



GOVERNMENT OF ORISSA

**ACTIVITIES OF  
FOREST AND ENVIRONMENT DEPARTMENT  
FOR THE YEAR 2008-2009**

**FOREST AND ENVIRONMENT DEPARTMENT**

# ACTIVITIES OF FOREST AND ENVIRONMENT DEPARTMENT 2008-2009

## 1. INTRODUCTION

1.1 The State of Orissa with a geographical area of 15.57 million ha. Has a population of nearly 36.71 million (2001 Census). The recorded forest area in the State stands at 58,136.87 Sq. Kms., which accounts for 37.34% of the geographical area. The forests are concentrated mostly in Central, Southern and Western parts of the State.

1.2 Forest occupy an important position in the economy of the State, particularly among rural and tribal masses. It contributes towards their food security and day-to-day livelihood. The pressure on forests for fuel wood, small timber and grazing in most places is much more than the carrying capacity of forests. Hence the forests are prone to the threat of degradation.

## 2. ADMINISTRATIVE SET UP

2.1 The Forest and 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 Kenduleaf Wings. The Orissa Forest Development Corporation (O.F.D.C.) Ltd. acts as the commercial wing of the Department and discharges the function of disposing of various forest produce, viz, Kenduleaf, timber, bamboo. It also supplies timber, bamboo and firewood to the public through over 269 depots run by it.

2.2 **Forest & Wildlife Wing-** Restructuring of the entire forest formation has been effected from the 1<sup>st</sup> October 2003 with a view to reducing overlapping functions, improving efficiency and integrating all forestry functions at the Divisional level. This will facilitate forestry extension activities and promotion of participatory forest management. After reorganization, the State has 7 Forest Circles and 37 Forest Divisions under the Principal Chief Conservator of Forests, I Circle and 12 Wildlife Divisions with territorial jurisdiction and Nandankanan under the Principal Chief Conservator of Forests (Wildlife)-cum-Chief Wildlife Warden. Besides, there are 3 Circles and 19 Kenduleaf Divisions under the Addl. Principal Chief Conservator of Forests (KL) engaged in collection and procession of Kenduleaves. There are 8 Working Plan Divisions, one Forest Resources Survey Division and two Silviculture Divisions looking into preparation of working plans, resource inventory and forest research respectively. There are five training institutions, viz. one Forest Rangers' Training College, one Forester Training School at Champua, two Forest Guards Training Schools at Angul and G. Udayagiri and Social Forestry Training and Research Institute, Bhubaneswar. There are 221 Forest Ranges, 60 Wildlife Ranges in the State for protection and management of forest and wildlife. Besides, 165 K.L. Ranges have been formed in the State for collection and processing of Kenduleaves.

2.3 **The Environment Wing-** The Environment Wing of the erstwhile Science, Technology and Environment Department became part of the Forest and Environment Department in October, 1990. The Environment Wing does not have any field formations. Besides, the Directorate of Environment, the State Pollution Control Board constitutes the

main agency of the Government. A Chilika Development Authority has been set up for the eco-restoration of Chilika Lake. The Regional Plant Resources Centre (R.P.R.C.) is an unique institution devoted to *ex situ* preservation and development of plant genetic resources of the State and development and application of micro-propagation technologies. A Centre for Environment Studies has been created during 2000-2001 by the State Government with the objective of disseminating environmental-linked information and creation of environmental awareness and taking up need based studies and consultancy assignments in the field of environmental impact assessment and environment management plans.

### 3. STATE OF THE FORESTS

3.1. The State has a recorded forest area of about 58,136.7 Sq. Kms. With the following classifications:-

Reserved Forest	26329.12 Sq. Kms.
Demarcated Protected Forest	11,687.079 Sq. Kms.
Undemarcated Protected Forest	3,838.78 Sq. Kms.
Unclassed Forest	20.55 Sq. Kms.
Other forests under the control of Revenue Department	16261.34 Sq. Kms.
Total	58,136.869 Sq. Kms.

3.2. According to the State Forests Report, 2005 published by the Forest Survey of India, Deharadun and actual Forest cover in the State is 48,374 Sq. Kms. Which constitutes 31.07% of State's geographical area. Out of this:

(i) Very Dense Forest (with crown density above 70%)	538 Sq. Kms
(ii) Moderately dense Forest (Crown density 40% to 70%)	27,656 Sq. Kms
(iii) Open Forest (with crown density of 10-40%)	20,180 Sq. Kms.
Total	48,374 Sq. Kms

Mangrove forests (included in above categories) = 207 Sq. Kms.

Tree cover outside forest area assessed separately is 4589 Sq. Kms.

3.3. Thus, while the recorded forest area constitutes about 37.34% of the total geographical area of the State, actual forest cover exists over only 31.07 % of the geographical area. National forest policy has mandated that 33% of geographical area should be under forest cover. The Department has been constantly endeavoring to protect the forest areas, regenerate the degraded forests and create more forests by way of afforestation.

3.4. The Revenue receipts from different sources during, 2008-2009 has been Rs. 162 crores

#### 4. FOREST PROTECTION

4.1. With growing population there has been tremendous pressure on the forests both for forest produce as well as for forest lands. Consequent upon reorganization during the year, 2003, the State is divided into 281 (221 Forest and 60 Wildlife) Ranges, 1,001 Sections and 3,674 Beats. The average forest area per Beat comes to 15.82 Sq. Kms. For a Forest Section, 58.07 Sq Kms. And for a Range 206.88 Sq. Kms, which is considered to be quite high from the management point of view.

4.2. Illegal removal of forest produces is largely confined to some vulnerable areas, such as the forests on the basin of River Mahanadi spread over Sambalpur, Angul, Cuttack, Nayagarh and Boudh district, Similipal Forests in Mayurbhanj district, the forests of Rayagada, Koraput and Malkangiri districts in Orissa-Andhra Pradesh Border and the forest corridor in the Inter-State Orissa-Jharkhand and Orissa-Chhatisgarh Border.

4.3. The Forest Department has been keeping a close vigil over forest offences and taking action to bring the offenders to book. During 2008-2009 as per the figures reported up to October, 2008 the forest offence cases booked, offenders involved, timber and forest produce seized and approximate value thereof, cases booked under Section 56 of Orissa Forest Act, 1972 (Amended) and put to confiscation proceedings in the State are as follows:

##### 2008-2009 (Up to October, 2008)

1	Total Number of forest offence cases booked	35,302
2.	Number of offenders involved	30,326
3.	Number of offenders arrested	1,617
4.	Quantity of timber seized (cum.)	3,718 cum.
5.	Approximate Value of forest produce seized (lakh rupees)	Rs.293 lakhs/-
6.	Number of vehicles seized U/s 56 of Act, 1972	2,358

4.4 19 Units of A.P.R. Forces have been deployed in different Forest and Wildlife Divisions of the State for the purpose of Forest protection. These 19 units comprise of 260 Nos. of Police Personnel including 20 S.Is., 14 A.S.Is 19 Havildars and 207 Constables. In addition, the Central Reserve Police Force (C.R.P.F.) has been deployed in the Dhuanali and Barbara Reserve Forest areas of Khurda Forest Division which is a patch of rich and unique Forest with teak Plantations from the pre-independence times. The experience has been encouraging.

4.5 265 Forest Check gates have been established in the State to regulate the transit of forest produce. 739 V.H.F. sets have been installed in different territorial ranges, sections and other vulnerable area. Besides, 408 Guns and 104 Revolvers have also been supplied to the field staff.

4.6 In addition to the above measures, the State has also adopted the policy of Joint Forest Management (J.F.M.) and has involved the local villagers in protection and management of forests. A scheme to reward villagers as well as departmental personnel for detection of forest offences and preventing theft has already been introduced.

## 5. JOINT FOREST MANAGEMENT

5.1 One of the salient features of the National Forest Policy (1988) is to actively associate the people in the protection, conservation and management of the forests. The State Government is wedded to a policy promoting participation of local village communities in protection and management of forest. In August, 1988, the State Government brought out a resolution to formally introduce a scheme of protection of peripheral reserved forests with participation of the people of adjoining villages. These guidelines have been fine-tuned from time to time, ending with October, 2008 Resolution.

5.2 11,105 Nos. of Vana Sarankhyan Samities (V.S.S.) and 328 Eco-Development Communities (E.D.C.) have been formed in the State or protecting and regenerating an area about 10128 Sq. Kms. forests in the State through Joint Forest Management up to 2008-2009.

## 6. PLANTATION PROGRAMME

6.1. According to the Forest Survey of India's latest report, the forest cover in the State is 31% as against 33% of the total geographical area mandated by the National Forest Policy, 1988. There is thus an imperative need to accelerate efforts for afforestation and regeneration of the degraded forests for achieving the mandated 33% forest cover.

6.2. During 2008-2009 the afforestation programme has been implemented in the State under different State Plan, central Plan and other Schemes over a total area of 98,738 ha. With a total plantation of 445 lakh seedlings.

6.3. The achievements under different afforestation schemes during 2008-2009 is as under:

Name of the Scheme	Area covered in ha.
Economic Plantation	4,131
R.L.T.A.P. in KBK Districts	11,780
Compensatory Afforestation	2,751
National Afforestation Programme through F.D.A.'s	31,096
Orissa Forestry Sector Development Project (J.A.I.C.A. Assisted)	41,605
Industrial Plantation	70
Support to V.S.S.	3,000
National Bamboo Mission	2,196
N.R.E.G.S & other Schemes	2,109
Avenue Plantation	42.6 KMs.
Total	98,738 ha. & 42.6 Kms.

6.4. The Orissa Forestry Sector development Project (O.F.S.D.P) was started in 14 forest divisions of 10 districts in the State under J.B.I.C. Assistance (now called J.I.C.A.) during the year 2006-2007. The Project has twin objective of restoration of degraded forests and

enhancement of income of participating communities living in and around the forest. Districts covered are Koraput, Rayagada, Gajapati, Khandhmal, Angul, Deogarh, Keonjhar, Sundargarh, Bhadrak and Balasore. Preparation of operation manual, VS management manual, selection of project villages, survey, demarcation and mapping of operational area, nursery raising, training and other preparatory measures were taken up in the year 2006-2007 and 2007-2008. During 2008-2009, 41605 ha. Afforestation has been taken up in 622 project villages with different poverty alleviation programmes. During 2009-2010 also, afforestation over 50000 ha. Has been targeted in about 700 project villages. The project is maintaining its website-www.ofsdp.org. and publishing regular quarterly New Letter both in English and Oriya for information sharing with various stake holders and public in general.

6.5. The Department has been implementing Afforestation Programmes in the KBK Districts under the Revised Long Term Action Plan (R.L.T.A.P.) since the last nine years. During the current year i.e. 2008-2009, 2,375 ha. Block Plantation and 4,000 ha. Rehabilitation of degraded forests have been taken up under “Afforestation under J.F.M. Mode”, 1,000 ha. Under “Medicinal Plantation”, 3,350 ha. Under “Karanja Plantation” and 1,055 ha. Under “Economic Plantation”., Thus, total achievement under afforestation is over 11,870 ha. Fruit bearing and N.T.F.P species as well as Fuel wood, Economic Species, Karanja, Medicinal Plants and Bamboo have been planted under the Scheme. Works have been carried out on integrated micro-water shed basis with livelihood options creation for dependent forest dwellers. At every plantation site Vana Sarankhyan Samities have been formed and people’s participation is ensured.

#### 6.6. **Forest development Agency :**

During 10<sup>th</sup> Plan period afforestation schemes under Central Plan or Centrally Sponsored Plan have been integrated by Government of India, whereby Ministry of Environment & Forests, Government of India introduced the National Afforestation Programme (N.A.P) Scheme and adopted an integrated approach for Forest Conservation and the development of the community living in the forest fringes by ensuring convergences in the flow of funds under various Central Sector and Centrally sponsored Schemes in the forestry sector through Forest Development Agency (F.D.A.) constituted in every forest division. During 10<sup>th</sup> Plan period, 40 projects have been implemented by 39 F.D.As. (one project per F.D.A. except in Balliguda F.D.A. where 2 projects have been implemented) in different Forest and Wildlife Divisions with 1,565 V.S.S. Micro-plans for development of area assigned to each of the V.S.S. was prepared and submitted to Government of India for funding. Ministry of Environment and Forest, Government of India released funds to the tune of Rs. 52.1 crores during 10<sup>th</sup> Plan whereby 50,937 ha. Of afforestation were taken up from 2003-2004 to 2006-2007. During first two years of 11<sup>th</sup> Plan (up to September, 2008), 41 F.D.A. projects have been sanctioned and Rs.29.49 crores have been released.

6.7. Besides the above plantation programme. Forest & Wildlife Wing have also a programme of Decentralized Nursery under State Plan where 1,000 decentralized nursery growers (V.S.S./S.H.G./Individual) are producing 10,000 seedlings per Decentralized Nursery and selling the seedlings on cost basis to public/ organizations and rotating the sale value for raising seedlings again. Thus, 1 crore seedlings are made available to public for planting per annum. Besides this, free distribution of seedlings is also taken up by some forest divisions under N.R.E.G.S. as per project sanction accorded by D.R.D.A.

6.8. **Compensatory Afforestation-** A number of development activities in different sectors like Irrigation, Mining, Railway Roads, etc. are also in progress. These development projects involve diversion of forest land for non-forestry purpose. In the State of Orissa since 1980 up to December, 2008, 350 Nos. of project proposals under different Sectors have been approved by the Government of India, Ministry of Environment and Forest under Forest (Conservation) Act involving diversion of 35,156 hect. Of forest land. The Government of India while giving their permission, have stipulated for undertaking compensatory afforestation in lieu of forest areas diverted for non-forestry purpose. Till December, 2008, Compensatory Afforestation has been done over an area of 35,137 ha. Including forest and non-forest land.

## 7. MEDICINAL PLANT CONSERVATION PROGRAMME

A Vanaspati Van Society has been set up with assistance from Ministry of Health, Government of India at Gandhamardan R.F. in Balangir and Bargarh district. The project area comprises of 200 ha. Of core area where rich floral diversity of medicinal plants is being preserved. The surrounding area of 3,000 ha. Is the conservation area to promote sustainable uses of medicinal plants. 25 villages situated in this area are actively involved in the project implementation. A demonstration area including nurseries has been set up over 40 ha. Adjacent to the conservation area. In the demonstration area, *ex-situ* conservation (plantation) has been established and nursery stock has been raised in respect of 300 species of Medicinal Plants.

With U.N.D.P. assistance through F.R.L.H.T., Bangalore, six Medicinal Plant Conservation Area (M.P.C.A.) have been set up in the State.

10,000 Home Herbal Gardens have been set up in Athagarh and Thakurmunda Blocks

A 60 ha. Plot at Patrapada in Bhubaneswar being developed as a Knowledge centre of medicinal plant species.

State Medicinal Plants Board is functioning in the State since August, 2002 for promoting cultivation of medicinal plants in the State. It promotes Promotional Schemes, Commercial Schemes and Contractual Farming Projects under financial assistance from National Medicinal Plants Board. During 2008-2009 the major medicinal plant projects sanctioned by the N.M.P.B. for the State are:-

- (i) Conservation of Saraca Asoca(Ashok) - Rs.2.96 cores
- (ii) Conservation of Dasmool species - Rs. 3,422 crores.

One unique medicinal plant garden has been developed, named “Ekamra Van” on the Western bank of Bindusagar at Bhubaneswar. About 15,000 plants of 186 medicinal species have been planted in this garden. Excellent sand stone carving and design of the garden has been achieved by Forest Department under the technical guidance of “A Heritage Lab”.

State Medicinal Plants Board has implemented medicinal Plants Service Programme in 7 district of the State as a livelihood improvement programme. This is funded by the World Bank and coordinated by the Planning & Co-ordination Department of the State Government.

Kalinga Herbal Fair, 2009 was organized at Berhampur and Bhubaneswar during the month of January and February, 2009 to provide trade linkage and plant development through intellectual property instrument in the sector. Different stakeholders such as Primary gatherers, Vana Sarankhyan Samity Members, farmers, Vaidays, traders, NGOs, registered practitioners interacted amongst themselves during this fair. It had demonstrative effect for good storage practice and good manufacturing practice for the participants and visitors alike.

## **8. SETTLEMENT IN FORESTS & DIVERSION OF FOREST LAND FOR DIFFERENT DEVELOPMENT PROJECTS**

8.1. For diversion of forest land for different non-forest purpose, prior approval of Government of India under Section 2 of the Forest Conservation Act, 1980 is mandatory. Since inception of the Forest (Conservation) Act, 1980, up to December, 2008, 350 Nos. of projects belonging to Irrigation, Industry, Mining, Transmission Line, Roads Railways and Defence Sectors have been cleared by Government of India under provisions of Forest (Conservation) Act, 1980 diverting 35,156 ha. Of forest area in total till December, 2008.

8.2. Pursuant to commitment of the State Government to regularize the Pre-1980 encroachment/ forest villages in favour of the eligible encroachers, complete proposals in respect of 17 districts involving the case of 3.754 families covering 3,328.42 ha. Of forest land to be settled in their favour have been sent to Government of India for their approval, under the provision of Forest (Conservation) Act, 1980. The Government of India, Ministry of Environment & Forests have already accorded in principle approval for regularization of eligible pre-1980 encroachment of 15 districts of the State involving 2,770.195 ha. Of forest land. Proposals relating to balance 2 (two) districts are under consideration of the Government of India.

## **9. RESEARCH & TRAINING**

Forestry research in different forestry related aspects and training to different target groups for technology transfer is extremely important. To carry out research activities, Silviculturists, Bhubaneswar and Rayagada undertake different programmes as per the drawn up research programme. They also supply Quality Planting Materials (Q.P.M.) to the field forest functionaries for enhancing productivity of forest from different high tech Nurseries maintained by them. They also provide training to unemployed youth for gardening and grafting to enable them to get self employment. Training activities are mainly organized by the Principal Forest Rangers College, Angul, Chief Instructor of forest school at Champua, Udaigiri, Ghatikia and Angul for different level of forest staff to acquaint them about recent developments. Conservator of Forests, Development Circle co-ordinates the research and training activities in the State.

10. Orissa Bamboo Development Agency (O.B.D.A.) has been set up in Orissa in the office of the Project Director, World Food Programme to implement the programme of National Bamboo Mission (N.B.M.) and National Mission on Bamboo Application (N.M.B.A.) for bamboo sector development work. It is headed by the Project Director, World Food Programme-cum-State Mission Director, O.B.D.A. Rs. 3.29 crores (100% C.S.P) has been utilized during 2006-2007 for raising nurseries, plantations in forest and non-forest areas and imparting training to farmers and field functionaries besides other bamboo sector

development works. The plantation programme under the Mission has a target of 2,000 hectares for the current year.

## **11. NATIONAL RURAL EMPLOYMENT GUARANTEE SCHEME (N.R.E.G.S)**

The Programme is being implemented since financial year, 2006-2007, during 2006-2007, Rs. 264 lakhs and during 2007-2008 Rs. 325 lakh were spent for different labour intensive forestry works, such as forest regeneration, soil conservation, water conservation and harvesting, maintenance of forest roads and boundaries, nursery raising, plantation activities, etc. The programme is being implemented in 30 districts of State during 2008-2009. The expenditure till October, 2008 is of Rs. 342.5 lakhs for different labour intensive works as mentioned above.

## **12. KENDULEAF TRADE**

12.1. Kenduleaf (KL) Trade has been Nationalized since, 1973. The Forest Department does the collection, processing, bagging and storage of Kenduleaves and the Orissa Forest Development Corporation Ltd. Sells them on behalf of the State Government on commission basis. Kenduleaf (KL) Trade offers employment opportunities to the Rural poor. The K.L. operation includes 7,608 collection centres (Phadies) spread over 23 districts (Western and central) for procurement of Kenduleaves from pluckers. There are 981. K.L. Central Godowns for storage of Kenduleaf bags.

12.2. During 2008-2009 (2008 K.L. Crop Year) the target of Kenduleaves was fixed at 4.46 lakh quintals, and the achievement has been 4.16 lakh quintals. 7.19 lakh pluckers were involved in collection of Kenduleaves. A total of about 138 lakhs person days were generated during 2008 K.L. Crop Year. For transparency of operations Phadi Committees have been organized and activated for each collection centre.

The procurement price was enhanced from 25 paise to 27 paise per kerry (bundle comprising 20 leaves) for 2008 KL Crop. During 2008 KL Crop Year Rs. 80 lakhs was disbursed to the retired seasonal staff as gratuity.

12.3. (a) The O.F.D.C. Ltd. Finances the entire operational cost of production and also conducts sale of KL as the sole selling agent of the State Government.

(b) A Kenduleaf Welfare Trust Fund has been formed in 2007 to provide social security to the next kin of Kenduleaves pluckers and binders. In case of death Rs. 50,000 and in case of any permanent disability Rs. 25,000 are being provided. More than two lakh pluckers and binders have been enrolled in this Trust and Rs. 41.50 lakhs has been disbursed in 81 death cases up to Deember, 2008.

## **13. WILDLIFE CONSERVATION ACTIVITY**

13.1. Conservation and protection of wildlife and its habitats throughout the State has been given due importance with special attention to 20 Nos. of notified protected areas. The protected areas comprise of Bhitarkanika National park, Similipal Tiger Reserve, Satkosia Tiger Reserve, Gahirmatha Marine Sanctuary and 16 other Wildlife sanctuaries. These

protected areas cover 9,009.82 Sq.Km. including 1,408 Sq. Kms.of the coastal area. The total land area notified as sanctuaries and National park is 4.25% of geographical area of the State.

### **Main strategy of Wildlife Conservation:**

1. 10-Year Management Plan for 9 sanctuaries and National parks have been prepared and for the balance 11 sanctuaries are under final stage of preparation.
2. Wildlife Conservation issues are the main strategy in the Forest Management objectives and prescriptions laid down in the Working Plans meant for all the Forest Divisions of the State.
3. A landscape approach being adopted to include the critical wildlife habitats, buffer zones and corridors.
4. Intensive patrolling taken up in the areas with wildlife concentration to curb offences against wild animals.
5. Habitat conservation measures such as preservation of rainwater by creating W.H.S. to provide water during lean period, forest regeneration through incentive based control of forest fire have also been introduced with the help of the neighboring villagers of the P.As.
6. Specific incentive scheme to motivate local public against forest fire, poaching, etc. have been introduced with reward and incentive support.

### **13.2. Tiger Conservation:**

Similipal Tiger Reserve located in Mayurbhanj district has been established in 1973.Satkosia Tiger reserve has also been notified in Angul district during 2008-2009.

98. Nos. anti-poaching camps involving 167 Nos. Sabujvahinee Volunteers are engaged and 7 Nos. striking force units consisting of 44 Nos. Ex-army personnel deployed in Similipal for preventing “Akhand Sikar”

To encourage local people, Similipal Eco-Tourism Society has been established to assist tourist in their visit to Similipal. 15,269 Nos. tourists including 164 Foreigners visited the park during 2008-2009 (Up to November, 2008). During March-April, 2009, due to Maoist activities, there has been damage to infrastructure inside Similipal Tiger reserve.

### **13.3 Elephant management:**

- (i) 54 numbers of anti-poaching and anti-depredation squads have been formed, each squad consists of 4 to 6 local persons under the supervision of 1 or 2 Foresters/ Forest Guards, who reach the affected spot quickly and tackle the situation.
- (ii) 46 nos. of elephant trackers have been engaged who keep regular watch on the movement of elephants and inform the forest officials for taking required action.

- (iii) In the elephant depredation areas the villagers have been provided with search lights, crackers, loudspeakers, etc. to drive away the elephants.
- (iv) All the pending claims for compassionate grants have been cleared.
- (v) Habitat improvement is done by providing water bodies, fodder plantation, protection from fire, etc.
- (vi) Efforts are made to contain the elephants by providing trench fencing/ stone walls and Solar Electric fencing at sensitive points to prevent the elephants from entering the human habitation. So far 77.4 Km. of Elephant Proof Trench and 93.5 Km. of Solar Power fencing has been provided at strategic points in Chandaka (WL) Division, Dhenkanal, Angul and Keonjhar Divisions. To address the man-animal conflict in the State it has been decided to implement one Elephant Management Plan in the State for 5 year (2009-2010 to 2013-2014).

#### **13.4.The Physical& Financial achievement position:**

1. 325 ha. of Mangrove plantations in the Coastal district of the State has been raised this year. This is in addition to 2,226.66 ha. Planted during 2000-2001 to 2007-2008.
2. Compassionate payments to the victims of wild animal depredation amounting to Rs. 116.00 lakhs from Non-Plan and Rs. 152.00 lakhs from Plan sector is being paid.
3. The Zoo entrance complex, vehicle parking place and numbers of animal enclosures, Toy Train, Boat Ghat have been renovated/ constructed and made attractive both to the visitors and to the inmates.
4. Migratory birds which have arrived for wintering to the Chilika lake and the Whitarkanika Wetlands during 2008-2009 migration season are estimated to be numbering 8.92 lakhs comprising of 111 species and 1.01 lakhs belonging to 79 species respectively. Besides, 0.23 lakh water birds of 25 species also arrived in Hirakud Reservoir during 2008-2009.
5. A total 1,516 crocodiles were counted in the river systems of Bhitarkanika and its associated creeks/ rivers during 8<sup>th</sup> to 14<sup>th</sup> January, 2008. This number (crocodile population) is 1.26% increase in population in comparison to 2007 January census.
6. For sea turtle's protection, 45 monitoring cams were set up covering all the nesting beaches. There was mass nesting of 1.80 lakh Olive Riddleys at Rushikulya Mouth. The casualty of turtles in 2007-2008 seasons was 5,763. There was vigorous enforcement of the provisions of law against illegal fishing in turtle congregation areas. A total of 25 fishing vessels including 16 trawlers, 5 gill netters and 4 mechanized boats were seized in this operation during the season through 36 sea patrolling sorties. Also protection of mass nesting beaches,

protection of the hatchling and estimation of the number of mass nesting turtles have been organized systematically.

During the year (2008-2009), the main protection strategy comprised of (a) patrolling around the congregation zones in the sea for vigorous enforcement of the law and the regulations against illegal fishing activities, and (b) continuous monitoring of the beach segments and all nesting areas through observation posts and patrolling camps.

7. During 2007-2008, 117 numbers of wildlife offence cases have been booked and 201 offenders have been arrested and during 2008-2009, 30 numbers of wildlife offence cases have been booked and 80 offenders have been arrested up to November, 2008.
8. Digitized maps for the Sanctuaries and National Parks on GIS domain being prepared.
9. The infrastructure in Similipal, Chilika (Part of which is Nalaban Sanctuary), Sunabeda Sanctuary and Kuldiha Sanctuary has been improved to promote eco-tourism. This work is further continued in Similipal, Satkosia, Hadagarh, Chandaka and Balukhan Sanctuaries during 2008-2009.

## **14. ORISSA FOREST DEVELOPMENT CORPORATION**

14.1 The O.F.D.C. Ltd. Has taken up coupe working in 13 Forest Divisions having approved working plans. The production of timber and firewood from forests by O.F.D.C. Ltd in 2008-2009 are 27,718 cum. Of Round timber and 20,063 MT. of Round firewood. The Corporation has achieved Rs. 34.73 crores towards earning for the year, 2008-2009. The Corporation has sold 25,002 cum. of timber and 22,684 MT. of Round firewood to the Public during the year, 2008-2009. The Corporation has paid Rs. 26.75 crores royalty on Timber trade during, 2008-2009.

14.2 At present, 11 (Eleven) Nos. of Saw Mills of O.F.D.C. Ltd. Are operating under the Corporation. O.F.D.C. propose to increase the same to 25 in 2009-2010.

14.3 The O.F.D.C. Ltd. Has taken up extraction of harvestable bamboo through Raw material procedure (R.M.P.) appointed by the Government i.e. M/s Ballarpur Industries Ltd. (Sewa) and M/s J.K. Paper Ltd. The bamboo production during 2008-2009 was 74,717.22 MT. in comparison to achievement of 1,04,282 MT. in 2007-2008. Royalty, etc. on bamboo trade deposited with Government in 2008-2009 was Rs. 7.68 crores.

14.4 The O.F.D.C. Ltd. Had received about 4.16 lakh quintals of processed and phal KL from the Forest department during 2008-2009. Total 4.07 lakh quintals have been sold with sale value of Rs. 304 crores during, 2008-2009. O.F.D.C. Ltd. Has paid enhanced working cost of Rs. 127 crores in 2008-2009 for production of Kenduleaf.

14.5 The O.F.D.C. Ltd. has taken up deposit works from funding agencies such as I.O.C.L., D.P.C.L., B.M.C., Railway, etc. Besides, Jeypore-CKL., Angul-CKL and Bhubaneswar-C divisions have undertaken few deposit plantation work in their jurisdiction

from NALCO, HAL, M.C.L., P.P.T., etc. respectively. By implementing the above programme O.F.D.C. Ltd. has earned Rs. 79.30 lakh during the year, 2007-2008 and Rs. 150.08 lakh in 2008-2009.

14.6 Voluntary Retirement Scheme of Public Enterprises Department has been availed by 147 staff from the surplus manpower of O.F.D.C. Ltd. During, 2008-2009.

14.7 Forest Development Tax of Rs. 43.86 crores on trades of KL, Timber and Bamboo in 2008-2009 by O.F.D.C. Ltd. have been deposited with Government in implementation of the Tax on sale of Forest Product Act, 2003 by Orissa Forest Development Corporation.

14.8 The Corporation has also undertaken cashew gap plantation/rejuvenation of existing Cashew plantation with financial assistance of D.C.R.B., Kerala and Director of Horticulture, Orissa, Bhubaneswar.

14.9 The Corporation at present also earns nominal amount of Rs.27 lakhs per annum from marketing of M.F.P. items such as rubber, Honey, Pickles and Squash, etc.

## **15. ENVIRONMENT WING**

Environment Wing is the Nodal Agency for environmental management and conservation in the State. Some of the important activities undertaken by environment Wing are:

**15.1.** Appellate authorities were constituted under the after (P.T.C) Act, 1974, Air (PCP) Act, 1981 and Bio-Medical Waste (M & H) Rules, 1998 to here appeals preferred against any order made by the State Pollution Control Board.

In the meantime ten (10) sittings of the Authorities have been held. Till date, altogether sixty-one appeals have been filed before the authorities, out of which, 14 (Fourteen) numbers of appeals under the Water (Prevention and Control of Pollution) Act, 1974 and 47 (Forty-seven) numbers of appeals under the Air (Prevention and Control of Pollution) Act, 1981. Out of these, thirteen (13) numbers of appeals under the Water (Prevention and Control of Pollution) Act, 1974 and thirty-nine (39) numbers of appeals under the Air (Prevention and Control of Pollution) Act, 1981 have been disposed of by the Authorities

**15.2 (a)** The Orissa State Coastal Zone Management Authority has been constituted by the Government of India to enforce the Coastal Zone Management Plan and to monitor violations of Coastal Zone Regulations. The Authority is its meeting held on the 3<sup>rd</sup> October 2008 recommended six project proposals involving C.R.Z. areas to MoEF, Government of India for environment clearance, viz., constitution of Fishing harbour at Bahabalpur, Balasore and at Chudamani, Bhadrak, construction of fish landing centre at Penthakata, Puri and at Keshpur, Ganjam, development of landing centre at Berhampur and establishment of a new lighthouse at Chandinipal, Bhadrak.

**(b)** The draft copies of the State Project Report (S.P.R) and Detailed Project Report (D.P.R) for integrated coastal zone management of two stretches (Gopalpur to Chilika and Paradeep to Dhamara) of the Orissa Coast have been submitted to Ministry of Environment and Forests, Government of India, having a project cost of Rs. 136.50 crore to be funded by

World Bank. The activities under the scheme relate to regional coastal process studies, coastal protection measures at Pentha Village, Bio-diversity conservation, coir making sector, establishment of environmental monitoring laboratory and developing solid waste management facility at conservation and improvement of archeological and cultural assets.

**15.3.** On the recommendation of the State Government, the Central Government has notified the constitution of the State Environment Impact assessment Authority (S.E.I.A.A) and State Expert appraisal Committee (S.E.A.C.) to examine and grant environmental clearance to “B” categories of projects, as specified in the Environment Impact Assessment Notification, 2006 of Government of India.

**15.4.** To encourage the protection of environment, State Government have awarded 36 Nos. of “Prakruti Mitra” and 36 Nos. of “Prakruti Bandhu” Award to voluntary Organizations/Villages/National institutions and individuals respectively. Provision for extending this facility to Block level has been made for 2008-2009 to encourage environmental conservation and protections.

**15.5** The Trust namely “Orissa Environment Management Fund” constituted for the purpose of taking up ameliorative steps for rehabilitations of degraded environment, has released Rs. 9.00 lakhs for development of green cover in Rani Park area in Talcher, Angul and to release of Rs. 25.00 lakhs for nursery development for plantation in and around Jharsugada industrial area.

The Environment Department has four organizations under its administrative control, such as:-

- (a) State Pollution Control Board, Bhubaneswar
- (b) Chilika Development Authority, Bhubaneswar
- (c) Regional Plant Resource Centre, Bhubaneswar
- (d) Central for Environmental Studies, Bhubaneswar

## **16. STATE POLLUTION CONTROL BOARD (S.P.C.B)**

The State Pollution Control Board is responsible for enforcement of the provisions of (i) The Water (Prevention & Control of Pollution) Act, 1974, (ii) The Water (Prevention & Control of Pollution) Cess Act, 1977, (iii) The Air (Prevention & Control of Pollution ) Act, 1981, (iv) Rules framed under the Environment (Protection) Act, 1986, viz-

- (a) The Hazardous Wastes (Management & Handling) Rules, 1989
- (b) The Bio-Medical Wastes (Management & Handling) Rules, 1998
- (c) The Municipal Solid Wastes (Management & Handling) Rules, 2000
- (d) The Recycled Plastics Manufacture & Usage Rules, 1999
- (e) The Batteries (Management & Handling) Rules, 2001

(f) The Manufacture, Storage & Import of Hazardous Chemicals Rules, 1989.

Within the framework of the above Act and Rules, the Board carried out the following activities during, 2008-2009:

### **16.1 Industrial Pollution, Abatement and Control through Consent Administration for establishment and before operation of the Industry.**

Continual improvement in compliance to pollution control norms, guidelines and regulations has been witnessed through vigorous surveillance, enhanced frequency of inspection and monitoring, stipulation of a series of guidelines and directives.

- (i) The Board has granted consent with stipulation for appropriate pollution measures to 608 industries, mines and stone crushers, etc. for establishment, 619 Nos. of industries, mines, stone crushers and mineral based industry have been granted consent to operate.
- (ii) 42 Nos. of public hearings have been conducted of major industrial/mining/development projects which require environmental clearance from Government of India.
- (iii) Board issued 90 Nos. of show cause notice and 66 Nos. of closure direction to defaulting industries, hotels, mines and mineral processing units during April-November, 2008.
- (iv) In the year April- November, 2008, 837 industrial waste water/sewage samples, 532 stack emission samples and 808 ambient air samples (industrial premises) have been analysed.

### **16.2 Regulation of Hazardous Wastes Management :**

- (1) Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008.

73 Nos. hazardous waste generating units have been granted authorization in the year, 2008-2009 for collection, storage, treatment and disposal of hazardous waste. 8 Nos. of units have been issued show cause notice under Section 5 of the Environmental (Protection) Act, 1986 and 2 No. of units have been issued closure direction for violation of above said Rule.

- (II) Manufacture, Storage and Import of Hazardous Chemical Rules, 1989

The Board has issued no objection certificate to 2 No. of units for transport of hazardous chemicals to Orissa from other State.

### **16.3 Implementation of the Batteries (Management & Handling) Rules, 2001**

The Board has directly written to the manufacture to submit half-yearly return. The industries, mines and bulk consumers such as State Road Transport Department, South Eastern Railway/East Coast Railway, Post and Telecom Department, Water Resource

Department, Works Department and State Electricity Supply Companies (CESCO, WESCO, NESCO and SOUTHCO) have been instructed to comply with the following:

- (a) Used batteries shall be auctioned to registered recyclers only (Registered with MoEF).
- (b) Furnish Half –yearly return to the Board in the prescribed format.
- © Maintain record of auction.

#### **16.4 Management of Biomedical Waste:**

The Board has granted authorization to 473 Health Care Units (H.C.U.) under the Bio-Medical (Management & Handling) Rules, 1998 with conditions for proper management, handling, treatment and disposal of bio-medical waste. The Board has refused 13 Health Care Units for inadequate management of bio-medical waste, issued closure direction to 03 defaulting health care units and served show cause notices to 103 Health Care Units.

As per the decision of the Board the renewal and fresh authorization order to be issued henceforth shall be for a period ending up to 31<sup>st</sup> March of the respective financial years in order to streamline authorization administration.

#### **16.5 Management of Municipal Solid Waste:**

The Board has granted authorization to 17 Urban Local Bodies and I Township. However, the authorization of 1 U.L.B. has been refused due to improper practice of management of Municipal Solid Waste. The Board has been pursuing with all district Collectors to expedite the progress of identification and allotment of land for Municipal Solid Waste Management. The Municipal Administration, H. & U. D. Department, Government of Orissa have been requested to pursue all the U.L. Bs. to expedite the progress of identification and allotment of land for Municipal Solid Waste Management. The Municipal Administration, H & U. D. Department, Government of Orissa have been requested to pursue all the U.L.B.s. for implementation of Municipal Solid Waste (M. & H. ) Rules, 2000.

As per the decision of the Board, the renewal and fresh authorization order to be issued henceforth shall be for a period ending up to 31<sup>st</sup> March of the respective financial years in order to streamline authorization administration.

#### **16.6. Management of Recycled Plastics:**

The Board has identified 59 No. of plastic carry bags and container manufacturing industries (Small Scale Industries) in Orissa as updated by collecting information from D.I.Cs. Out of these units, only 36 units are now manufacturing carry bags. The other units are either closed or changed over to other products. The Board has been insisting the carry bags manufacturing units to comply to the statutory provisions of the Rules and registered about 14 Nos. of plastic carry bags units with conditions to produce virgin plastic carry bags of more than 20 micron thickness. As per the order of the Hon'ble High Court, Orissa, 19 units have been closed for non-compliance after joint inspection with D.I.C. However, after compliance the closure of 16 Nos. of plastic units has been revoked.

As per the decision of the Board the renewal and fresh registration order to be issued henceforth shall be for a period ending up to 31<sup>st</sup> March of the respective financial years in order to streamline registration administration and Rs.1,000 (Rupees one thousand) only towards processing fee is to be deposited along with the application for registration.

#### **16.7. Planning and Monitoring:**

To plan a comprehensive programme for prevention and control of pollution, the Board has undertaken the following activities during, 2008:

- **The Board has started a study for Preparation of Regional Environment Management Plan for Joda-Barbil area. R.E.M.P. Study for Angul-Talcher-Meramundali area has been completed during, 2008. The final report will be published shortly.**
- **The monitoring of water qualities in 62 stations of 6 major rivers of the State (Mahanadi, Brahmani, Baitarani, Rushikulya, Subarnarekha and Nagavali). 32 Nos. of water quality parameters are being regularly monitored in each of those stations.**
- **Monitoring of ground water quality of three towns (Cuttack, Bhubaneswar and Puri) at 15 stations and at the peripheral areas of Phosphatic Fertiliser Units at Paradeep to assess Fluoride concentration.**
- **Monitoring of ambient air quality in 9 important towns and industrial areas like Angul, Rourkela, Rayagada, Bhubaneswar, Berhampur, Cuttack, Sambalpur, Keonjhar and Balasore, Air quality is being monitored at 17 stations in the above 9 towns in respect of four parameters, namely, Suspended Particulate Matter, Sulphur Dioxide and Nitrogen Oxides.**
- **Study of ambient air quality during Deepawali in 9 cities/towns (Angul, Rourkela, Rayagada, Cuttack, Bhubaneswar, Balasore, Berhampur, Sambalpur, and Keonjhar) and impact of idol immersion in water quality during Dushera at Cuttack and Bhubaneswar have been studied.**
- **Monitoring of Ambient noise level on Deepawali at 9 Nos. of cities/towns (Angul, Rourkela, Rayagada, Bhubaneswar, Berhampur, Cuttack, Sambalpur, Keonjhar and Balasore) have been conducted.**

#### **16.8. Awareness Programme:**

- With a view to generate public awareness, Board collaborated with Mosumi Social and Charitable Organization to organize vehicular pollution check, noise monitoring on the occasion of World Environment Day, 2008.
- The Board regularly publishes advertisement related to environmental issues in different periodicals/newspapers/souvenirs.

- 44 numbers of Police personnel from various districts of Orissa State were imparted training on vehicular pollution and its control by the Board in 2 Nos. of training programme. The participants have been trained on the instrumentation and methodology for vehicular pollution and noise level monitoring.
- With a view to generate public awareness on environmental related issues, Board organized mass awareness as well as beach clean up at Puri on International Coast Clean up Day.
- The Board has published two issues of quarterly newsletters “Paribesh Samachar”

#### **16.9. Celebration of Silver Jubilee of the Foundation Day of the Board:**

The Board observed its Silver Jubilee (25<sup>th</sup>) Foundation Day on 14<sup>th</sup> September, 2008. On the occasion of Silver Jubilee Function, the Board has felicitated former Chairmen of the Board and the employees who have completed 25 years of service.

On this occasion a Souvenir was released and workshop on “Emission Reduction in Sponge Iron Plant and Integrated Steel Plant (D.R.I. Routes) of Orissa by adoption of Clean technology” was organized. Like in other years, Industries, Mines, H.C.U. were awarded with Pollution Control Excellence and Appreciation Award.

Prof. M.K. Rout Memorial Lecture was delivered by Dr. B. Sengupta, Member-Secretary, Central Pollution Control Board, New Delhi.

#### **17. CENTRE FOR ENVIRONMENTAL STUDIES (C.E.S)**

As a registered society under administrative control of the Forest and Environment Department, the Centre for Environmental Studies (C.E.S.) undertakes activities to promote environmental awareness in the State. C.E.S. is the Regional Resource Agency for the National Environment Awareness Campaign (N.E.A.C.) and Nodal Agency for the National Green Corps (N.G.C.) . It is also an ENVIS CENTRE under the ENVIS Programme of the Ministry of Environment & Forests (MoEF), Government of India.

Under the N.E.A.C. Programme of the MoEF, Government of India, C.E.S. released grants to organizations working in the areas of environmental conservation, 493 organizations during the period 2001-2002, 691 in 2002-2003, 577 in 2003-2004, 477 in 2004-2005, 526 in 2005-2006. Since 2006-2007, C.E.S. is working as Regional Resource Agency for 15 districts, namely, Balangir, Cuttack, Gajapati, Ganjam, Jagatsinghpur, Kalahandi, Kandhamal, Khurda, Koraput, Malkangiri, Nawarangpur, Nayagarh, Nuapada, Puri, Rayagada. During the financial year, 2006-2007, C.E.S. released grants to 314 organizations and 311 in 2007-2008. For the financial year 2008-2009, 397 organizations were selected to undertake activities related to action oriented environmental awareness.

Under the National Green Corps Programme, Eco Clubs have been established in 4,500 schools in 30 districts of Orissa up to the financial year, 2004-2005. Subsequently from the financial year, 2005-2006, additional 100 Eco Clubs have been added in each district increasing the number of Eco Clubs rise from 150 to 250 per district. C.E.S. provides resources materials for dissemination of environmental knowledge and facilities activities

among members of Eco Clubs. This programme includes activities like seminars, talks, debates, camps, field visits, and plantation and cleanliness exercises on issues, such as coastal eco-restoration and turtle conservation awareness. Also C.E.S. has published books for school students on different aspects of Orissa's environment under this programme. During the financial year, 2007-2008, C.E.S. conducted 5-days training programme for Eco-Club teacher-in-charge. C.E.S. has also conducted a Master Training Programme. Earlier there was one Master Trainer in each district. Now it has been increased four. A grant of Rs. 2,500 has been released to each eco-club to conduct various environmental awareness activities along with action oriented programmes both in school campus and outside the school.

As a part of the ENVIS programme, C.E.S. has created a database on the state of Environment Report of Orissa. The Centre also maintains a website on various aspects of state of Environment in Orissa. The website [www.envisorissa.org](http://www.envisorissa.org) has been modified exclusively focusing ENVIS activities and reports on state of the Environment.

The Centre has been selected by the MoEF to prepare Indian State Level Basic Environmental Information Database (I.S.B.E.I.D.) in association with National Information Centre (N.I.C), New Delhi. In addition to this, the Centre publishes quarterly newsletter on different environmental issues of Orissa to fulfil the objectives of ENVIS Centre. 12 Nos. of newsletter have been published so far. These are a part of the serial newsletter depicting the state of Environment of Orissa. So far, the state of Environment in relation to decadal variation of weather in Orissa, climate changes, Coal mining, Fly-ash, iron Ore mines, Chromite Mining and related issues, Plastic waste management, Bauxite Mining & Alumina, Biodiversity, Chilika, Biodiversity Hotspot-Bhitarkanika and Chandaka Wildlife Sanctuary have been published.

The Centre Organized World Environment day (W.E.D.) on the 5<sup>th</sup> June; 2008. In that programme, 34 Prakruit Mitra Awardees were awarded in a State level function by the Hon'ble Chief Minister of Orissa at Jayadev Bhawan.

## **18. CHILIKA DEVELOPMENT AUTHORITY (C.D.A.)**

Chilika is the largest Brackish water lagoon in the east coast of India. It has rich estuarine and marine fauna. It is a RAMSAR site. The activities undertaken by the Chilika Development Authority (C.D.A.) are as under:-

18.1. Consolidation and strengthening of eco restoration of Chilika Lagoon-special problem grant as per recommendation of 12<sup>th</sup> Finance Commission.

The 12<sup>th</sup> Finance Commission have recommended Rs.750 lakhs as special problem grant for the year, 2008-2009. Accordingly, the works under the following components have been initiated by Chilik Development Authority.

1. Participatory management of watershed
2. Outreach programme
3. Wetland research training monitoring and assessment
4. Socio- economic improvement
5. Biodiversity conservation and wise use of natural resources
6. Improvement of communication network

7. Improvement of water exchange and salinity gradient and maintenance of hydrological structures.
8. Fishery Resource Development.

18.2. Integrated sustainable management of Chilika lagoon with fund support from Ministry of Environment & Forests, Government of India.

An amount of Rs. 90.00 lakhs was sanctioned and released by MoEF, Government of India for implementation of the action plan for conservation and management of Chilika Lake, during the year, 2007-2008. Since the funds were released in the last part of the year, the work programme has been implemented during 2008-2009 as detailed below:

**(1) Catchment treatment:**

<b>Programme</b>	<b>Target</b>	<b>Achievement</b>	<b>Implementing agency</b>
Block Plantation	130.6 ha.	130.6 ha.	D.F.O. Berhampur-60 ha. Chilika (WL) Division-20 ha. CDA-50.6 ha.
Gap Planting	158.5 ha.	158.5 ha.	D.F.O. Berhampur Division.

**(2) Community Development:**

Under the programme, different development activities have been undertaken in the fishermen villages in and around the lagoon. Village ponds (5 Nos.) have been renovated in five villages, namely, Ankulapadar, Parala, Raipur, Satapada and Harichandanpur. Solar lights (23 Nos.) have been installed in the remote island villages in and around the Chilika lagoon. Tube-wells in villages, namely, Nairi, Patharakata, Baulabandha, Nimuna and Dangua have been dug to provide drinking water facilities in the villages.

**(3) Biodiversity Conservation and Awareness Programme:**

Under the programme, activities like creation of water body, bunds and mounds, perching facility for birds and weed control in Nalaban for improvement of habitat for migratory birds have been undertaken through D.F.O., Chilika (WL) Division. Awareness programme for protection of migratory birds has been conducted in three villages in the northern sector area, i.e. at Kalupadaghata, Deipur and Mangalajodi creating awareness among local villagers.

**18.3. Micro-watershed Development Project in Banapur C.D. Block under Khurda District sanctioned by Govt. of India, Ministry of Rural Development.**

Development of 10 micro-watershed projects has been up by this organization in the Banapur Block of Khurda District through financial assistance from Ministry of Rural Development, Government of India and D.R.D.A., Khurda. The duration of the project is 5 (five) years, i.e. from 2004-2005 to 2008-2009. The project is being implemented in a participatory mode with active involvement of local community.

**19. REGIONAL PLANT RESOURCES CENTRE**

A serious commitment for conservation of biological diversity of plant resources by the Government of Orissa has found manifestation in establishment of the Regional Plant Resource Centre, Bhubaneswar as an autonomous Research & Development Organization under the aegis of the erstwhile Department of Science, Technology and Environment in the year, 1985. It was registered as a society under the Society Registration Act, 1860 on the 23<sup>rd</sup> March, 1985. Besides, undertaking advance researches in the field of plant biotechnology and molecular biology, the Centre also works on habit preservation, conservation and multiplication of plant species in man made habits like Botanic garden, field gene bank, seed bank, conservatories orchidarium and other living plants.

### **19.1. The Campus:**

The main campus of R.P.R.C. is spread over 487 acres, out of which 60 acres is under natural forest and 40 acres under water body. The Botanic garden extends over 110 acres and balance area covers the Administrative Blocks, Research Laboratory, Climate Control Green House, Shade Net House and experimental plots. The entire campus is fully protected by strong boundary wall and by a solar power fence.

### **19.2. Sub-Centre:**

Another Sub-centre of R.P.R.C. has been established a Sanghagra in Keonjhar District where in 51.284 ha. of revenue land has been alienated in favour of R.P.R.C. for taking up plant conservation and research activities and to provide space for recreation of public.

### **19.3. Field Experiment Infrastructure:**

R.P.R.C. as an R&D institution has large experimental garden, series of climate controlled green house, mist chamber, poly houses for evaluation, propagation, acclimatization and hardening of plants. Nine deep wells to deliver enough water for irrigation, two long and medium term seed storage centre, well established nurseries and plant sale counter are well set up.

### **19.4. Botanic Garden:**

The botanic garden of R.P.R.C. spreads over 110 acres with sprawling lawns, trees and flower beds, musical and finger jet fountains and children park, morning health walking facility, boating facility in garden lake, annual flower show.

### **19.5. The Lake:**

The lake of R.P.R.C. spreads over 40 acres is regularly visited by local resident and migratory birds like Gadwall, little grebe, Cormorant, Oriental Darter, Browne Crowned Night Heron, Little Green Heron, Purple Heron and Little Egret. Boating facility with 10 boats has been provided for public use in the lake.

### **19.6. Living Collection of Plants:**

Large Cacti garden in Asia with 1,050 variety of cacti besides, more than 200 new hybrids and cultivars of cacti have been evolved at the Centre.

- Arboretum with 1,430 tree species including 130 timber species, 41 firewood, 25 RET species.
- Orchidrium has 220 species/hybrids/cultivars of orchids including 65 wild orchids of Orissa.
- Bambusetum with 32 species of bamboo and bambusoid grasses.
- Pandanus and cycad collection with 6 species of Pandanus, 4 species of cys, 3 species of Zamia.
- Large enhancing Rose Garden and flowers bed spread over 50 acres.
- Nursery of R.P.R.C. enriched with 250 species of house plants, 42 cultivars of Dahlia, 150 varieties of chrysanthemum.

#### **19.7. Taxonomy and Conservation:**

- Herbarium of R.P.R.C. stored with 8,000 plants specimens belonging to 1,410 species of angiosperms, 65 species of ferns.
- 42 species reported as new distributional records for Orissa, Eastern India and India.

#### **19.8. Plant Biotechnology & DNA finger printing:**

- Micro propagation of forestry, ornamental, medicinal and aromatic plants through tissue culture.
- Studies on genetic diversity and phylogenetic relationship among important genera through molecular markers using RAPD & ISR techniques.
- Determination of chromosome numbers, karyotype analysis and estimation of 4c DNA content in cacti, mangroves, Musa and other important plants groups.

#### **19.9. Microbiology:**

Screening and evaluation of microbes from different ecosystems, especially from mangroves forest and mined land for various useful enzymes and secondary metabolities.

#### **19.10. Plant Tissue Culture:**

During the year 2008-2009, R.P.R.C. has produced 2.50 lakhs tissue cultured banana plants in its laboratory, out of which 2.00 lakhs plants supplied to farmers through different Government organization, NGO and individuals Improved types of drumstick (5000) and Papaya (3000) has been generated in R.P.R.C. and supplied to several districts of Orissa and other states like West Bengal, Tripura, Andhra Pradesh, Chhatishgarh and Jharkhand.

#### **19.11. Research Projects:**

16 Research projects are in operation at the Centre funded by different funding agencies like, I.C.A.R., D.B.T., C.S.I.R., E & F. Department, Government of India.

More than 70 M.Sc. B. Tech. and B.Sc. students have been provided training in emerging area of Bio-technology.

The Scientist of the Centre have brought out 32 research publications in reputed international and national journals.

8 Research Scholars have been registered under Utkal University for Ph. D Degree by the guidance of R.P.R.C.

R.P.R.C. has been functioning as a lead/ Co-ordinating Centre for research on Similipal Bio-sphere Reserve.