702.0006	RWC	>40%	298211	Sal Mixed
61	Sapua R.F	Sp 4	556.3740	RWC	>40%		Sal Mixed
62	Sapua R.F	Sp 5	805.3868	RWC	>40%		Sal Mixed
63	Sapua R.F	Sp 6	725.3056	RWC	>40%		Sal Mixed
64	Sapua R.F	Sp 7	883.4660	RWC	>40%		Sal Mixed
65	Sapua R.F	Sp 8	386.2498	RWC	>40%		Sal Mixed
66	Sapua R.F	Sp 9	650.3146	RWC	>40%		Sal Mixed
67	Sapua R.F	Sp 10	481.2428	RWC	>40%		Sal Mixed
68	Sapua R.F	Sp 11	521.5492	RWC,PLWC	>40%		Sal Mixed
69	Sapua R.F	Sp 12	721.5915	RWC	>40%		Sal Mixed

70	Sapura R.F	Sp 13	711.9831	RWC	>40%		Sal Mixed
71	Sikharpur R.F		1398.4830	RWC,PLWC	>40%	63089	Sal Mixed
72	Patrabani Jamubani R.F		212.3944	RWC,PLWC	>40%	3549	Sal Mixed
	Khandapara Range (Total)		12832.1058				
	Mahipur Range						
73	Hatimunda R.F	Hm 1	603.6784	RWC	>40%	93000	Sal with Bamboo
74	Hatimunda R.F	Hm 2	599.5121	RWC	>40%		Sal with Bamboo
75	Hatimunda R.F	Hm 3	393.4262	RWC	>40%		Sal with Bamboo
76	Hatimunda R.F	Hm 4	295.0725	RWC	>40%	206196	Sal with Bamboo
77	Hatimunda R.F	Hm 5	386.9039	RWC	>40%		Sal with Bamboo
78	Hatimunda R.F	Hm 6	320.7396	RWC	>40%		Sal with Bamboo
79	Hatimunda R.F	Hm 7	489.3869	RWC,PLWC	>40%		Sal with Bamboo
80	Hatimunda R.F	Hm 8	589.0450	RWC	>40%		Sal with Bamboo
81	Hatimunda R.F	Hm 9	707.7462	RWC	>40%		Sal with Bamboo
82	Hatimunda R.F	Hm 10	222.6502	RWC	>40%		Sal with Bamboo
83	Hatimunda R.F	Hm 11	461.1620	RWC,PLWC	>40%		Sal with Bamboo
84	Hatimunda R.F	Hm 12	498.5381	RWC	>40%	669	Sal with Bamboo
85	Maicheli Sampada R.F		328.9887	SWC	50%	26393	Sal with Bamboo
86	Ratadei R.F	Rd 1	315.4693	RWC,PLWC	>40%	32680	Sal with Bamboo
87	Ratadei R.F	Rd 2	656.1344	SWC	50%	50505	Sal with Bamboo
88	Ratadei R.F	Rd 3	350.2195	RWC	>40%	20006	Sal with Bamboo
89	Ratadei R.F	Rd 4	763.7505	SWC	50%	64800	Sal with Bamboo
90	Palva R.F	Pb 1	461.6117	SWC, PR.WC	45%	35000	Sal with Bamboo
91	Palva R.F	Pb 2	337.6271	RWC, PR.WC	>40%	183865	Sal with Bamboo
92	Palva R.F	Pb 3	293.4185	RWC, PR.WC	>40%		Sal with Bamboo
93	Palva R.F	Pb 4	429.9870	RWC, PR.WC	>40%		Sal with Bamboo
94	Palva R.F	Pb 5	440.3508	SWC, PR.WC	45%		Sal with Bamboo

95	Palva R.F	Pb 6	402.2832	SWC	50%		Sal with Bamboo
96	Palva R.F	Pb 7	394.3466	RWC, PR.WC	>40%		Sal with Bamboo
97	Palva R.F	Pb 8	355.1275	SWC	50%	21696	Sal with Bamboo
98	Sulia R.F	Sl 1	647.5751	RWC	>40%	100366	Sal with Bamboo
99	Sulia R.F	Sl 2	502.3064	RWC, PR.WC	>40%		Sal with Bamboo
100	Ragadimada R.F	Rm 1	403.9182	RWC	>40%	188000	Sal with Bamboo
101	Ragadimada R.F	Rm 2	661.2036	RWC	>40%		Sal with Bamboo
102	Ragadimada R.F	Rm 3	405.1577	RWC	>40%		Sal with Bamboo
103	Ragadimada R.F	Rm 4	427.5547	RWC,PLWC, PR.WC	>40%		Sal with Bamboo
104	Ragadimada R.F	Rm 5	727.8733	SWC,PLWC, PR.WC	50%	82256	Sal with Bamboo
105	Ragadimada R.F	Rm 6	481.1499	RWC	>40%	100726	Sal with Bamboo
106	Ragadimada R.F	Rm 7	544.5512	RWC	>40%		Sal with Bamboo
107	Ragadimada R.F	Rm 8	267.8752	RWC, PR.WC	>40%		Sal with Bamboo
108	Ragadimada R.F	Rm 9	530.9555	RWC	>40%		Sal with Bamboo
109	Panchupandav R.F	Pp 1	409.7043	RWC	>40%	37144	Sal with Bamboo
110	Panchupandav R.F	Pp 2	454.1617	RWC	>40%	36441	Sal with Bamboo
	Mahipur Range (Total)		17561.1627				
	Nayagarh Range						
111	Balaram RF		341.1061	RWC	>40%	24164	Sal Mixed
112	Hatimunda R.F	Hm 13	312.9783	RWC	>40%	200000	Sal Mixed
113	Hatimunda R.F	Hm 14	338.5783	RWC	>40%		Sal Mixed
114	Hatimunda R.F	Hm 15	360.3932	RWC	>40%		Sal Mixed
115	Hatimunda R.F	Hm 16	201.0997	RWC	>40%		Sal Mixed
116	Hatimunda R.F	Hm 17	255.3059	RWC	>40%		Sal Mixed
117	Hatimunda R.F	Hm 18	155.5424	RWC,PLWC	>40%		Sal Mixed
118	Hatimunda R.F	Hm 19	546.4431	RWC	>40%		Sal Mixed

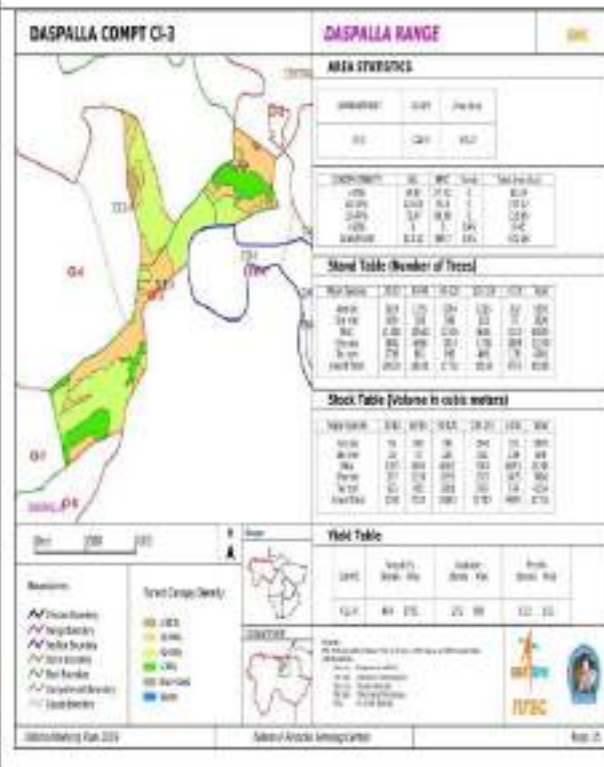
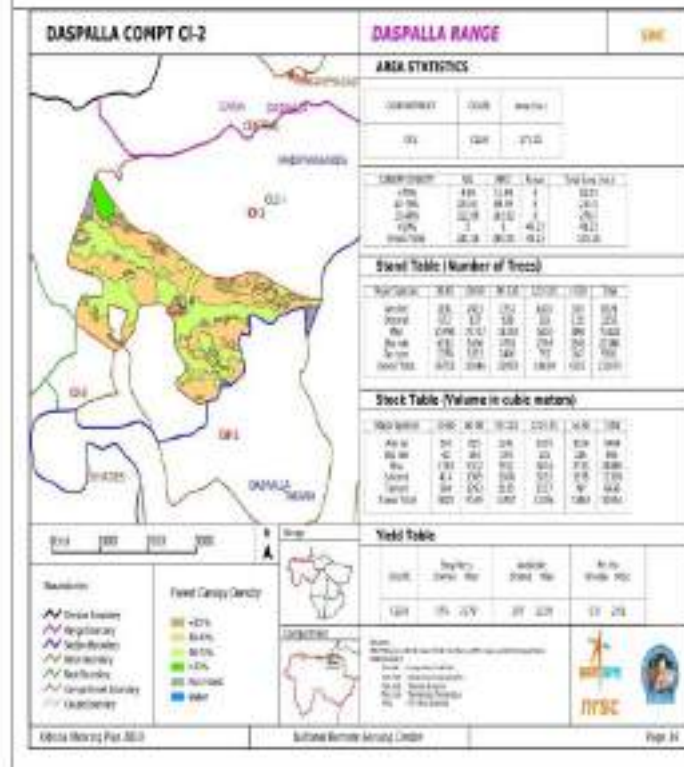
119	Hatimunda R.F	Hm 20	367.5184	SWC	50%		Sal Mixed
120	Rukhi R.F		220.8998	RWC	>40%	12882	Sal Mixed
121	Sulia R.F	Sl 3	828.5552	RWC,PLWC	>40%	50700	Sal Mixed
122	Sapua R.F	Sp 1	369.6665	RWC	>40%	32207	Sal Mixed
123	Sapua R.F	Sp 2	585.9866	RWC	>40%		Sal Mixed
124	Patharakata R.F	Pk 1	135.0238	RWC,PLWC	>40%	7780	Sal Mixed
	Nayagarh Range(Total)		5019.0973				
	Odogaon Range						
125	Bahadajhola R.F		404.5449	SWC, RWC,PLWC	>40%	17327	Sal Mixed
126	Balisinsa Badhulipur R.F	Bb 1	92.2116	RWC	>40%	28138	Sal Mixed
127	Balisinsa Badhulipur R.F	Bb 2	318.0178	RWC	>40%	30383	Sal Mixed
128	Gayalsingh R.F	Gs 1	324.3672	RWC	>40%	116335	Sal Mixed
129	Gayalsingh R.F	Gs 2	393.3122	RWC,PLWC	>40%		Sal Mixed
130	Gayalsingh R.F	Gs 3	361.3458	RWC	>40%		Sal Mixed
131	Gayalsingh R.F	Gs 4	320.5606	RWC,PLWC	>40%		Sal Mixed
132	Gochha R.F	Gc 1	452.5743	RWC, PR.WC	>40%	43867	Sal Mixed
133	Gochha R.F	Gc 2	413.7592	RWC, PR.WC	>40%		Sal Mixed
134	Gochha R.F	Gc 3	218.7219	SWC, PR.WC	50%	191770	Sal Mixed
135	Gochha R.F	Gc 4	464.9396	SWC,	50%		Sal Mixed
136	Gochha R.F	Gc 5	311.7409	SWC	45%		Sal Mixed
137	Gochha R.F	Gc 6	433.0097	SWC, PR.WC	45%		Sal Mixed
138	Gochha R.F	Gc 7	877.2780	RWC, PR.WC	>40%		Sal Mixed
139	Gochha R.F	Gc 8 (a)	823.0117	RWC,PLWC, PR.WC	>40%	100000	Sal Mixed
140	Gochha R.F	Gc 18	396.7640	RWC,PLWC, PR.WC	>40%		Sal Mixed
142	Sulia R.F	Sl 4	915.8674	RWC,PLWC	>40%	51000	Sal Mixed

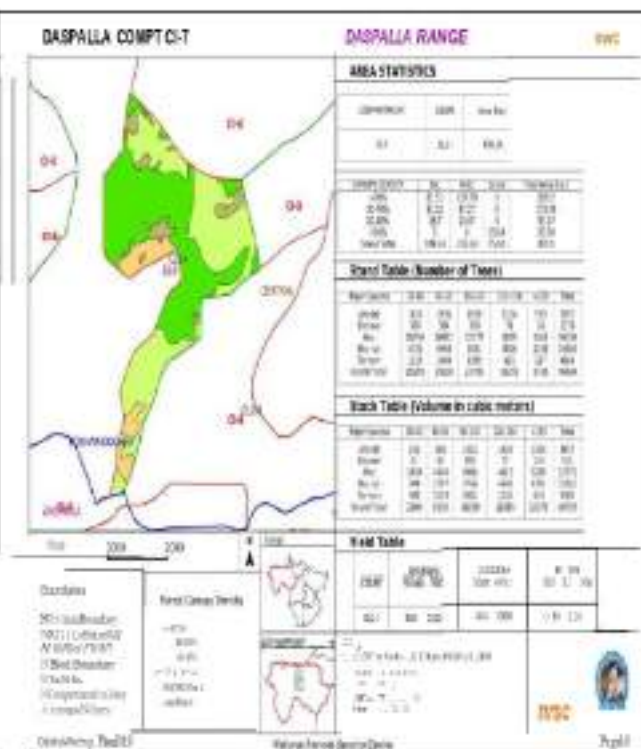
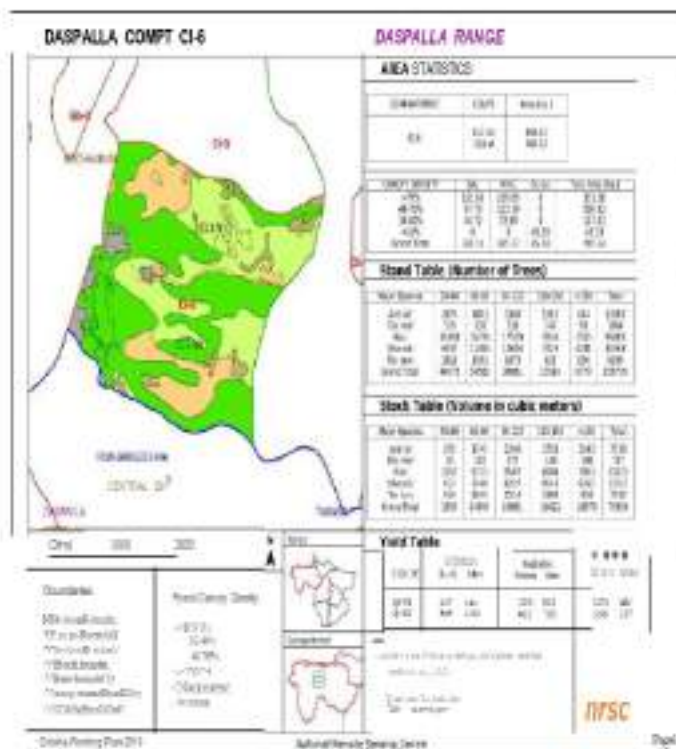
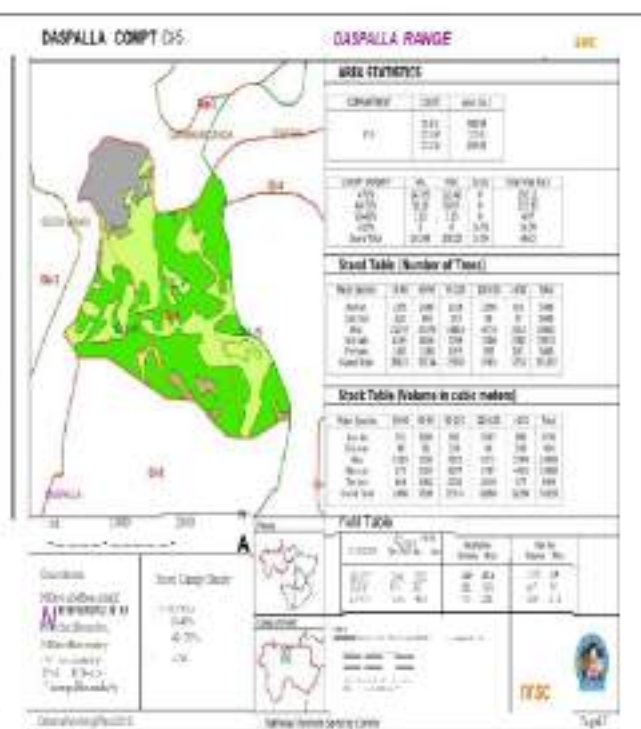
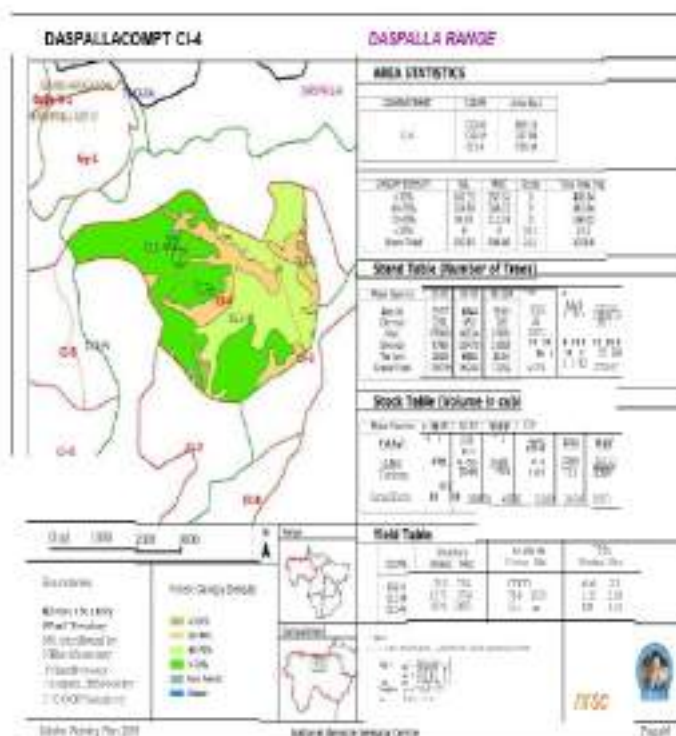
143	Sulia R.F	Sl 8	477.5446	RWC,PLWC	>40%	110000	Sal Mixed
144	Sulia R.F	Sl 9	668.6969	RWC,PLWC	>40%		Sal Mixed
	Odogaon Range (Total)		8668.2683				
	Panchirida Range						
145	Gochha R.F	Gc 9	956.5656	RWC, PR.WC	>40%	351361	Sal Mixed
146	Gochha R.F	Gc 10	842.4302	RWC, PR.WC	>40%		Sal Mixed
147	Gochha R.F	Gc 11	740.4688	RWC, PR.WC	>40%		Sal Mixed
148	Gochha R.F	Gc 12	774.6294	RWC,PLWC	>40%		Sal Mixed
149	Gochha R.F	Gc 13	448.5630	RWC	>40%		Sal Mixed
150	Gochha R.F	Gc 14	779.5681	RWC,PLWC, PR.WC	>40%		Sal Mixed
151	Gochha R.F	Gc 15	654.5882	RWC, PR.WC	>40%	311961	Sal Mixed
152	Gochha R.F	Gc 16	465.5781	RWC	>40%		Sal Mixed
153	Gochha R.F	Gc 17	446.5627	RWC	>40%		Sal Mixed
154	Khatia Damasahi R.F		268.2350	RWC,PLWC	>40%	21427	Sal Mixed
155	Patharaganda R.F	Pd 1	316.8457	RWC	>40%	30730	Sal Mixed
156	Patharaganda R.F	Pd 2	273.4276	RWC, PR.WC	>40%	62788	Sal Mixed
157	Patharaganda R.F	Pd 3	298.5558	RWC	>40%		Sal Mixed
158	Patharaganda R.F	Pd 4	394.0514	RWC,PLWC	>40%	31029	Sal Mixed
159	Sulia R.F	Sl 6	1328.8260	RWC	>40%	8713	Sal Mixed
160	Sulia R.F	Sl 7	885.2014	RWC, PR.WC	>40%	42000	
	Panchirida Range (Total)		9874.0970				
	Division Total		85535.5488				
	of PRF						
	Daspalla Range						
1	Khamana (PRF)		116.8569	RWC	>40%	3159	Misc with Sal
2	Boni (PRF)		79.3134	RWC	>40%	6057	Misc with Sal
3	Gumurukhola (PRF)		270.9614	RWC	>40%	24007	Misc with Sal

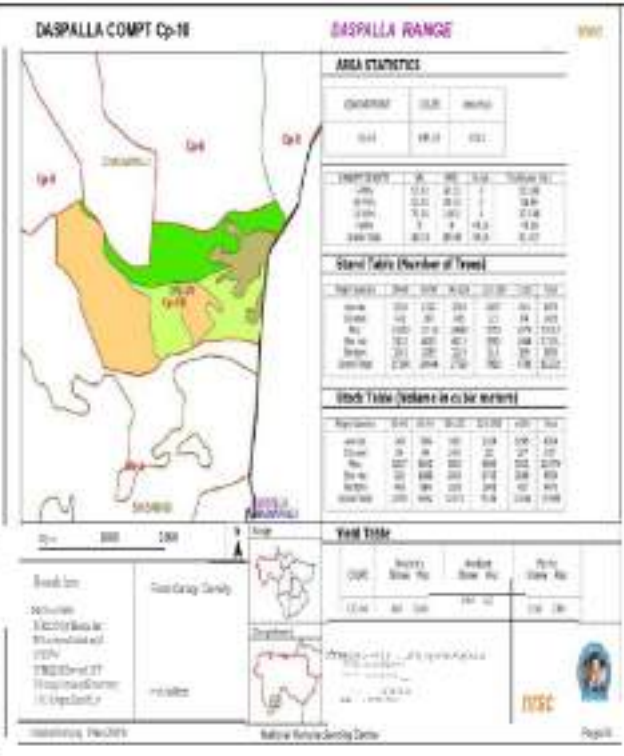
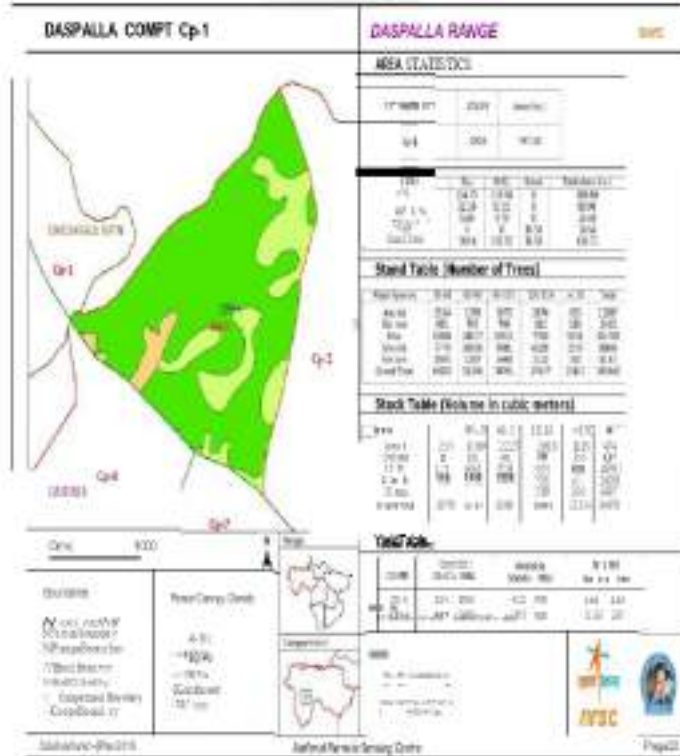
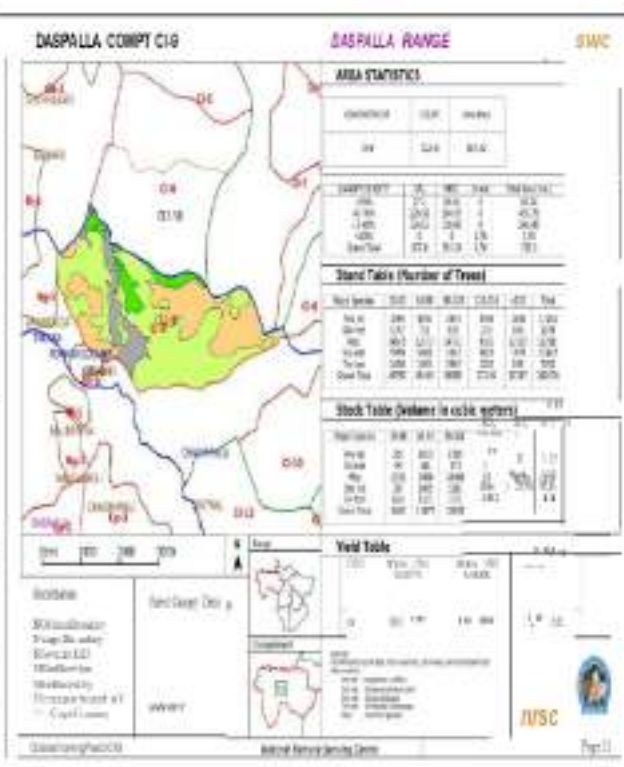
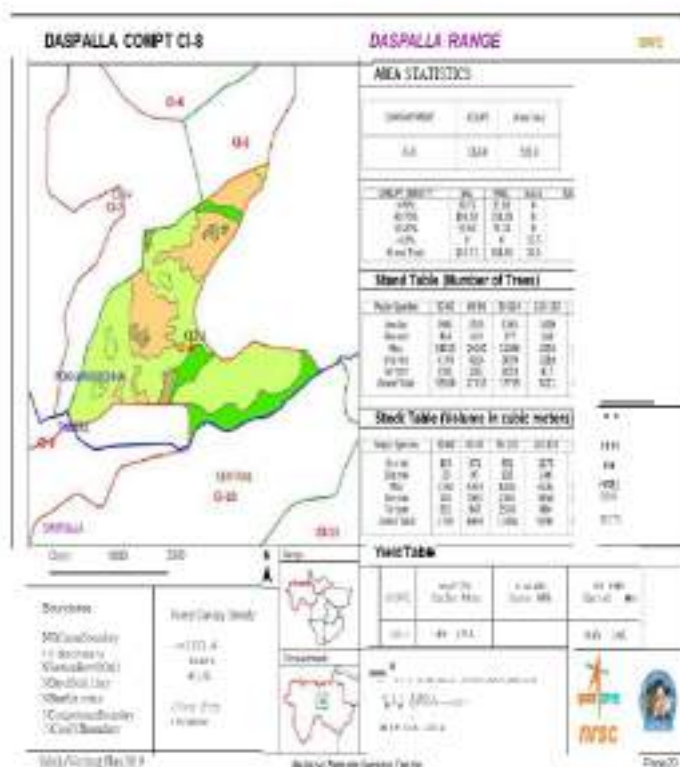
4	Pankalasahi (PRF)	68.1276	RWC	>40%	6508	Misc with Sal
5	Baisipalli Extn-I (PRF)	73.2720	RWC	>40%	6478	Misc with Sal
6	Baisipalli Extn-II (PRF)	110.4664	SWC	45%	11188	Misc with Sal
7	Baisipalli Ext-III (PRF)	163.6354	SWC	45%	15194	Misc with Sal
8	Dhundugadia PRF	756.7991	RWC	>40%	68274	Misc with Sal
9	Nephari (PRF)	253.7985	SWC	45%	23653	Misc with Sal
10	Gochhabari	522.0140	SWC	50%	49042	Misc with Sal
11	Gambhariganda (PRF)	325.2898	SWC	55%	28590	Misc with Sal
12	Baliberena (PRF)	44.5776	SWC	55%	3988	Misc with Sal
13	Chadiapalli Extn (PRF)	378.0971	SWC	50%	36411	Misc with Sal
14	Aranignda (PRF)	102.1612	SWC	45%	8192	Misc with Sal
	Daspalla Range total	3265.3704				
	Gania Range					
15	Phasi Extn-I (PRF)	23.4961	RWC	>40%	364	Misc with Sal
16	Phasi Extn-II (PRF)	112.0323	RWC	>40%	739	Misc with Sal
17	Phasi Extn-III (PRF)	58.8719	RWC	>40%	315	Misc with Sal
18	Matia (PRF)	54.8403	RWC, PLWC	>40%		Misc with Sal
19	Bankamunda Extn-I (PRF)	205.6272	RWC	>40%	14281	Misc with Sal
20	Baisipalli Ext-IV	609.1446	RWC, PR. WC	>40%	43634	Misc with Sal
21	Palava (PRF)	59.8702	RWC	>40%	240562	Misc with Sal
22	Ragadimada (PRF)	76.8970	RWC	>40%	6838	Misc with Sal
	Gania Range Total	1200.7796				
	Odogaon Range					
23	Makarapalli (PRF)	1126.2980	RWC, PLWC	>40%	66437	Misc with Sal
	Odogaon Range total	1126.2980				
	Panchirida Range					
24	Banijhari (PRF)	2756.6170	RWC	>40%	213429	Sal Mixed
25	Sukarmala (PRF)	2525.8950	RWC, PLWC	>40%	152437	Sal Mixed

26	Ambamundia (PRF)	297.7761	RWC	>40%	29313	Sal Mixed
	Panchirida Range Total	5580.2881				
	Nayagarh Range					
27	Barabanka (PRF)	583.1289	RWC, PLWC	>40%	22591	Misc with Sal
	Nayagarh Range Total	583.1289				
	Div. Total of DPF	11755.8650				
	Daspalla Range					
1	Kuradhinisa Ext	2615.4160	RWC	>40%	282045	Sal Mixed
2	Kuradhinisa (DPF)	505.1108	RWC	>40%	58009	Sal Mixed
3	Kerabari (DPF)	39.6854	RWC	>40%	4139	Sal Mixed
4	Nandagadu (DPF)	54.4770	RWC	>40%	5243	Sal Mixed
5	Nuagaon (DPF)	49.4514	RWC	>40%	3724	Sal Mixed
6	Sirisabadi (DPF)	934.9828	RWC	>40%	65203	Sal Mixed
7	Sikharpanga (DPF)	87.6165	RWC	>40%	5937	Sal Mixed
8	Ranga (DPF)	305.9649	RWC	>40%	8358	Sal Mixed
9	Baijhari (DPF)	89.4322	SWC	55%	8467	Sal Mixed
	Daspalla Range Total	4682.1370				
	Gania Range					
10	Matia Extn (DPF)	546.1503	RWC	>40%	35810	Sal Mixed
11	Bankamunda Extn-II (DPF)	546.6233	RWC	>40%	37300	Sal Mixed
12	Arakhataila	253.3231	RWC, PLWC	>40%	17082	Sal Mixed
13	Ambaghati-I	1.1650	RWC	>40%	2844	Sal Mixed
14	Ambaghati-II	11.8504	RWC	>40%		Sal Mixed
15	Ambaghati-III	1.9600	RWC	>40%		Sal Mixed
16	Ambaghati-IV	60.3667	RWC	>40%		Sal Mixed
17	Makarprasad	125.2948	RWC	>40%	7405	Sal Mixed
	Gania Range Total	1546.7336				

	Odogaon Range						
18	Dhadi (DPF)		232.8733	RWC	>40%	22684	Sal Mixed
19	Takarakhai (DPF)		78.8052	RWC	>40%	5300	Sal Mixed
20	Kurala (DPF)		677.3515	RWC,PLWC	>40%	24913	Sal Mixed
21	Nariamba		774.0594	RWC,PLWC	>40%	42288	Sal Mixed
	Odogaon Range (Total)		1763.0894				
	Mahipur Range						
22	Bhagabati (DPF)		62.0763	RWC	>40%	5453	Misc with Sal
	Mahipur Range (Total)		62.0763				
	Panchirida Range						
23	Binjhagiri (DPF)		250.2270	RWC,PLWC	>40%	19649	Misc with sal
24	Netabandha (DPF)		141.5044	RWC	>40%	5438	Misc with sal
	Panchirida Range (Total)		391.7314				
	Division Total		8445.7677				







Annexure-XVII

The Orissa Grama Panchayats (Minor Forest Produce Administration) Rules, 2002

Published vide Notification S.R.O. No.934/2002, dated 14th November, 2002, Orissa Gazette Extraordinary No. 2091 dated 15.11.2002

Panchayati Raj (G.P.) Department

S.R.O. No.934/2002 dated 14th November, 2002 - Whereas the draft of certain rules which the State Government propose to make in exercise of the powers conferred by clause (w) of Sub-section (1) of Section 44 read with Section 150 of the Orissa Grama Panchayats Act, 1964 (Orissa Act 1 of 1965), was published as required by Sub-section (1) of Section 150 of the said Act in the extraordinary issue No. 1241, dated the 9th August 2002 of the Orissa Gazette under the notification of Government of Orissa in the Panchayati Raj (Grama Panchayat) Department NO.9570/G.P., dated the 6th July 2002 bearing S.R.O. No.701/2002 inviting objections and suggestions from all persons likely to be affected thereby till the expiry of a period of thirty days from the date of publication of the same in the Orissa Gazette;

And whereas objections and suggestions received during the period specified above have been duly considered by the State Government.

Now, therefore, in exercise of the powers conferred by clause (w) of Subsection (1) of Section 44 read with Section 150 of the said Act, the State Government do hereby make the following rules, namely :-

1. Short title and commencement. - (1) These rules may be called the Orissa Grama Panchayats (Minor Forest Produce Administration) Rules, 2002.

(2) They shall come into force on the date of their publication in the *Official Gazette*.

2. Definitions. - (1) In these rules, unless the context otherwise requires, -

(i) "**Act**" means the Orissa Grama Panchayats Act, 1964;

(ii) "**Form**" means a form appended to these rules;

(iii) "**Minor Forest Produce**" means any or all of the Minor Forest Produces specified in the Schedule appended to these rules;

(iv) "**Section**" means Section of the Act; and

(v) "**Training year**" means the seasonal year commencing from the first day of October and completing on the thirtieth day of September of the following year.

(2) All other words and expression used but not defined in these rules shall have the same meaning as have been respectively assigned to them in the Act.

3. Regulating procurement and trading of minor forest produce. - (1) The Grama Panchayat shall have the power to regulate procurement and trading of minor forest produce whether produced in Government lands and forest areas within the limits of the Grama or collected from Reserve Forests and brought into the Grama.

(2) In case of the forest areas where Vana Sanrakshyana Samiti has been formed the Grama Panchayats shall give priority to such Samities and its members in the matter of collection and trading of minor forest produce.

4. Registration of trades. - (1) Any person intending to procure Minor Forest Produce from the primary gatherers or to trade in minor forest produce within the limits of Grama during any trading year shall register himself as a trader in Minor Forest Produce in the Grama Panchayat.

(2) Any person intending to be registered as a trader in minor forest produce shall apply to the Grama Panchayat in Form No.1. All such applications shall be placed before the Grama Panchayat immediately in its next meeting and with the approval of the Grama Panchayat the Sarpanch shall register the applicant as a trader in minor forest produce for one trading year ending next September and grant a Certificate of Registration in Form No. 2 to that effect.

(3) The names of all the traders of minor forest produce registered under Sub-rule (2) each year shall be recorded in a Permanent Register to be maintained in Form No. 3 in the Grama Panchayat.

(4) At the time of filing of application under Sub-rule (2) the applicant shall deposit with the Grama Panchayats the required registration fees for each item of Minor Forest Produce applied for.

(5) No application for registration shall be entertained if the required fees has not been deposited under Sub-rule (4)

(6) The fees for registration for every item of Minor Forest Produce shall be such as may be notified by Government from time to time.

5. Fixation of minimum price of the minor forest produce. - (i) (a) In the month of September every year the Panchayat Samiti shall, by adopting a resolution to that affect., fix-up the minimum price of procurement of different Minor Forest Produces payable to the primary gatherers during the next trading year, which shall be applicable to all the Grama Panchayats within the Block;

Provided the Grama Panchayat shall be competent to modify the minimum price so fixed under this Sub-rule or Sub-rule (3) by the Panchayat Samiti according to the local need by adopting a resolution to that effect.

(b) The representatives of Divisional Forest Office, Tribal Development Cooperative Corporation, Orissa Forest Development Corporation and Tribal Co-operative Marketing Development Federation of India Ltd., shall be invited to the meetings convened under this sub-rule or under Sub-rule (3).

(2) The minimum price fixed under sub-rule (1) or Sub-rule (3) shall be notified in the notice board of the Panchayat Samiti and copies thereof shall be communicated to the Collector, Divisional Forest Officer, District Panchayat Officer, Sub-Collector and all the Grama Panchayat within the Block.

(3) If at any time or in any case it appears to the Collector that a Panchayat Samiti has failed to fix up the minimum price for procurement of Minor Forest Produce under Sub-rule (1) the Collector shall convene a Special Meeting of the Panchayat Samiti preferably in the month of October to fix-up the minimum price of procurement of Minor Forest Produce.

(4) On receipt of intimation under Sub-rule (2) regarding fixation of the minimum procurement price of the Minor Forest Produce fixed under Sub-rule (1) or (3) the Grama Panchayat shall place the same before the Grama Sabha in its next meeting for ratification.

6. Furnishing of returns. - (1) A trader registered under these rules shall furnish a monthly return of Minor Forest Produce to the Grama Panchayat within fifteen days of the following month in Form No. 3.

(2) Within one month of the closure of the trading year the dealer shall also file an annual return of the Minor Forest Produce for the trading year in Form No. 3.

(3) The Grama Panchayat shall communicate a copy of the annual return received under sub-rule (2) to the Forest Range Officer concerned.

7. Cancellation. - (1) If at any time or in respect of any case it appears to the Sarpanch, that a trader, registered under these rules, has failed to-

- (i) Pay the minimum price of procurement to the Primary gatherers fixed by the Grama Panchayat in Minor Forest Produce;
- (ii) register himself in the Grama Panchayat; or
- (iii) Comply with the conditions of registration; the Sarpanch shall issue a notice to such dealer or person, as the case may be to show cause as to why the registration shall not be cancelled or action shall not be taken against him for such illegal trading.

(2) If such trader or person fails to show cause within seven days of receipt of the notice or show cause which is not satisfactory, the Sarpanch shall conduct an inquiry and after giving the traders or the person an opportunity of being heard, place his inquiry report before the Grama Panchayat in its next meeting together with the explanation, if any, received from such trader or person for its decision.

(3) On consideration of the inquiry report of the Sarpanch and the explanation of the trader if the Grama Panchayat are satisfied that circumstances specified in Sub-rule (1) exist in relation to such trader or person, the Grama Panchayat shall resolve to cancel the registration of the dealer for the trading year and may also refuse to register him as trader for the subsequent trading years;

Provided that if the person is engaged in the trading of minor forest produce without registering himself in Grama Panchayat the Sarpanch or Secretary of the Grama Panchayat shall lodge necessary complaint before the Divisional Forest Officer concerned for taking appropriate action against the person concerned for such illegal trade under the appropriate provisions of law.

(4) In pursuance of the decisions of the Grama Panchayat under Sub-rule (3), the Sarpanch/Secretary shall cancel the registration of the trader and in case of the person carrying an illegal trade in Minor Forest Produce, the Sarpanch shall forthwith lodge the complaint with the concerned Divisional Forest Officer.

(5) If after cancellation of the registration under Sub-rule (4) it appears to the Sarpanch/Secretary that the trader is still continuing his trade in the Minor Forest Produce, the Sarpanch/Secretary shall report the matter to the Divisional Forest Officer for taking action against the person under the appropriate provisions of law.

(6) The item of Minor Forest Produce seized by the Divisional Forest Officer from the dealer or person shall be sold by public auction and the sale proceeds thereof be deposited under the appropriate Head of Account as provided under the Orissa Forest Act.

8. Appeal. - Any person aggrieved by the decision of the Grama Panchayat under these rules may prefer an appeal under Section 133 of the Act. The appeal shall be disposed of within thirty days from the date of admission of the appeal.

9. Deemed traders. - (1) Public Sector undertakings like the Orissa Forest Development Corporation, Tribal Development Co-operative Corporation and Tribal Co-operative Marketing Development Federation of India Ltd., shall be deemed to have been registered under these rules.

(2) Notwithstanding the relaxation provided under Sub-rule (1), the provisions of rules 6, 7 and 3 shall apply to these public sector undertakings.

10. Issuance of instructions. - The Government may from time to time, issue such instructions as occasion may require for,-

(a) smooth implementation of these rules and

(b) removal of any doubt or difficulties arising out of implementation of these rules.

Schedule
(See rule 2(i)(iii))

List Minor Forest Produces

1. Tamarind, de-seeded Tamarind, Tamarind seeds.
2. Mahua Flower
3. Hill Brooms
4. Thorn Broom (Jhadu or Ghoda Lanji)
5. Phula Jhadu
6. Broom Grass
7. Nux Vomica (Kochila Seeds)
8. Hardad
9. Bahada
10. Anla
11. Soap Nut (Ritha Phala)
12. Marking Nut (Bhalia)
13. Cleaning Nut (Nirmala)
14. Honey
15. Siali Leaves
16. Sabai Grass
17. Mango Kernel
18. Thatch Grass
19. Simul Cotton
20. Arrow Root (Palua)
21. Dhatuki Flower
22. Putrani
23. Sikakai
24. Jungal Jada or Gaba
25. Palasa Seed
26. Siali Seed
27. Indra Jaba (Korai Seed)
28. Gila (Seed and Coat)
29. Benachera

30. Bana Haladi
31. Gaba
32. Basil
33. Bana Kalatha
34. Makhena Seed (Kanta Padma)
35. Tala Makhana Seed
36. Baidanka Seeds
37. Baghanakhi Seeds
38. Kamala Gundi Fruit
39. Landa Baguli
40. Bela
41. Chiraita (Bhui Neem)
42. Khajuripata
43. Riohini Fruit
44. Bhurusunga Leaves
45. Phenaphena Fruit
46. Rasana Root
47. Sidha Fruit
48. Sethabari
49. Kitha Lal
50. Aundi Lal
51. Khelua Lal
52. Suam Lal
53. Eksira Fruit
54. Katha Chhatu (Mushroom)
55. Mat Reed(Sapa Masina Grass)
56. Anania Mula
57. Antia Pata
58. Nageswar Flower
59. Mankad Kendu
60. Atundi Fruit
61. Mahula Seed

- 62. Kusum Seed
- 63. Karanja Seed
- 64. Neem Seed
- 65. Char Seed
- 66. Chakunda Seed
- 67. Babul Seed
- 68. Baibirang Seed

Form No.1

[See rule 4(2)]

Application Form for registration of trading in Minor Forest Produce.

To

The Sarpanch Grama Panchayat

Sir,

I sri..... Village/Post.....do hereby apply for registration as a dealer in Minor Forest Produce in Grama Panchayat.

Detail of Trade

1. Name of the business organisation with full address
2. Relationship of the applicant with the organisation-
3. Applicants name/Fathers name/Permanent Address ;
4. The name of the Minor Forest Produce the dealer wants to deal;
5. Type of business;
Retail/Wholesale or both
6. Amount deposited for registration with registration with receipt number and date
7. Trading year for which registration is applied for
8. Name and address of the place where Minor Forest Produce to be stored

I hereby declare that.....

1. I Shall abide the rules and regulations framed by Govt, for trading in Minor Forest Produce.
2. I Undertake that I shall not default in making payment the registration fees and other dues fixed by the Grama Panchayat.
3. That facts stated above are true to the best of my knowledge and belief.

Yours faithfully,

Signature of the Applicant.

Received Rs (Rupees) only towards registration for vide receipt No dated.....

Secretary

Order

The application be placed in the next Grama Panchayat meeting for consideration.

Sarpanch
Grama Panchayat

Form No.2

[See rule 4(2)]

Certificate of registration for trading in Minor Forest Produce.....Grama
Panchayat.....

Sri.....Son of.....

Village.....Post.....Dist.....

Registered as a dealer in Minor Forest Produce.

1. Registration No.

2. Trading year for which the registration is granted.

3. Description of Minor Forest Produce to be dealt with by the dealer

(a)

(b)

(c)

(d)

Secretary

.....Grama Panchayat

Sarpanch

.....Grama
Panchayat

N.B : Rules and regulations of registration noted backside:-

Renewal Report

Date of renew	Trading year for which renewal is granted	Signature of Secretary	Signature of Sarpanch
(1)	(2)	(3)	(4)

Conditions of Registration

1. Registered Minor Forest Produces shall be purchased only from the Primary gatherers as per the price fixed from time to time.
2. While purchasing the Minor Forest Produce from the Primary gatherers the Registered dealer shall ensure proper weight of the produces so purchased and the full cost thereof shall be paid to the primary gatherers on the spot.
3. The registered dealer shall submit a monthly return in the prescribed form to the concerned Forest Ranger and the Grama Panchayat.
4. The registered dealer shall abide by all such guidelines as may be issued from time to time.

Form No.3
[See Rule 4(3)]
Minor Forest Produce
Monthly/annual Return.
For The Month/trading Year

Name of the dealer

Registration No.

Name of the Grama Panchayat:

District.....

Sl. No.	Item of MFP	Opening balance in Kg.	Quantity procured during the month trading year	Total in Kg.	Rate paid	Quantity sold or diverted during the period	Balance at the end of the reporting period
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

Declaration : I declare that the above information are true and correct to my knowledge.

Signature of the dealer.

Form No.4
[See rule 6(3)]
Register Of M.F.P. Dealers

Name of the Grama Panchayat:

Trading year:

Sl. No.	Name and address of the dealer	Registration No	Date of registration	Trading year	Remarks