ANNUAL ACTIVITY
REPORT
2018-19

Forest & Environment Department
Government of Odisha

Forest Cover Map of Odisha

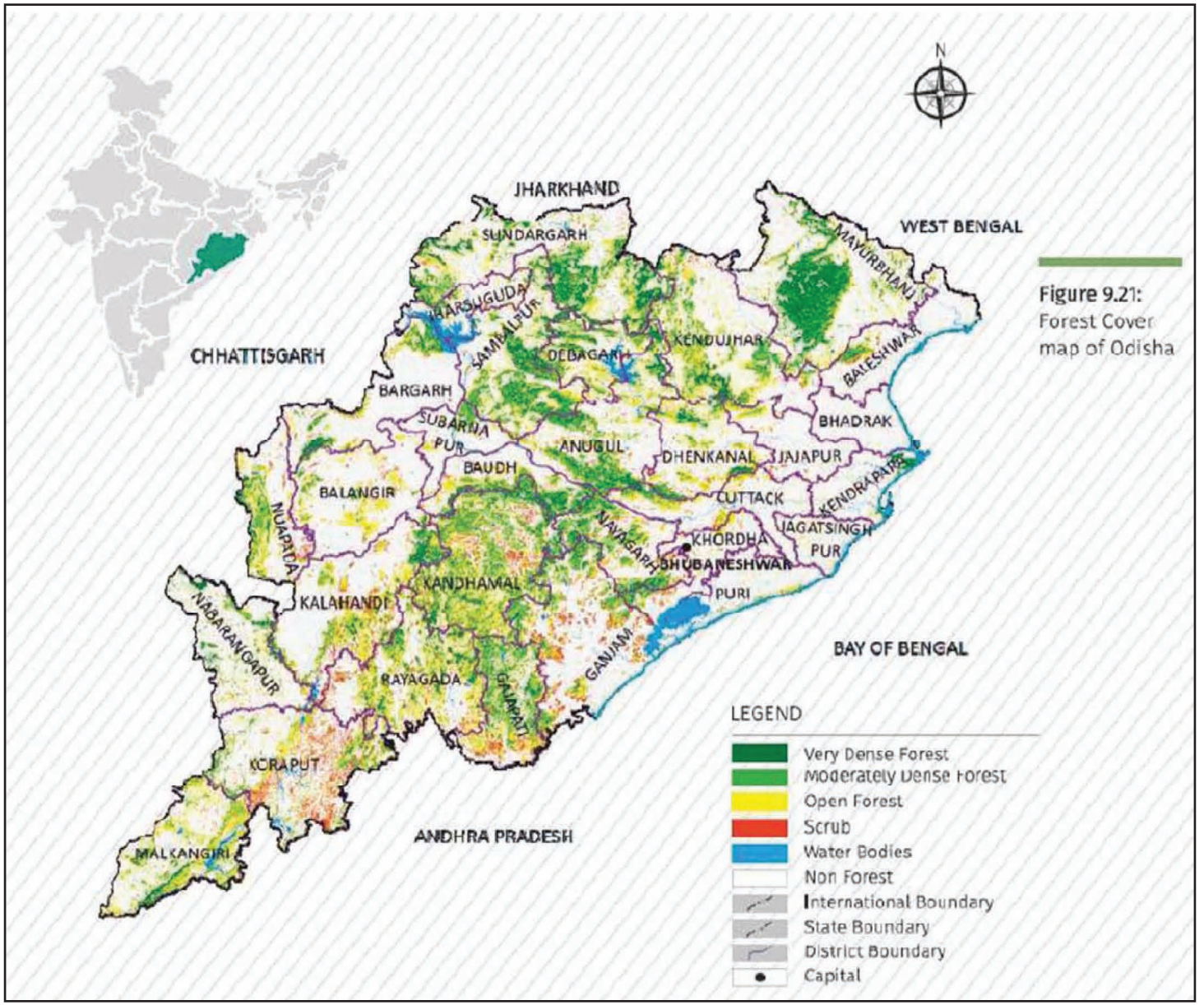

Figure 9.21: Forest Cover map of Odisha

Source : India State of Forest Report, 2017, FSI

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1. Introduction

The Forest & Environment Department is actively engaged in conservation and development of Biodiversity and Ecosystems in the State. The department is mandated to manage, conserve and protect forest and wildlife resources in the State through afforestation and regeneration of degraded forest lands, forest protection as well as socio-economic up-liftment of people in the forest fringe areas leading to sustainable management of forests and wildlife.

Forests have an important role in the economy of the State, particularly amongst the rural and tribal masses. Forestry activities contribute a lot to their food security and day-to-day livelihood. The pressure of human population and livestock on forests for timber, fuel wood, small timber, NTFP, collection of medicinal species and grazing in most places is much more and beyond the carrying capacity of existing forests. This vital resource is under continuous threat due to degradation, industrialization infra-structure development projects, mining, urbanization, etc. The rapid degradation of forests has created serious problems for the eco-system and the State is facing natural calamities like droughts, floods, and cyclones frequently.

2. Administrative Set up

The Forest & Environment Department in the State operates through a number of departmental formations and autonomous bodies. The field formations under the Forestry set up are organized under the Forest, Wildlife and Kendu Leaf wings. The Odisha Forest Development Corporation (OFDC) Ltd. acts as the commercial wing of the Department and discharges the function of disposing various forest produce like Kendu Leaf, salvaged timber, bamboo, etc. It also supplies timber, bamboo and firewood to the public.

The State has 8 Forest Circles & 37 Forest Divisions under the Principal Chief Conservator of Forests and 13 Wildlife Divisions with territorial jurisdiction and Nandankanan under the Principal Chief Conservator of Forests (Wildlife) and Chief Wildlife Warden. Besides, there are 3 Circles and 19 Kendu Leaf Divisions under the PCCF (KL) who are looking after collection and processing of Kendu Leaves. Further, there are 8 working plan Divisions, one Forest Resources Survey Division, one State Silviculturist at Bhubaneswar and one Silviculture Division at Rayagada, under the control of PCCF.

3. Forest and Tree Cover in Odisha

The State has a recorded forest area of about 61,204.17 sq. km which is about 39.30% of the Geographical area. Out of which, 37,443.60 sq. km. is under the control of Forest Department (26,873.66 sq. km. Reserved Forests, 9,175.15 sq. km. Proposed Reserve Forests, 1,085.22 sq. km. Protected Forests, 287.51 sq. km. Village Forests and 22.06 sq. km. Un-Classed Forests), 23,569.80 sq. km. is under the control of Revenue Department and 190.77 sq. km. of forests are under Private Ownership.

The Forest Survey of India (FSI), an organization of the Ministry of Environment, Forests & Climate Change, Government of India, is making an assessment of the Forest Cover of different States and Union Territories of the country by using remote sensing technology. Based on the data obtained from the satellite imageries, the FSI in 2017 has assessed that the total forest cover of Odisha is 51,345 sq. km., which is about 32.98% of the geographical area of the state. There has been an increase of 885 sq. km. of forest cover in the State since the assessment made by FSI in 2015.

4. Afforestation Activities during 2018-19

a) The achievement on afforestation as on 31st March, 2019 was AR-6,223.80 ha, ANR (with planting in gaps)–1,08,747.28 ha and ANR (Silvicultural Operation) – 1,33,560.84 ha with total achievements of 2,48,531.92 ha. Further, there is an achievement of 3,685.65 RKM of Avenue Plantation. During the year 2018-19, 326.53 lakh saplings have been planted, 142.46 lakh saplings have been distributed and 12.21 lakh saplings have been planted in the urban/ peri-urban areas of the State. Thus, the total seedlings planted and distributed under different afforestation schemes during 2018-19 was 481.20 lakh.

b) Green Mahanadi Mission (GMM)

Mahanadi is lifeline of Odisha & in order to enhance water availability and to improve livelihood, the river Mahanadi needs to be protected and conserved for ensuring its perennial flow for benefit of the people of the State. The State Government have been pleased to decide & launch "**Green Mahanadi Mission**" through massive participation of people's representatives and all stake holders during the year 2018-19.

During 2018-19 under Green Mahanadi Mission, 1374.75 ha of AR, 5,743ha of ANR, 40ha of Bald Hill Plantation, 200ha of Bamboo Plantation, 807 RKM (Row Kilometer) of Avenue Plantation, 5.742 lakh seedlings of Urban Plantation have been executed. Besides, 39.90 lakh seedlings were distributed free of cost to the beneficiaries.

Flagging off Mahanadi Ratha

Subarnapur Division

5. Forest Protection & Management

(a) Initiatives taken for protection of forest in the State

- The forest protection units in the field comprise of 50 Divisions (37 Territorial Divisions + 13 Wildlife Divisions), 283 Ranges (223 Territorial Ranges + 60 Wildlife Ranges), 1,017 Sections (827 Territorial Sections + 190 Wildlife Sections) and 3,683 Beats (3,082 Territorial Beats + 601 Wildlife Beats).
- Each Division, Range, Section and Beat is manned by Deputy Conservator of Forests, Forest Ranger, Forester and Forest Guard respectively.
- There are 19 APR units deployed in 19 vulnerable Forest Divisions to assist forest staff in protection activities. These Divisions are Keonjhar, Angul, Athgarh, Baripada, Dhenkanal, Sambalpur, Rairakhol, Sundargarh, Puri, Nayagarh, Ghumsar (South), Ghumsar (North), Parlakhemundi, Boudh, Rayagada, Kalahandi, Jeypore, Khariar and Bolangir.
- In to 199 Forest Check Gates have been set up for checking of vehicles and prevention of smuggling of forest produce on transit.
- 91 Forest Protection Squads, 65 Para Forest Staff Unit and 216 Fire Protection Squads have been constituted under different Schemes involving 910 nos., 1,950 nos. and 2,160 nos. of local youths respectively for forest protection activities in different Forest Divisions of the State.

- 590 nos. of VHF stations and 880 nos. of walky-Talky are in operation in the State for strengthening communication network to be used for monitoring protection activities.
- 5,866.50 Kms of forest road have been maintained, 567 culverts, 1,224 causeways have been constructed to facilitate mobility for forest/ wildlife protection.
- 1,121 nos. of Beat Houses, 291 nos. of Forester's Quarters, 78 nos. of Range Office-cum-Residence, 97 nos. of Forest barracks and 51 nos. of Malkhanas have been constructed out of CAMPA funds.
- So far, 91 nos. of vehicles (four wheelers) and 261 nos. of motor cycles have been purchased out of CAMPA funds for exclusive use in forest protection in vulnerable areas.
- The Orissa Forest Act, 1,972 has been amended as "The Orissa Forest (Amendment) Act, 2010", where in the compounding fee has been enhanced from Rs.100/- to Rs.5,000/-.
- Rewards are being given to informers, staff, Public etc as per "Reward for detection of Forest Offence Rules, 2004" to encourage them to cooperate in forest protection activities.
- During 2009-10 and 2011-12 financial year 2,149 nos. of Forest Guards and 558 nos. of Foresters are recruited in State Forest Department for protection of forests.
- In addition to this, for protection of Berbera and Dhuanali forests from the claws of forest mafias, 25 nos. of Forest Guard and 04 nos. of Foresters have been recruited to assist two platoons of Odisha Special Striking Force in the State.

(b) Joint Forest Management programme (JFM):

About 12,168 sq. km of forest area have been brought under Joint Forest Management (JFM) programme through 13,182 nos. of Vana Surakshya Samities (VSSs) involving 16,16,109 nos. of families for protection of forests under usufruct sharing mechanism. Besides, 542 nos. of Eco-Development Committees (EDCs) have been formed so far within and around protected areas to look after the protection activities. Odisha Forestry Sector Development Project (OFSDP), National Afforestation Programme (NAP), Green India Mission (GIM) and Ama Jangala Yojana (AJY) programmes are also being implemented through Vana Surakshya Samities (VSSs).

(c) Forest Fire Prevention and Management

The Forest Fire occurrence is properly monitored with satellite imaginary data duly analyzed at State Headquarter and communicated to field three times a day. Standard operating procedure on Forest Fire has been developed to control Forest Fire. Linkage of telephone numbers through WhatsApp among field officials upto Forest Block level with the Control Room functioning at forest headquarters for quick response on occurrence of fire

in forest area and non-forest area received through Forest Survey of India. The control room at forest headquarters is dedicated with a Toll Free Number **1800-3457-158** for use by public in 24x7 hours all through the year exclusively for disseminating information and douse forest fire. Monitoring made through control room whether action is being taken up or not by the field officer. The Standard Operating Procedure (S.O.P.) for prevention and control of forest fire in the state has been developed and circulated in local language to field officials for prevention and control of forest fire. During 2018 fire season, total 31,680 number of incidences were recorded. Forest fire control is taken up under two Schemes CAMPA and Centrally Sponsored Scheme (Forest Fire Prevention and Management).

An amount of ₹ 16.29 crores and ₹ 18.57 crores was allotted to different Forest Divisions towards control of forest fire in the state under CAMPA APO-2016-17 & APO-2017-18 respectively. For the fire season 2019, an amount of Rs.467.39 lakh, Rs.83.99 lakh under Tribal Sub-Plan & Rs.124.61 lakh under Special Component Sub-Plan of Centrally Sponsored Scheme under Forest Fire Prevention & Management have been approved for taking up activities relating to prevention of Forest Fire.

6. Tribal Sacred Groves

Special scheme has been launched by the Government of Odisha for supporting the initiatives of tribal people who are protecting and maintaining the Sacred Groves. So far, 2,161 nos. of Tribal Sacred Groves have been identified in this state & conservation measures like plantation of 2.16 lakh seedlings have been taken up. Under this scheme, activities including awareness-cum-consultation meeting, management plan preparation, green fencing, provision for signage by engraving on locally available stone / other material, protection of deities from desecration, enrichment plantation with species having religious significance, creation of permanent water source etc. are being carried out.

7. Working Plan

The geographical area of the State is 1,55,707 sq. km. out of which recorded forest area of the State in 61,204.17 sq.km. Out of the above forest area 35,071.32 sq. km., about 57.30% of the area is covered under Working Plan. Previously, there were 34 Working Plans in the State and even forest areas of five Divisions were covered under one Working Plan.

There are 50 Forest and Wildlife Divisions, out of which 6 Wildlife Divisions namely Chandaka WL, Sunabeda WL, Satkosia WL, Mahanadi WL, Hirakud WL & Similipal Tiger Reserve are managed under Wildlife Management Plans. The forest area of seven Wildlife Divisions namely, Bamra WL, Rajnagar WL, Puri WL, Chilika WL, Balasore WL, Bhadrak WL, Keonjhar WL partly having protected area are managed under Working Plans. Thus, the area of 37 Territorial and part of 7 Wildlife Divisions are covered under Working Plans.

At present 10 Forest and Wildlife Divisions namely Boudh, Sundargarh, Rourkela, Dhenkanal, Deogarh, Bamra (WL), Ghumsur (South), Ghumsur (North), Berhampur and Nabrangpur are having approved Working Plan and implementation duration of Working

Plans of 34 Forest and Wildlife Divisions have expired. The draft working plan of the rest two Divisions namely Nabarangpur and Ghumsur North Division have been submitted to Government of India for approval. The revision of Working Plan of rest 34 Divisions is under progress. Preliminary Working Plan reports of all the above 34 Divisions have already been approved by the Standing Consultative Committee and the preparation of the revised Working Plans are under progress.

8. Status of Forest Diversion Proposals

a) Diversion of Forest Land under Section 2 of Forests (Conservation) Act, 1980

Ministry of Environment, Forests & Climate Change, Govt. of India have accorded approval for diversion of forest land for non-forestry purpose under section 2 of Forest (Conservation) Act, 1980. As on 31.03.2019, about 53395.60 ha of forest land has been diverted under the above Act for different developmental projects, the details of such diversion are as under.

Name of the Sector	No. of Proposals	Forest Area Diverted (Ha.)
Irrigation	84	9777.46
Industry	28	4304.49
Mining	187	27259.93
Energy	06	116.45
Road & Bridges	41	466.49
Railway	19	2417.59
Defence	04	3865.25
Human Habitation	03	321.94
Transmission	66	3716.88
Others	48	1149.12
TOTAL	**486**	**53395.60**

b) Diversion of Forest Land under Section 3(2) of Forest Rights Act, 2006

Ministry of Environment, Forests & Climate Change, Govt. of India have authorized Divisional Forest Officers to grant permission for diversion of forest land up to 1.0 ha. in each case and which involves felling of trees not exceeding 75 per hectare for small projects of Govt. Departments in 13 categories as envisaged u/s 3 (2) of Forest Rights Act, 2006. As on 01.01.2019, about 810.919 ha of forest land has been diverted under the above Act for different developmental projects, the details of such diversion are as under.

Name of the Sector	No. of Proposals	Forest Area Diverted (Ha.)
Anganwadi	14	0.761
Electric Line	576	292.422

Water Harvesting Structure	32	8.435
Tank & other minor water bodies	22	9.223
Drinking water supply & water pipeline	35	13..934
Irrigation	37	10.278
Road	419	380.451
School	98	52.668
Community Centre	29	14.936
Vocational Training Centre	20	12.053
Hospital	12	3.773
Telephone Line	12	1.893
Others	18	10.092
TOTAL	**1324**	**810.919**

c) Diversion of Forest Land under General Approval by State Government

Ministry of Environment, Forests & Climate Change, Govt. of India have authorized the State Government to grant General Approval under Section 2 of Forest (Conservation) Act, 1980 for diversion of forest land up to 5.00 Ha. in each case (in two laning of roads the area is not limited to 5.00 Ha.) for creation of critical public utility infrastructure by Government Departments and which involves felling of trees not exceeding 50 per hectare in Left Wing Extremism (LWE) affected districts in 15 categories. As on 31.03.2019, about 78.348 ha of forest land has been diverted under the above Act for different developmental projects, the details of such diversion are as under.

Name of the Sector	No. of Proposals	Forest Area Diverted (Ha.)
Road	07	53.540
Stone Quarry	01	2.992
Police Establishment	04	3.972
Drinking Water Supply	02	1.790
Power Sub-Station	01	2.833
Irrigation	01	4.800
Transmission Line	01	4.261
School	01	4.160
TOTAL	**18**	**78.348**

9. State Compensatory Afforestation Fund Management and Planning Authority (State CAMPA), Odisha

The State CAMPA was constituted vide Notification No.13995/F&E dated 14.08.2009 with an objective of Conservation, Protection, Regeneration and Management of existing Natural Forests, Wildlife and their habitats and raising Site Specific Compensatory Afforestation, Penal Compensatory Afforestation etc. by utilization of funds deposited in Adhoc CAMPA towards Net Present Value for Diversion of Forest land for non-forestry purposes under Forest (Conservation) Act, 1980.

The state CAMPA, Odisha has formulated 9 Annual Plans of Operation starting with APO 2009-10. The last in this series is APO 2017-18 which is being implemented from July 2018. Since inception of State CAMPA in 2009, 8 nos. of APOs have been implemented with total receipt of Rs.2,644.15 Cr. From Ad-hoc CAMPA upto APO 2017-18, against which Rs.2,142.91 Cr. has been utilized i.e. 81% of total receipt of fund. An amount of Rs. 6,311.07 Cr. has been collected from user Agencies towards Net Present Value (NPV) of Forest Land diverted for Non-Forestry purpose as on 31.12.2018.

10. e-Green Watch

Integrated e-Governance Portal for Automation Streamlining and Effective Management of processes related to plantation and other forestry works- Web based monitoring portal 'e-Green Watch' has been launched for monitoring and evaluation of all activities undertaken out of CAMPA funds in the State. Each and every activities covered under Annual Plan of Operation are required to be Geo-referenced and uploaded onto the portal for their monitoring and evaluation by FSI & NIC. The process has already been initiated and likely to be completed soon to provide required data to make it concurrent monitoring and evaluation. All the assets created are being uploaded.

11. Ama Jangala Yojana

Ama Jangala Yojana (AJY) is a flagship programme of Government of Odisha, being implemented through Odisha Forestry Sector Development Society with the objective to promote sustainable forest management in the state. The project lays emphasis on livelihood support for the communities living in the forest fringe villages in participatory mode. Under AJY scheme, strengthening of the community based initiative for protection of the forest and creation of alternate livelihood opportunities to reduce pressure on forests is envisaged.

Orientation training on Forest Fire control in Satakosia DMU

SMC Training in Baragodha Range of Bargarh DMU

LPG connection distribution in convergence mode in VSS of AJY, Koraput DMU

The objectives of AJY, *inter-alia*, includes to conserve and restore degraded forests with active participation of communities living in the forest fringe areas by developing their skills through capacity building and creation of alternate livelihood opportunities. This will arrest further degradation of forests as the alternate livelihood opportunity will reduce their dependence on forests and thereby reduce pressure on forest.

The total approved outlay of the scheme is Rs.1,170.03 Crores, to be met from 4 sources, namely from CAMPA, (Rs. 511.32 Crores), State Plan (Rs. 285.18 Crores), MGNREGS (Rs. 322.18 Crores) and NRLM, (Rs. 51.19 Crores).

The scheme is presently being implemented in 23 Territorial and Wildlife Divisions of the State involving 3180 VSSs. All the activities are being carried out with active participation of local communities.

12. Odisha Forestry Sector Development Project, Phase-II, Banayana

Odisha Forestry Sector Development Project Phase- II is being implemented by Forest & Environment Department. The project is being funded by Japan International Cooperation Agency (JICA) and it is being executed through Odisha Forestry Sector Development Society. The project implementation period is from 2017–18 to 2026-27. The aim of the project is to enhance the forest eco-systems and the livelihood of the forest dependent communities residing in project villages. The project cost is Rs. 1000.30 crores. The project is being implemented in 14 Forest Divisions, falling in 10 Revenue Districts of the State, through 1200 joint forest management committees designated as Vana Surakshya Samities (VSSs). The implementing Divisions are Baripada, Rairangpur, Karanjia, Dhenkanal, Athmallik, Ghumsur (N), Ghumsur (S), Boudh, Subarnapur, Sambalpur, Jharsuguda, Sundargarh, Bamra (WL), and Rajnagar Mangrove Forest (WL) Divisions. The project will organise 3600 women Self-Help Groups (SHGs) for enhancing their income through different income generating activities.

The Forest Vision 2020 of Odisha Forest and Environment Department envisages promotion of Joint Forest Management (JFM) and Sustainable Forest management through Micro Plans. It also outlines the strategies to increase the forest cover outside the forest, mainly on private lands as well as non-forest public lands. Odisha Forestry Sector Development Project Phase-I, was implemented by Forest and Environment Department through OFSDS with the assistance from Japan International Cooperation Agency (JICA) from 2006-07 to 2014-15 in Joint Forest Management (JFM) mode along with community / tribal development. As a positive outcome of OFSDP-I the dense forest and moderately dense forest in the Project area increased significantly, as ascertained through analysis done by using satellite imageries.

In line with the Government policies and from lessons learnt from OFSDP-I, the OFSDP-II is being implemented to expand the achievements of OFSDP-I with emphasis on sustainable forest management, biodiversity conservation and community development.

OFSDP-II is one of the first 3rd generation JICA assisted forestry project in India. Based on the lessons learnt from OFSDP-I, improvement and innovations are envisaged in OFSDP-II.

Hi-tech Nurseries created under OFSDP-II

DMU Building of Boudh under OFSDP-II

DMU Building of Ghumsur South under OFSDP-II

Following strategic approaches are being adopted in order to achieve the project objectives:-

a) Micro Plan as a community development plan through strengthening of convergence.

b) Enhanced support for cluster business development and partnership ecosystem through Livelihood Resource Centre.

c) Gender Mainstreaming and

d) Creating Models for Community-Based Monitoring, Reporting, and Verification (CMRV) System for Sustainable Forest Management for Odisha.

It is envisaged to cover 57, 000 ha under plantations (51000 Ha under ANR and 6000 Ha under AR) under the OFSDP-II, which will lead 15% reduction in degraded forest area in the target VSS and enhancement of house hold income by 15% in the project area. Further Farm Forestry over 10,000 Ha land is also envisaged covering about 10,000 beneficiary famers. Further different government schemes will also be converged in the programme villages.

It is expected that by the end of the project, there will also be enough capacity building of the institutions created under OFSDP-II which will be sustainably managing their natural resources with equitable distribution of usufructs and will be capacitated enough to implement their own development plan in convergence. During the project period 1200 number of VSS will be organized out of which 355 VSSs are formed in Batch-I. It is proposed that 400 VSSs in Batch –II, 350 VSSs in Batch -III and 150 VSSs in Batch –IV will be formed.

Activities Proposed in OFSDP-II

Major activities proposed under OFSDP-II are divided into various components and sub-components.

a) Preparatory Work: Under the preparatory work component, one state level PMU has been set up and staffs are deployed in it as per the project plan in the first year. Along with this 12 DMUs and 50 FMUs have been set up. As per the plan, at the DMU level, 50 teams of NGOs are deployed for community development and Sustainable Forest Management. In the first year, 1200 VSSs have been identified and survey and

demarcation work has been initiated in for assigning areas to the first phase VSSs. Orientation programme on the project activities have been completed for the 12 DMUs and 50 FMUs.

b) **Sustainable Forest Management Plan:** Under this component, converge of 57000 ha of lands under ANR, AR and other plantations with community participation in 1200 VSSs have been envisaged. Farm Forestry over 10,000 ha in private and non-forest public land covering 10,000 farmers is proposed along with consolidation and demarcation of forest boundaries over 1898 km. The SFM activities also envisages establishment of 6 Hi-Tech nurseries, which is in progress.

c) **Sustainable Biodiversity Management:** Under this component two Wildlife Divisions viz., Bamra and Rajnagar have been selected. The SATOYAMA model is proposed to be initiated in Bamra (WL) Division. In Rajnagar (WL) Division, establishment of Eco-system based management and introduction of Eco- system Health Report card in Bhitarkanika area is being implemented.

d) **Livelihood improvement** component under OFSDP – II has been planned by constituting 3600 SHGs for promotion of income generating activities (IGA), covering all 1200 VSSs. A special entity would be established as Livelihood Resource Centre (LRC) to consolidate the IGAs and sustainability of community business models.

e) **Capacity Development** component under the project is planned for project executing staffs and 50 PNGO teams. Training of project functionaries on various aspects of natural resource management, farm forestry, community development, livelihood improvement activities etc are planned. Besides, a Livelihood Resource Centre will be developed under the project for sustainable livelihood related capacity development of various stakeholders in the state.

13. Ekamravan at Bindusagar

Ekamra Van with a garden of medical plants at Bindusagar has been developed under the Ekamra Garden Society since 2009-10. The objective for establishing this garden is not only to set up a site of tranquillity and harmony in an ambience of religious atmosphere but to create awareness on traditional herbal medicines among urbanites. It is an example of

Ekamravana at Bindusagar

quality work by local stone carvers and stone masons drawing inspiration from the ancient structures.

14. State Medicinal Plants Board, Odisha

a) To create awareness on conservation, use, cultivation and marketing of medicinal plants, State Medicinal Plants Board has been conducting a State Level Kalinga Herbal Fair and Regional level Kalinga Herbal Fairs in different Divisions of the State. During the current year i.e. 2018-19 so far four Regional Kalinga Herbal Fairs have been conducted at Banki of Cuttack District from 13th – 17th November, 2018 at Puri from 21st – 25th November, 2018, at Dhenkanal from 23rd – 27th December, 2018 and at Phulbani from 2nd – 6th January, 2019.

b) 40,000 nos. of Medicinal and Aromatic Plants Seedlings distributed to the public on cost plus basis at the rate approved by the PCCF, Odisha through 8 Nos. of Forest Divisions, namely Baripada, Balasore (WL), Bargarh, Bhadrak (WL), Boudh, Athamallik, Cuttack & Malkangiri .

c) Rs. 2.00 lakh has been released to DFO, Athagarh Forest Division for creation of a Medicinal Plant Garden inside the Saranda Bidyapitha, Banki. Similarly one more Medicinal Plants Garden is being developed at Boudh through DFO, Boudh who was placed fund in the previous year. The main objective of the scheme is to develop awareness and knowledge on different medicinal plant species including its conservation amongst school children and public.

d) Three nos. of four days duration training programmes conducted at Nrusingthnath (108 participants), Chandipur (110 participants) and G. Udayagiri (approximately 100 nos. of participants). Ayurvedic Traditional Practioners, Plant Lovers, NGO Members, VSS Members, Forest Officials and Forest Guards took training on "Cultivation, Conservation & Use of Medicinal Plants for Herbal Drug Preparation".

e) SMPB Stall was set up in the Arogya Fair, 2018 at Imphal, Manipur from 6th – 9th December, 2018 in which live rare Medicinal Plants of Odisha, Photo frames of rare Medicinal Plants, distribution of IEC materials, Video shows of SMPB activities, participation in scientific session etc were done.

f) SMPB supported the member convenor, District Implementation Monitoring Committee, NGC, Balasore for imparting training to ECO club members.

g) Free distribution of SMPB publication books, leaflets and NMPB guidelines in Odia was done amongst public and intrested farmers.

Herbal Fair, Banki

15. Odisha Bamboo Development Programme

Bamboo is one of the most productive and fastest growing plants. It has high rate of biomass production and carbon sequestration potential. The carbon captured by bamboo is sequestered effectively for a long time as durable bamboo products, such as boards, panels, floors, furniture, buildings, cloth, paper, activated charcoal, etc. Bamboos have more than 1500 documented applications. A bamboo setum has been established at Patrapada near Bhubaneswar where so far 63 species of bamboo have been planted.

During 2018-19, 3rd year maintenance of 1000 ha of bamboo plantation has been done.

16. Odisha Biodiversity Board

Odisha Biodiversity Board (OBB) under the administrative control of Forest and Environment Department, Government of Odisha, is functioning since 2009 to implement the legal provisions of Biological Diversity Act 2002. Odisha Biodiversity Board is mandated to implement the Biological Diversity Act, 2002 which envisages conservation of biodiversity, sustainable use of its components and fair and equitable sharing of benefits arising out of the use of biological resources and associated traditional knowledge.

The OBB has constituted 1,450 Biodiversity Management Committees (BMCs) at G.P. level in 26 districts of the State. Preparation of 104 People's Biodiversity Register (PBR) has been completed. The International Day for Biological Diversity, 2018 was celebrated on 22.05.2018 in IMAGE, Bhubaneswar. A Book on "Mandasaru: the biological paradise of Eastern Ghats of India" was released on the occasion. Section 37 of the Biological Diversity Act, 2002 provides for declaration of BHS (Biodiversity Heritage Sites) in the State. As per rule 20(2) of Odisha Biological Diversity Rules, 2012, Odisha Biodiversity Board has notified the guidelines in the official Gazette of Odisha. In this regard "Mandasaru" which is coming under Raikia Block of Kandhamal District has been declared by the State Government as "Biodiversity Heritage Site". Other such sites have also been identified and efforts are going on for the same purpose.

Celebration of International Day for Biological Diversity 2018 with participants and guests

17. Wildlife Organisation

Accelerated developmental activities and promotional aspects of industries added with ever increasing anthropogenic pressure has created a challenge for protection of wildlife and its habitats. As a result, human and wild animals' confrontations are taking place quite often. In order to minimize man-animal conflict and to protect the life and properties of human beings as well as wildlife, the wildlife organization has initiated a number of steps.

Celebration of International Day for Biological Diversity 2018 with participants and guests

a) **Eco-tourism :** During 2018-19 development of ecotourism activities i.e. creation of new infrastructure, renovation and maintenance of existing facilities and other amenities have been undertaken in 40 different locations across the State with financial assistance from State Budget. At present, the facility for night stay accommodation is available in 40 sites, 283 rooms to accommodate 609 persons. 450 nos of EDC / VSS member have been engaged for livelihood support. Now the online booking facility is available for the above destinations through www.ecotourodisha.com. This facility was available with effect from 01.04.2016. During the financial year 2018-19, Rs. 557 lakhs has been realized from 19,931 nos. of tourists who visited the facilities.

b) **Rationalization of boundary Satkosia Gorge sanctuary :** Rationalization of boundary has been made after excluding an area of 186.96 sq km (104 villages excluded) and inclusion of the area of adjoining RF/PRF to the extent of 359.799 sq km, finally computing the area of Satkosia Gorge sanctuary from 795.52 sq km. to 968.35 sq km. and approved by Government. After alteration of boundary and change of forest area of Satkosia Gorge Sanctuary, the area of the Satkosia Tiger Reserve is 1136.70 sq km.

c) **Restructuring of Chandaka-Dampara Wildlife Sanctuary:** Government have transferred the administrative / management control over Chudanga Reserved Forest

Ecotourism at Badmul, Mahanadi Wildlife Division

Daringbadi Tribal Cottages

(531.76 Ha) and Krushnanagar Protected Forest (72.84 Ha) part of Chandaka - Dampara Sanctuary to the Director, Nandankanan Biological Park pursuant to the recommendation of SC-SBWL in its 5th meeting held on 29.10.2018 for better administration and management.

d) **Rationalization boundary of Bhitarkanika Wildlife Sanctuary**: Proposal for Rationalization of boundary of Bhitarkanika Wildlife Sanctuary has been finalized by Standing Committee of State Board for Wildlife held on 29.10.2018 by excluding an area of 54.45 sq km (52 villages) and inclusion of the area of adjoining RF/PRF to the extent of 55.45 Sq km finally computing the area of Bhitarkanika (WL) sanctuary from 672.00 sq km to 673.00 Sq km. The proposal has been approved in-principle by Standing Committee of National Board for Wildlife.

e) **Proposal for bringing Kunki Elephants from Karnataka for Monitoring Tigers in Satkosia Tiger Reserve, Angul**: Proposal to obtain 3 (Three) numbers of elephants free of cost from Karnataka with the transportation cost only and engagement of 6 field personnel (3 Mahouts and 3 Asst. Mahouts) of Karnataka State in Satkosia (WL) Division against the vacant post of Mahouts and Asst. Mahouts in the Wildlife Organization for systematic monitoring of tigers in Satkosia Tiger Reserve, Angul and to utilize in management of man- animal conflict was submitted to Govt. The said proposal has been approved by the Government.

f) **Initiated Tiger Relocation Programme: (Recovery of Tigers in Satkosia Tiger Reserve):** The proposal for recovery plan for reviving the tiger population in Satkosia Tiger Reserve, Odisha has been approved by National Tiger Conservation Authority, Government of India in 2016. The Project was formulated with involvement of Wildlife Institute of India, Dehradun as per the instruction of NTCA. The 1st pair of tigers was reintroduced in Satkosia Tiger Reserve in 2018 with active involvement of National Tiger Conservation Authority, New Delhi, Wildlife Institute of India, Dehradun, Government of Odisha and Government of Madhya Pradesh. It is one of the six recovery sites identified by NTCA.

g) **Declaration of Debrigarh Tiger Reserve**: It has been proposed to declare Debrigarh Sanctuary as Tiger Reserve comprising 503 sq. km., Compliance to the objection raised by NTCA dated 13.08.2018 has been submitted to NTCA on 18.09.2018 for consideration.

h) **Declaration of Sunabeda Tiger Reserve:** In principle approval of National Tiger Conservation Authority was accorded for constituting the Sunabeda Tiger Reserve in Nuapada District vide letter No. 15-01/2007-

NTCA (Part) dated21.08.2008. The Government in F&E Department has also transmitted the above proposal to NTCA for their kind consideration and recommendation under 38 (V) of Wildlife (Protection) Act, 1972 vide F&E Department letter NO. FE-WL-WLF-0015-2017/15576/F&E, dated 18.07.2018.

i) **Village relocation**: Relocation of villages form critical protected areas is an important step for conserving flagship species like Tigers which require vast inviolate habitats. It not only makes the Protected Area inviolate but also enable the villagers to access various development schemes of the State. During 2018-2019, three villages comprising of 181 families from Karanjia and Hirakud Wildlife Divisions were relocated from Tiger Reserves and Sanctuaries of the State.

j) **Compassionate grant payment- Simplification of procedure:** As per previous rule in case of human death, the Officer-in charge of the police station and Forest Range Officer had to submit their enquiry report simultaneously within three days of occurrence to the Divisional Forest Officer. After receiving these enquiry reports the Divisional Forest Officer was sanctioning compassionate grant in favour of the victim within 30 days from the date of lodging the First Information Report in the police station. This procedure was not working properly and considerable hardship was faced by the heirs of the deceased. Now as per the latest rule, after receiving the enquiry report from the Range Officer only, the Divisional Forest Officer shall sanction compassionate grant to the victim within 15 days from the date of lodging the First Information Report before the Range Officer concerned. There is no requirement of lodging FIR in police station as required earlier.

18. Kendu Leaves

The Kendu Leaves operation like bush cutting, repair and maintenance of Phadies, procurement, drying and storage of Kendu Leaves and processing and binding have been carried out as per the schedule. These operations have generated 150 lakh person days of employment during the lean season of employment i.e. summer months. About 8, 24,457 nos. pluckers and 23,964 nos. binders mostly belonging to weaker sections of society and

Munshi giving instruction to bush cutter

Kenduleaves at mature stage

Kerry tendering at Phadi

Drying of Kerries

largely of women have been engaged in KL operation. For the crop year 2018 a sum of Rs.157.37 crores towards Procurement Price and Rs. 23.92 crores towards bush cutting have been disbursed through respective bank account of the pluckers and binders. A remarkable achievement of the K.L. organisation during 2017 was that all the enrolled pluckers have opened bank accounts/postal accounts and their bonus dues of Rs. 159.23 crores at that rate of 100% of Kerry procurement cost had been released through their Bank Account. Incentive awards of Rs. 5.30 crores to the Binders and Seasonal Staff at the rate of 20% of wages earned has been disbursed during 2016crop year through online payment.

A Welfare Trust Fund has been set up for the pluckers and binders that provides compassionate grant of Rs.1,00,000/- in case of death & disability, marriage assistance of Rs. 25,000/- (maximum 2 major daughter), medical assistance up to Rs. 2,00,000/- (in case of severe disease like treatment/operation of heart, Kidney failure treatment, cancer and Gall bladder treatment) and educational scholarship to the children (maximum 2 children) of eligible Pluckers & Binders. Till date this office has already released Rs. 9.21 crore towards Marriage Assistance for marriage of 3685 nos. of daughters of KL Pluckers and Binders and Rs. 44.06 crore towards Education Scholarship for 34242 nos. of children of KL Pluckers & Binders for higher education. Similarly, a Trust Fund has been constituted for Seasonal Staff as well and the above benefits (except marriage assistance) are being provided to them.

Besides the above amenities, all 8,24,457 nos. of pluckers are covered under Pradhanamantri Jiban Jyoti Bima Yojana and Pradhanamantri Surakshya Bima Yojana, that provides life insurance, disability insurance and scholarship to their school going children and 18,028 nos. of Seasonal Staff were covered under Biju Pattanaik Group Insurance that provides life insurance and disability insurance.

19. Odisha Forest Development Corporation Ltd. (OFDC Ltd.)

a) Timber Trade: Timber and firewood trade are the core activity of OFDC Ltd. Main source of timber and firewood is from the forest coupes delivered by forest department as per the prescriptions of working plans. Harvesting of timber from coupes ensures

good health and hygiene of forests. OFDC Ltd. also receives timber and firewood salvaged from forest floor, timber seized in forest offence cases, tenant timber and from developmental project areas like roads, railways, refineries, mining etc. During the year 2018-19, 34445 cum of timber & 29223 stacks of firewood were produced and a revenue of Rs. 126.07 crore was received from sale of timber and firewood.

b) **Kendu leaf Trade:** The Kendu leaf is collected and processed by Kendu leaf Wing of the Forest Department and marketed by the OFDC after its nationalisation since 1973. After deregulation of Phal Kendu leaf in Malkanagiri District Jeypore KL Division and Nabarangpur District from 2014 & 2013 crop year respectively, working of Process KL in Keogan & M. Rampur KL range of Bhawanipatna Division has also been deregulated from November, 2018. OFDC is marketing Kendu leaves of those areas which are collected by the KL organisation. During the year 2018-19, a total quantity of 2.733 lakh quintal of Kendu leaves was sold with a sale value of Rs. 464.62 crore.

c) **Bamboo Trade:** Bamboo is a nationalised forest product in the State. Production is done either by the OFDC or through Raw Material Procurers (RMPs). Most of the Bamboos in the form of Industrial Bamboo [I.B] is sold to Paper Mills whereas commercial Bamboos [C.B] are harvested for supply to local people and Bamboo artisans at concessional rate. During the year 2018-19, 3748.78 sale unit of Industrial Bamboo and 3,06,562 number of Commercial Bamboo were produced from different Forest Coupes of the State.

d) **Plantation & Landscaping:** OFDC is also engaged in raising avenue and block plantations, plantations around industrial and urban areas, landscaping etc for various industrial units like IOCL, Dhamra Port, NHAI, East Coast railways, Airport Authority of India, MCL, SAIL, Landscaping at Kalinga Stadium, Utkal University and Nayagarh Stadium etc. During the year 2018-19, total 5,66,409 numbers of seedlings were planted by the OFDC Ltd. at different places.

e) **Processing of MFP items and other value added products:** OFDC is also processing MFP items like honey. It is also producing pickles from mango, lemon etc, squash and a non-carbonated soft drink made from Honey, ginger and lemon. These items are sold through various outlets of OFDC and also through authorised selling agents. There is good demand of all these products in the market throughout the state. Keeping the demand in view, OFDC has going to set up a Honey Processing Plant, RTS Soft Drink Plant and an Automated Canning Unit at Jashipur of Mayurbhanj District very soon.

f) **Saw Mill Operations:** OFDC Ltd is operating 9 Saw Mills at Berhampur (Ganjam), Khapuria (Cuttack), Jeypore (Koraput), Mathili (Malkangiri), Nabrangpur, Remed (Sambalpur), Muniguda, Kantabanjhi and Rourkela for meeting sawing requirements of the general public.

g) **Ecotourism:** OFDC has been appointed as the Nodal Agency for promotion of Ecotourism in the State and to provide one stop solution for this purpose. During the

year 2018-19, there are 4938 nos of online booking with total transaction value of Rs.5.37 Crore was done which was nearly twice the business done over the previous year.

OFDC has developed a natural park at Jaydev Batika in the outskirt of Bhubaneswar. Jaydev Batika is an aesthetic park having more than 300 native and exotic species with medicinal herbs, shrubs, climbers, grass and Bamboo spread over an area of 39 Hectares. During the financial year 2018-19, Rs. 1.97 crore has been generated by the OFDC from the Park.

20. Environment Wing

Environment Wing is the Nodal Agency for environmental management and conservation in the State.

a) Appellate Authority:

The State Government in Forest & Environment Department have constituted Appellate Authorities under the Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981 and Bio-Medical Waste (Management & Handling) Rules, 1998 to hear appeals preferred against any order made by the State Pollution Control Board, Orissa under the aforesaid Acts and Rules. The Authority has been functioning under the Chairmanship of one sitting Judge of Hon'ble High Court, Orissa.

b) State Environment Impact Assessment Authority, (SEIAA) and State Expert Appraisal Committee (SEAC):

On the recommendation of the State Government, the Central Government has notified the State Environment Impact Assessment Authority (SEIAA) and State Expert Appraisal Committee (SEAC) to examine and grant environmental clearance to category "B" Projects, as specified in the Environment Impact Assessment Notification, 2006. Depending on submission of project proposals, the SEAC examine the 'B' category projects and consider all environment aspects of the project proposal and recommend for grant/ rejection of the proposals to SEIAA, which is the competent Authority to accord or reject environmental clearance. So far Environmental Clearance has been granted to 528 projects and an amount of Rs. 4,40,02,000/- has been received towards scrutiny fees, which has been deposited in the Govt. Treasury.

c) Climate Change Action Plan:

The State Government is implementing Climate Change Action Plan to combat the challenges due to Climate change. Forest & Environment Department is the Nodal Department for co-ordinating the implementation of various activities envisaged under State Climate Change Action Plan. The second iteration of Climate Change Action Plan2018-23, which has been prepared involving 12 identified sectors, has been finalized during this year and is in operation with other 11 different stakeholder Departments. Odisha is the 1st State in the

Country to have got the 1st Green Climate Fund (GCF) for 34.35 million US dollar covering 16 million SC/ST households in the vulnerable tribal areas of the State. The State is also the first of its kind to get clearance for the 2nd Green Climate Fund (GCF) for 130.30 million US dollar. It has been planned to implement this project in coastal areas of three Indian States including Odisha covering approximately 10 million beneficiaries.

21. Odisha Coastal Zone Management Authority

The Authority has been constituted by the Government of India to enforce the Coastal Regulation Zone Notification and to monitor violations thereof. The Authority considers projects to be taken up in the coastal zone and grant/recommend CRZ clearance. During 2018-19, CRZ clearance has been granted to 12 projects and 3 proposals have been recommended to MoEF&CC for consideration.

22. Odisha Environment Management Fund Trust

A Trust namely "Orissa Environment Management Fund" constituted in the year 2006 for the purpose of taking up ameliorative steps for rehabilitations of degraded environment. During 2018-19, an amount of Rs.4,69,74,992/- has been released to seven project proposals under this programme.

23. Odisha Wetland Development Authority

Odisha Wetlands Development Authority has been constituted to conserve and protect the eco-system of important wetlands and formulate policy guidelines for holistic management of wetland of the State. It is monitoring the activities relating to the conservation management of wetlands which identified to be ecologically important. It also monitors the activities undertaken in the field under assistance from State Government and Government of India.

24. State Pollution Control Board

The State Pollution Control Board (SPCB), Odisha was constituted on July, 1983 and was entrusted with the responsibility of implementing the Environmental Acts, particularly the Water (Prevention and Control of Pollution) Act, 1974, the Water (Prevention and Control of Pollution) Cess Act, 1977, the Air (Prevention and Control of Pollution) Act, 1981 and the Environment (Protection) Act, 1986. Several Rules addressing specific environmental problems like Hazardous Waste Management, Bio-Medical Waste Management, Solid Waste Management, e-Waste Management, Plastic Waste Management, Environmental Impact Assessment etc. have been brought out under the Environment (Protection) Act, 1986. The SPCB also executes and ensures proper implementation of the Environmental Policies of the Union and the State Government. The activities of the SPCB broadly cover the following:

- Planning comprehensive programs towards prevention, control or abatement of pollution and enforcing the environmental laws.
- Advising the State Government on any matter concerning prevention and control of water and air pollution.

- Environmental monitoring and research.
- Creating public awareness.

The achievements and activities of the Board during period of report are as follows.

a) **Industrial Pollution Abatement and Control through Consent Administration**: Implementation of the on-line consent management system (from receipt of application to consent order) for all industries, mines and on-line authorization management for Hazardous Waste, Solid Waste and Health Care Establishment has been made. So far, online monitoring and data transmission system has been installed in 143 industries and 24 mines. The Fly Ash Resource Centre (FARC) has been setup in the State Pollution Control Board for promoting safe management and utilization of fly ash in the State. The Sea Worthy Pollution Monitoring Vessel (Sagar Utkal) with an in-built Laboratory, procured under the ICZM Project has been registered.

b) **Regulation of Hazardous Waste Management**: The Board has granted authorization to 108 hazardous waste generating units for collection, storage, treatment and disposal of hazardous wastes whereas show cause notice has been issued to 02 nos. of units for violation under the said Rules.

c) **Management of Bio-Medical Waste:** The Board has granted authorization to 603 Health Care Facilities (HCF) under the provisions of the Bio-Medical Waste Management Rules, 2016 with conditions for proper management, segregation, handling, treatment and disposal of biomedical wastes.

d) **Management of Plastic Waste:** The Board is consistently vigilant on carry bag manufacturing units for their compliance with the statutory provisions of the Plastic Waste Management Rules. So far, 13 plastic product manufacturing units (08 producer, 04 brand owner and 01 re-processor) have been registered with the Board during the reporting period.

e) **Management of Municipal Solid Waste:** The Board has issued show cause notices to 03 non-complying Urban Local Bodies during the reporting period. In total 29 ULBs are having valid authorization from the Board and rest ULBs have been instructed to apply for authorization.

f) **Planning and Monitoring:** Board is regularly monitoring the river water quality at 129 stations on 11 major river systems of the State. Monitoring of ground water quality at 48 stations of 11 towns i.e., Cuttack, Bhubaneswar, Puri, Berhampur, Sambalpur, Paradeep, Angul, Talcher, Ib valley-Jharsuguda area, Sukinda and Balasore has also been conducted in respect of 32 water quality parameters. Bio-monitoring at 21 stations of 08 major rivers i.e. Mahanadi, Brahmani, Rushikulya, Subernarekha, Budhabalanga, Kolab, Vansadhara and Nagabali has been monitored to assess the biological health of these river systems. Ambient air quality at 37 stations of 17 important towns and industrial areas has been assessed.

25. Chilika Development Authority

Chilika is one of the important hot spot of biodiversity and it shelters a number of endangered species. The lagoon is an avian grandeur and wintering ground of more than one million migratory birds and is a Ramsar site. The highly productive eco- system with its rich fishery resource sustains the livelihood of more than 0.2 million fisher folk who live in and around the lagoon. Chilika Development Authority is carrying out the most desired and appropriate restoration measures to save the unique wetland of International Importance.

The restoration measures of Chilika Lagoon mainly consist of (1) Catchment treatment (2) Desiltation of Balugaon channel, Lead channel and ferry route channel (3) Fishery Resources development (4) Socio-economic development of fishermen in and around Chilika lake (5) Opening of artificial mouth (6) Improvement of Nalabana eco-system, (7) Development of Communication network, etc. The activities were taken up in the past with financial assistance of Special Problem Grant.

In view of the decision of Govt. of India for discontinuance of the State Specific Schemes, Govt. had been pleased to approve the action plan under State sector scheme **Eco-restoration and sustainable management of Chilika Lake and its catchments** for 5 years (2015-2020) with a financial outlay of Rs. 32.75 crores for continuance of major important activities of CDA like watershed management, maintenance of Lake Hydrology, bio diversity conservation, scientific monitoring of the lake, infrastructure development of fishers, strengthening of the PFCS to promote responsible fishery, etc.

The activities have been undertaken under the following components of the above scheme during 2018-19.

a) **Participatory Watershed Management:** 10 nos. of most erosion prone micro watersheds have been identified in Chilika Block and Banapur Block and necessary activities have been undertaken such as Soil Conservation measures, Rain Water Management, Capacity Building of Village Level Stake Holders, Building of Village Level institutions, Creation of Water Bodies, etc.

b) **Improvement of water exchange and salinity gradient by desiltation and Enhancement of hydrological regimes:** Chilika being a very shallow Lake, depth of water varies from 0.38 to 6.20 meter Maximum silt is being brought to the Lake from the catchment areas of river Mahanadi through its rivulets. To reduce the silt load, for maintenance of a salinity gradient of the Lake as well as to maintain the dredged channels (Lead channel, Muggarmukh channel, Balugaon channel etc) and to maintain salinity gradient, facilitate proper flushing out of sediment, auto recruitment of juveniles, breeding & migration of economic species, massive de-siltation is essential. For the above propose, the desiltation of channels through dredging is under progress.

c) **Biodiversity Conservation:** Chilika is well known for the largest congregations of migratory avifauna in India. It is an avian grandeur which hosts over 225 species of

Nalaban

Kalijai Temple

birds during the peak migratory season, out of which at least 97 species are intercontinental migrants. The Nalaban Island situated within the Lake, is notified as a Bird Sanctuary under Wildlife (Protection) Act, receives the largest congregation of birds. The Nalabana Island inside Chilika Lake spreads over an area of 15.53 sq. km. has been notified as a Wildlife Sanctuary in 1987 by the Govt. of Odisha. Restoration and improvement of Nalabana Eco-system, is being supported by CDA through activities like assistance to the Chilika Wild Life Division for protection of the migratory bird, census, habitat improvement and research.

Irrawaddy Dolphins is the flagship species of Chilika Lake. The population inhabiting the lagoon is perhaps an isolated population and thus raises many crucial ecological questions about long-term genetic variability, population viability and long-term survival etc. 113 Irrawaddy Dolphins were recorded inside Chilika Lagoon during 2019 census.

d) **Fishery Resource Development:** The fishery is one of the most important natural resources of Chilika that supports the livelihood of more than 2.00 lakh fisher-folk. The fisheries & ancillary activities of the Lagoon do make significant contribution in the state economy. Since Chilika is a highly dynamic ecosystem, for sustainable management of the fishery resources of this Lake, basic key information and data need to be generated periodically. These basic and key data/information are essential for formulation of the strategy for sustainable management of fishery resources of the Lake. A detailed fisheries investigation / study in the Chilika was undertaken by the Central Inland Fisheries Research Institute (CIFRI), Barrackpore (WB). It is proposed to continue to monitor the fish yield potential study, fishery resource assessment, demolition of un-authorized gherries, research studies on crab and shrimps, construction of fish landing centers, capacity building and training of fishermen etc.

e) **Wetland Research, Training, Monitoring & Assessment:** Monitoring & assessment is the backbone of wetland management. Chilika Lake is a complex and dynamic ecosystem. The salinity gradient of the Lake is influenced by influx of freshwater from

the catchment area and ingress of saline water with the every tidal cycle. The biological phenomenon occurring in aquatic system pertaining to biological regime such as plankton, algae, macrophytes, fish, prawn, crab and other benthic bio-data etc. are directly or indirectly influenced by the intrinsic properties of water. Considering the fragile ecosystem of the Lake, a close monitoring of the Lake is carried out to assess the impact of various management interventions on the Lake, which commenced from 1996.

For a long-term management strategy of the Lake, it is essential to generate the scientific data to bridge the gap and to develop an integrated database. The basic objective of the Wetland Research Centre is to facilitate the studies and research in the field of limnology, marine biology, hydrology, coastal influence on the Lake, floristic and faunistic study, weed analysis, ecological and mathematical modelling, advanced oceanographic and hydrological studies like sediment transport, wave climate, tidal influence, Lake Bathymetry, hydro graphic survey, weed dynamics, meteorological studies, etc.

f) **Socio Economic Development**: Various social economic activities are carried out like improvement of peripheral roads to Chilika Lagoon, development of small fish landing centres, providing solar lights to the peripheral villages of the lagoon, strengthening the embankments, construction of community halls, renovation of tanks at different villages etc. To facilitate communication to the island people of Chilika lagoon, a mechanised Ferry service has been commissioned between Satapada and Janhikuda benefiting more than 70000 people living in particular Krushna Prasad block of Puri district and drastically reducing the road length between Berhampur and Puri.

g) **Outreach Programme**: The Visitor Centre established at Satapada, in collaboration with CEE, Ahmedabad, has the facilities like multimedia presentation; touch screen exhibits diorama, aquarium, observatory and a discovery room for the children. This centre is open to the tourists round the year giving an overall idea on Chilika lagoon. The Eco-Park developed at Satapada over an area of 1.72 acres has been the attraction of tourists during the day time.

26. Regional Plant Resource Centre, Bhubaneswar

Established in the year 1985, the Regional Plant Resource Centre has gained the distinction of a leading plant science research institute and a major centre for conservation of plant genetic resources of Eastern India during the last 33 years of its existence. The Centre is engaged in research in the field of plant taxonomy and conservation, tissue culture, molecular biology, genetic engineering, microbiology, horticulture, medicinal plants and allied disciplines. The institute has well-equipped laboratories, plant houses, experimental fields for laboratory and field-based research. The scientists and researchers of the Centre have brought out 20 books and more than 500 research publications in national and international journals of repute. RPRC is recognised by several universities for award of Ph. D. and D. Sc. degrees. More than 50 externally funded research projects have been successfully

implemented at the institute and 11 projects are currently in operation. The R & D activities undertaken and achievements made during the year 2018-19 are given below.

Inauguration of Annual Flower Show, 2019 in the Botanic Garden of RPRC on 12 January, 2019

a) Plant biodiversity inventories, assessment and *ex situ* conservation

(i) Plant biodiversity inventories, quantitative and qualitative assessment of plant resources of several interesting habitats of Odisha like Similipal, Chilika, Mahendragiri, Malyagiri, Bhitarkanika, etc., in different forest types and under different disturbance gradients have been taken up. More than 11 species have been reported as new for the state of Odisha.

(ii) The taxonomy and ecology of the family Solanaceae of Eastern Ghats of India has been studied and 23 species of the family have been reported to occur in the region. A book entitled "*The family Solanaceae in Eastern Ghats of India*" has been brought out during the year.

(iii) The diversity, distribution, taxonomy and ecology of about 450 forest trees of Odisha have been studied and a pictorial guide to forest trees is under compilation.

(iv) A total of 65 species of trees, palms, orchids, cacti and other succulents, bamboos and ornamental plants have been collected and introduced to the Botanic Garden of the Centre.

(v) The diversity of fungi, bacteria and other micro-organisms in mine sites, mangrove forests and other problematic habitats has been documented.

(vi) During the year, genetic diversity of several threatened plants such as *Cycas sphaerica, Hypericum gaitii, Dendrobium regium, Cymbidium bicolor* have been evaluated.

b) Propagation and reintroduction of threatened plants of Odisha

During the current year, vegetative propagation of *Lasiococca comberi* has been standardized through air-layering. Propagation of *Cycas sphaerica* by induction of roots in bulbils has also been developed. About 800 plants of *Lasiococca comberi* and 330 plants of *Cycas sphaerica*, so propagated, have been reintroduced to Mandasaru gorge area of Raikia Range, Phubani Forest Division, Odisha.

Reintroduction of endangered mangrove *Heritiera littoralis* (Dhala Sundari) has been initiated in Bhitarkanika National Park by RPRC, Bhubaneswar in collaboration with Forest Department in order to establish a viable and self-sustaining population in its natural habitat. The remnant/ representative individual(s) of the target species located in different identified

locations i.e., Dangamal, Mahishamara and Suajore area have been augmented / supplemented with the vegetatively propagated and hardened saplings and the same have been studied for their adaptability and growth performance.

Some rare orchid species like *Dendrobium regium*, *Cymbidium bicolor*, *Phaius tankervilleae*, *and Tainia penangiana* have been propagated by tissue culture and reintroduced to different natural habitats as a conservation measure.

The newly inaugurated Modern Tissue Culture Laboratory in RPRC, Bhubaneswar

c) Bio-prospecting of plant and fungal resources of Odisha

(i) Phyto-chemical screening and therapeutical evaluation of medicinal species of *Homalium, Geophila repens, Hydrolea zeylanica, Clerodendrum* etc. have been undertaken.

(ii) The food and nutritional values of *Cycas sphaerica* seeds consumed by tribals of Odisha and phytochemical screening of essential oil of the endangered *Hypericum gaitii* have been assessed.

(iii) Various experiments were conducted to study the effect of microbial inoculants on growth and development of forestry species such as *Gmelina arborea, Pongamia pinnata.*

f) Developmental activities

(i) Inauguration and functioning of Modern Tissue Culture Laboratory: The Modern Tissue Culture Laboratory constructed in the premises of the Centre was inaugurated by Hon'ble Minister, Forest & Environment Department, Odisha on 12th January, 2019 and was made functional by renovation/ upgrading the physical and instrumentation facilities.

(ii) A parking Shed for parking of 26 nos. of 4-wheelers and 100 nos. of 2-wheelers has been constructed through state PWD.

(iii) A series of green/ shade net houses have been constructed and renovated for growing tissue culture banana and orchids with financial assistance from Rasthriya Krishi Vikas Yojana (RKVY).

(iv) Work on renovation of Food Court, Training Centre, Old Laboratory etc. are in progress.

27. Centre for Environmental Studies (CES)

Centre for Environmental Studies is an organization under the Department of Forest & Environment, Government of Odisha. CES undertakes activities to promote environmental education, awareness, training & research; to build environment information database and

Environment Day

Coastal Clean-up Day

dissemination of environmental knowledge through newsletters, books, booklets, posters, leaflets, video clips etc.

Eco-club programme

CES is the State Nodal Agency for National Green Corps Program. Under this programme, there are 9500 Eco-clubs functioning in the State mostly in schools & junior colleges, which are carrying out both awareness & action based activities related to environment throughout the year.

Observation of important Environmental Days such as Earth Day, World Environment Day, Van Mahotsav Week, Coastal Clean-up Day, Ozone Day, Wildlife Week, Energy Conservation Day and World Wetland Day are celebrated during the year 2018-19.

Plastic Free Campaign has been organized in Puri and Paradip Sea beaches and also in Cuttack during Bali Yatra Festival involving public, students and interested NGOs.

28. Integrated Coastal Zone Management Project, Odisha

a) Installation of Geo- textile tube embankment with TOE mound is completed to save the life and property of most erosion prone critical stretch of 505 meter at Pentha village, Rajnagar, Kendrapada District.

b) 14 multipurpose cyclone shelters (MCS) in the cyclone prone villages are completed and handed over to the respective Cyclone Shelter Management & Maintenance Committee (CSMMC) for its management. ICZMP has provided the basic equipments and gadgets that are necessary during calamities. The CSMMC members are trained on search & rescue operation, first aid techniques and record keeping at the shelter level.

c) The Centre for Management of Coastal Ecosystem (CMCE), Paradeep, a LEED Certified Green Building is completed and made operational by installing pollution monitoring equipments and required manpower. A full-fledged coastal environmental laboratory with state-of-art technology is set up in the Central Laboratory of Odisha State Pollution Control Board at Chandaka, Bhubaneswar for the analysis of coastal water and

sediments. For facilitating monitoring of the creeks and coastal water, a customized vessel "Sagar Utkal" with on board monitoring system has been provided.

d) Up-gradation of the Wetland Research & Training Centre at Chandraput, Barkul with installation of lab equipments is completed. To bridge the knowledge gaps, 5 studies on the unique bio-diversity of Chilika Lake by premier research institutions are completed. Tourism Master Plan for Chilika Lake and its catchment is completed. The construction of New Scientist Hostel for Researchers at Dangamal is completed. Improvement of Kalijai Island is completed.

e) 40 women SHGs have been identified and trained to carryout coir activities. Training programme has been completed for all the 40 SHGs. 37 active SHGs are provided with temporary sheds and revolving fund for purchase of raw materials to continue coir activity on a sustainable basis. Sales Van for supplying raw materials and marketing the finished products of SHGs has been provided to SHGs. Construction work of Common Facility Centre at Gola, Parvatipur & Gangadharpur are completed, machines installed and training imparted to SHG members on newly procured coir defibring machines.

f) Strengthening of Crocodile research and rearing center along with research laboratory at Dangamal is completed and made operational. Researcher's hostel at Gupti is completed and made operational. Turtle Monitoring Centre at Chakradharpur is completed and made operational. Plantation of mangroves over 168 ha. is completed including plantation over 30 ha. land by EDCs. Plantation of mangroves over 60 ha. of land is completed under Puri and Rajnagar WL Division under post Phailin activity. 16 nos. of boats have been procured and put to use for ecotourism and bio-diversity conservation purpose in Bhitarkanika, Chilika and Berhampur. Renovation of Hukitola heritage building at Hukitola by INTACH is completed. 2 nos. of High Speed Sea Going vessel for conservation measures have been deployed at Sasanpeta, Rajnagar for conducting sea patrolling for protection of Olive Ridley and other marine flora and fauna. Construction of Permanent Camp shed at Chinchiri and Dobandhi have been completed and put to departmental use. Construction of raised platforms for pitching tents & construction of kitchen and sit outs at Chinchiri are completed. Construction work of permanent camp sheds at Rambhartia,Berhampura, Khirisahi, Balianla & Pokharikuda sites, have been completed. These camp sheds are being used to promote ecotourism in Chilika Wildlife Division.

g) Financial support has been given to 600 SHG's for carrying out alternate livelihood activities; (Integrated Pisciculture-211, Dairy -63, Poultry -88, Hygienic dry fish & value-added product preparation 115, Cold chain activities – 75 & Ancillary Business-48). Best possible technology, skill up gradation, hand holding supports are provided to SHG's to improve their income. 10 nos. of Producer groups formed in Ganjam & Puri district in convergence with Odisha Livelihood Mission.

h) Infrastructural development work for eco-tourism promotion at Barkul, Banamalipurpatna, Mirzapr, Gangadharpur and Gabakunda has been completed and assets handed over to Eco-tourism Development Society for their management. Eco-tourism site at Rambha has been handed over to OTDC. Comprehensive Management Plans have been prepared to run the eco-tourism sites sustainably.

i) For solid waste management at Paradeep, the bid document (collection, transportation system of SWM project at Paradeep) is finalised at SPMU and sent to World Bank for vetting. Bid document for development of sanitary landfill site is prepared. This is shared with World Bank for technical vetting. Construction of Boundary Wall over 20.00 acres of proposed land fill site and Approach road is completed.

j) Structural Conservation works of seven cultural heritage sites namely Harihardev temple, Nairi, Harachandi temple, Baliharachandi, Jagannath temple, Pentha, Bhabakundaleswar temple, Manikapatna, Bateswar temple, Kantiagarh, Ganjam Fort & British Cemetry, Ganjam have been completed. The Chemical conservation work of five sites namely Bhabakundaleswar Temple, Manikpatana, Bateswar Temple, Kantiagarh & Harachandi Temple, Baliharchandi, Ganjam Fort, Ganjam and Harihardev temple, Nairi are completed.

k) ICZM plan for two coastal stretches from Gopalpur to Chilika and Paradeep to Dhamra is completed by the consultant M/S IPE Global Ltd. Shoreline management plan for the entire coast of Odisha using RCPS data is completed.

l) NGOs were engaged to assist village committees to carry out mangrove plantation in community mode in Arakhakuda, Itakhandia and Tarapada village of Puri & Kendrapara Districts. Mangrove Plantation has been completed in 94.63 ha of land.

Alternative Livelihood Activity - Poultry

Bhabakundelswar Temple, Manikapatna,Puri

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