

**Environmental Consultancy Services Being Rendered By the Environment Management Division, Directorate of Extension, ICFRE**

The Environment Management Division (EM Div.) under the Directorate of Extension, ICFRE is involved in conducting several environment related studies throughout the country falling under diverse developmental sectors such as hydropower, mining, infrastructure development, express highways and other projects. The EM Division has worked in about 80 consultancy projects related to environment management since its inception in the year 2002. Major areas of environmental services provided is summarize in the table below:

**ENVIRONMENTAL CONSULTANCY SERVICES BEING RENDERED**

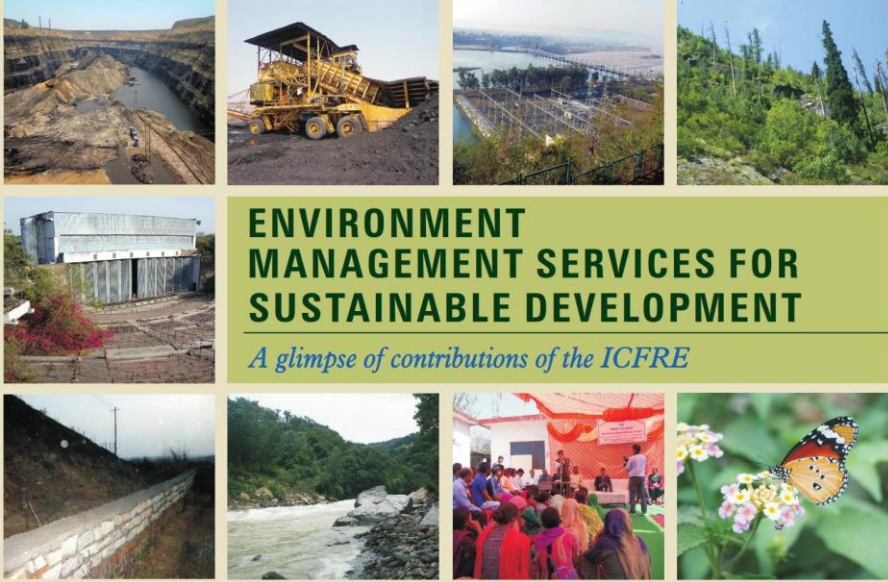
| S.No. | SERVICES  |
|-------|---|
| 1.    | Biodiversity Assessment Studies and Preparation of Biodiversity Management Plan               |
| 2.    | Monitoring & Evaluation of Plantations/ Afforestation Schemes                                 |
| 3.    | Carrying Capacity Studies of Forests in relation to Mining and Other Developmental Works      |
| 4.    | Environmental Audit of EC Compliance Conditions of mines and other projects                   |
| 5.    | Environmental Performance Evaluation of Complied Conditions Under Mines and Other Projects    |
| 6.    | Preparation of Reclamation, Rehabilitation & Restoration Plan for Mines                       |
| 7.    | Studies for Eco Restoration of Mined Out Areas  |
| 8.    | Monitoring and Evaluation of Performance of Ecologically Restored Areas under different mines |
| 9.    | Preparation of Mine Closure Plan  |
| 10.   | Preparation of Wildlife Management Plan wrt. Developmental Projects                           |
| 11.   | Training and Technical Advice for Biological Reclamation of Mined Out Areas                   |
| 12.   | Rapid EIA & EMP Studies for Developmental Projects  |
| 13.   | Post EIA Monitoring and Evaluation Studies  |
| 14.   | Monitoring & Evaluation of CAT Plans and others   |
| 15.   | Preparation of CAT Plans and DPRs   |
| 16.   | Cumulative Environmental Impact Assessment (CEIA) Studies wrt. Hydropower Projects            |
| 17.   | Carrying Capacity Assessment of River Basin wrt. Establishment of Hydropower Projects         |
| 18.   | Studies on Dependency of Tribal People on Forestry Resources                                  |
| 19.   | Evaluation of Environmental Goods and Services of Forests                                     |
| 20.   | Social Management Plan wrt. Developmental Projects  |
| 21.   | Carbon Stock Estimation in Plantations  |

## CLIENTELES TO WHOM ENVIRONMENTAL SERVICES WERE RENDERED BY THE DIVISION

Various clients approach to the ICFRE for need based works as per the stipulated conditions or as per directions from statuarities bodies, NGT or Hon'ble Courts. Accordingly, for the safeguard of environment and sustainable development, the ICFRE has carried out works for various clients on case to case basis as indicated in the following table:


|   |   |   |
|---|---|---|
| <p style="text-align: center;"><b>HYDROPOWER PROJECTS</b></p> <ul style="list-style-type: none"> <li>• Tehri Hydro Development Corporation India Ltd. (THDCIL)</li> <li>• National Hydro Power Corporation Ltd. (NHPC Ltd.)</li> <li>• Himachal Pradesh Power Corporation Ltd.</li> <li>• Department of Energy, Government of Himachal Pradesh for Sutlej River basin (Later on for MoEF&amp;CC)</li> <li>• Uttarakhand Jal Vidyut Nigam Limited (UJVN, Ltd), for Yamuna &amp; Tons River basin</li> <li>• National Thermal Power Corporation Ltd. (NTPC Ltd.)</li> <li>• JSW Group of Companies</li> <li>• Chhattisgarh State Electricity Board</li> </ul> | <p style="text-align: center;"><b>MINING PROJECTS</b><br/>(Iron ore, coal, Manganese)</p> <ul style="list-style-type: none"> <li>• MoEF&amp;CC, Govt. of India</li> <li>• Coal India Ltd. Kolkata</li> <li>• Western Coalfield Ltd. (WCL)</li> <li>• South Eastern Coalfield Ltd. (SECL)</li> <li>• Northern Coalfield Ltd. (NCL)</li> <li>• Singareni Collieries Company Limited (SCCL)</li> <li>• National Mineral Development Corporation (NMDC)</li> <li>• Central Mine Planning and Design Institute Ltd. Ranchi</li> <li>• Andhra Pradesh Mineral Development Corporation (APMDC Ltd.)</li> <li>• Essar Power (Jharkhand) Ltd.</li> <li>• JSW Group of Companies</li> <li>• Govt. of Karnataka</li> <li>• Chhattisgarh Forest Department.</li> <li>• Odisha Mining Corporation Limited</li> </ul> | <p style="text-align: center;"><b>MONITORING AND EVALUATION</b><br/>(Cultivation of Medicinal Plants, Plantation of Forestry Species and CAT plan activities)</p> <ul style="list-style-type: none"> <li>• National Medicinal Plant Board (NMPB), GoI</li> <li>• National Afforestation &amp; Eco-Development Board (NAEB), MoEF&amp;CC, GoI</li> <li>• National Thermal Power Corporation Ltd. (NTPC Ltd.)</li> <li>• Tehri Hydro Development Corporation India Ltd. (THDCIL)</li> </ul> |
|   |   | <p style="text-align: center;"><b>INFRASTRUCTURE DEVELOPMENT</b></p> <ul style="list-style-type: none"> <li>• Chandigarh Administration</li> <li>• New Delhi Municipal Council</li> <li>• Ministry of Culture, GoI</li> </ul>   |
| <p style="text-align: center;"><b>OIL EXPLORATION</b></p> <ul style="list-style-type: none"> <li>• Reliance Industries Ltd. Mumbai</li> </ul>   |   | <p style="text-align: center;"><b>TOURISM</b></p> <ul style="list-style-type: none"> <li>• Andhra Pradesh Tourism Development Corporation</li> </ul>  |
| <p style="text-align: center;"><b>TRAININGS</b></p>   | <p style="text-align: center;"><b>IRRIGATION PROJECT</b></p>  | <p style="text-align: center;"><b>HIGHWAY PROJECT</b></p>   |

- |  |  |   |
|--|--|---|
| <ul style="list-style-type: none"> <li>• Central Mine Planning and Design Institute (CMPDI), Ranchi</li> </ul> | <ul style="list-style-type: none"> <li>• Dept. of Water Resources, Gwalior, Govt. of Madhya Pradesh</li> </ul> | <ul style="list-style-type: none"> <li>• Jaypee Ventures Ltd., Noida</li> </ul> |
|--|--|---|




**ENVIRONMENT MANAGEMENT SERVICES FOR SUSTAINABLE DEVELOPMENT**


*A glimpse of contributions of the ICFRE*


**ENVIRONMENT MANAGEMENT DIVISION**  
**DIRECTORATE OF EXTENSION**  
**INDIAN COUNCIL OF FORESTRY RESEARCH AND EDUCATION**  
 (An Autonomous Body of Ministry of Environment, Forest and Climate Change, Government of India)  
 Dehradun - 248 006 (Uttarakhand)


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**OPEN CAST IRON ORE MINE RECLAMATION & REHABILITATION IN KARNATAKA**



**THE CHALLENGES & PROSPECTS**





  
**INDIAN COUNCIL OF FORESTRY RESEARCH AND EDUCATION**  
 (An Autonomous Body of Ministry of Environment, Forest and Climate Change, Government of India)

## STATUS OF CONSULTANCY SERVICES RENDERED

### 1. Awarded Consultancy Projects to the division

Since inception of EM Division, altogether 78 nos. of consultancy projects worth Rs. 6540.13 Lakhs have been awarded to the EM Division from different clients. Year wise summary of awarded Consultancy Projects is provided in Figure – 1.

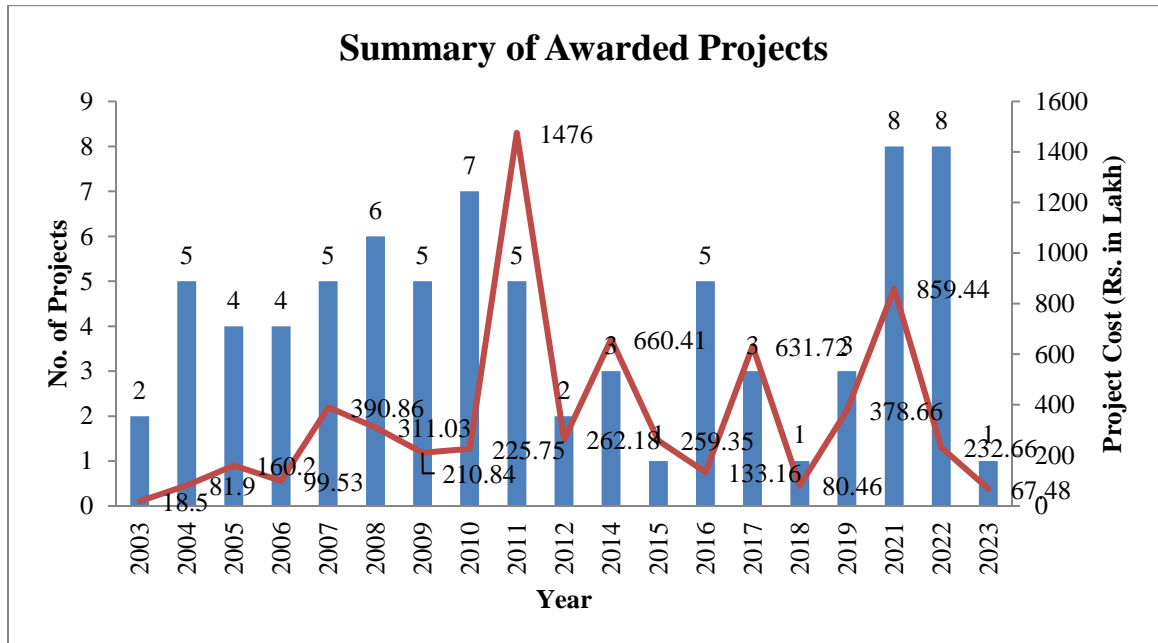


Figure – 1: Year wise summary of awarded Consultancy Projects

### 2. Completed Consultancy Projects by the Division

Out of 78 consultancy projects awarded, 60 Projects worth Rs. 3273.29 Lakhs have been completed and final reports submitted to respective clients. Year wise summary of completed Consultancy Projects is provided in Figure – 2

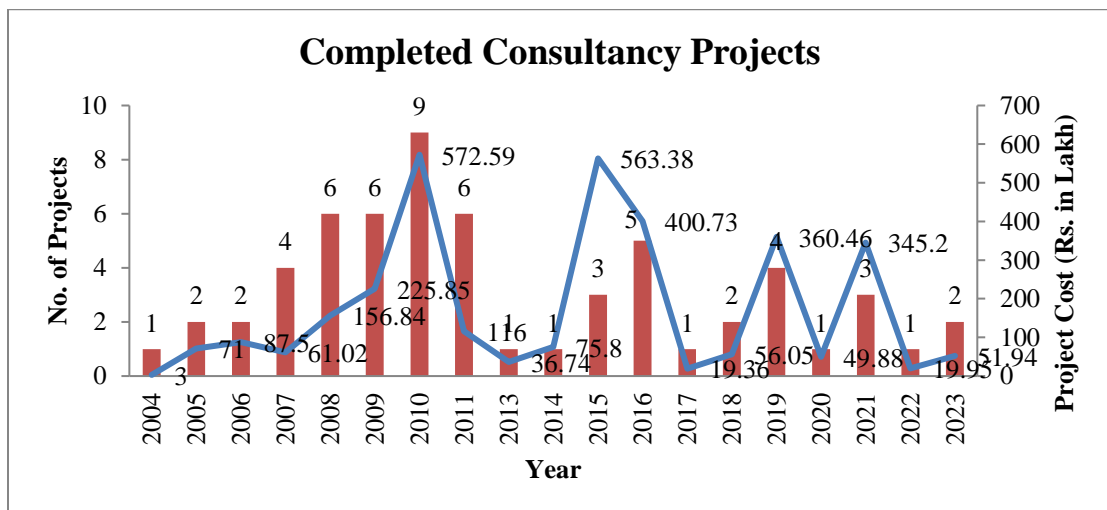


Figure – 2: Year wise summary of Completed Consultancy Projects

### 3. On-going Consultancy Projects:

As per assignment from various clients, presently works under 17 consultancy projects related to the preparation of R & R Plans for iron ore mines, Biodiversity Assessment studies wrt. iron ore mines, Environment Audit and Environmental Performance Evaluation of Coal mines, Monitoring and Evaluation of CAT Plan activities, Afforestation activities and R & R Plan activities implemented for environmental protection are in progress. Summary of the same is provided in table below:

| Category of Study         | S. No. | Title of Projects  | Clients  |
|---------------------------|--------|--|--|
| <b>R &amp; R Plan</b>     | 1      | Reclamation and Rehabilitation Plan for 166 mine affected areas of Bellary, Chitradurga and Tumkur Districts, Karnataka and preparation of Comprehensive SMP of these three districts of Karnataka.  | Karnataka State Official Authority, Karnataka              |
|                           | 2      | Preparation of Environmental Management Plan & Reclamation and Rehabilitation of two iron ore mining leases of BIOM, Kirandul Complex, Bacheli, South Bastar, Dantewada District, Chattisgarh'.  | NMDC Ltd., Hyderabad                                       |
|                           | 3      | Reclamation and Rehabilitation Plan (R & R Works)' for Jambunathanahalli Iron Ore Mines (ML No. 1659) of Karnataka State Minerals Corporation Limited.   | M/s. Jambunathanahalli Iron Ore Mines, Bengaluru           |
| <b>Biodiversity Study</b> | 1      | Ecological Studies related to Umrer OC Coal Mine and Niljay OC Coal Mine of Western Coalfield Limited in Maharashtra.  | Western Coalfield Limited (WCL), Maharashtra               |
|                           | 2      | Study on improvement of water quality in immediate catchment of proposed Navnera Reservoir on Kalisindh River through requisite measures and rehabilitation of lost habitat of scheduled wildlife (reptiles) in remaining forest area near Abra village, Tehsil Digod, district Kota, Rajasthan. | Water Resource Department, Kota, Rajasthan                 |
|                           | 3      | Assessment of reclamation and Rehabilitation Activities carried out for Eco-restoration of mined out and surrounding areas of Gouthamkhani OC Coal Mine Project under Sustainable Development Activities in Singreni Collieries Company Limited, Kothagudem, Telangana                           | Singreni Collieries Company Limited, Kothagudem, Telangana |
|                           | 4      | Biodiversity Assessment, Impact and Mitigation Measures for Chakla Opencast Coal Block Mine in North Karanpura Coalfield, Chakla, Latehar, Jharkhand' of M/s. Hindalco Industries Limited.   | M/s. Hindalco Industries Limited                           |
|                           | 5      | Multi-disciplinary Comprehensive study regarding 'Impact of changes in composition of  | M/s. Northern Coalfields Ltd.                              |

|                                |   |   |   |
|--------------------------------|---|---|---|
|                                |   | the forest flora and fauna and the health and well being including mental health of the forest fringe community' impacted due to of diversion of 7.448 ha reserved forest land in collaboration with AIIMS Bhopal.  |   |
| <b>Environment Audit Study</b> | 1 | Environmental Audit and Environmental performance Index Ranking of 35 mines of CIL.   | M/s Coal India Limited, Kolkata                             |
|                                | 2 | Environmental Audit of Dipka Expansion Project, Dipka Area, South Eastern Coalfields Limited (SECL), Korba, Chhattisgarh.   | SECL, Korba, Chhattisgarh                                   |
|                                | 3 | Third Party Auditing of Environmental Clearance Compliance of 04 Coal Mines of Singareni Collieries Company Limited, Kothagudem Collieries, Bhadradi Kothagudem district, Telangana.  | Singareni Collieries Company Limited, Telangana.            |
|                                | 4 | Carrying out Environmental Audit in respect of Kusmunda Opencast Project of SECL (A subsidiary of Coal India Ltd.), Kusmunda Area, District Korba, Chhattisgarh'  | M/s. South Eastern Coalfields Limited                       |
|                                | 5 | 3 <sup>rd</sup> Party Assessment of Compliance of Environmental clearance condition imposed by MoEF&CC, GoI to Kahiraha UG coal mine of South Eastern Coalfields Limited (SECL) (A subsidiary of Coal India Ltd.), Sohagpur Area, District Shahdol (MP)'.<br>'. | M/s. South Eastern Coalfields Limited                       |
| <b>CAT Plan</b>                | 1 | Third Party Monitoring of Catchment Area Treatment Plan of Vishnugad Pipalkoti Hydro Electric Power Project (444 MW), District Chamoli, Uttarakhand.  | THDCIL, Rishikesh, Uttarakhand                              |
| <b>Monitoring Study</b>        | 1 | Monitoring of NTPC Accelerated Afforestation programme of Plantation of 10 Million Trees – in the states of Madhya Pradesh, Maharashtra, Assam, Karnataka, Andhra Pradesh, Telangana and Bihar.   | NTPC Ltd., Noida  |
|                                | 2 | Environmental Monitoring & Evaluation of Reclamation and Rehabilitation plan activities at John Mine of R. Praveen Chandra (ML No. 2294), Chitradurga District, Karnataka   | M/s. R. Praveen Chandra (ML No. 2294), Jayanagar, Bangaluru |
|                                | 3 | Study on impact of implementing various environmental protection measures in respect of mining lease No. 2678 of the Sandur Manganese & Iron Ores Limited (SMIORE)  | The Sandur Manganese & Iron Ores Limited                    |



#### 4. Consultancy projects of major significance undertaken by the EM Division, ICFRE:

Out of about 80 assignment awarded to the ICFRE from various clients/agencies from time to time, some of the consultancy projects have major significance to the ICFRE and nation as a whole. Works related to these consultancy projects have yielded recognition and fame to the ICFRE as an expert institution at national level in the field of environmental consultancy services. These have also helped in decision making by the respective authorities. Such consultancy projects include the following:

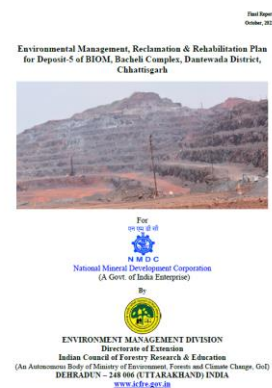
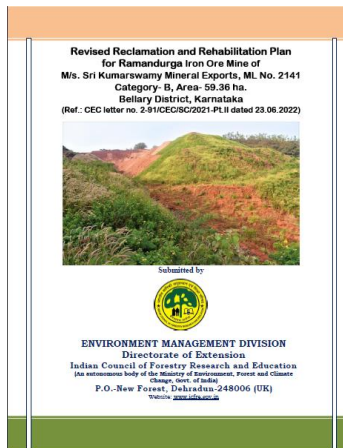
##### 1. Macro –level EIA study of Bellary District, Karnataka as per directions of Hon’ble Supreme Court of India for MoEF&CC, GoI

The Hon’ble Supreme Court of India while hearing Special Leave to Appeal petition Nos. 7366-7367/2010, citing rampant and unscientific iron ore mining leading to environmental degradation in Bellary district, Karnataka, ordered the ICFRE on 5th August 2011 to carry out a Macro level EIA study of Bellary district in collaboration with the Forest Survey of India (FSI) and Wildlife Institute of India (WII) and incorporating other domain specialists as needed in consultation with the Ministry of Environment, Forests & Climate Change (MoEF&CC), GoI. The study was accordingly completed and report submitted to the Hon’able Supreme Court of India.

##### 2. Preparation of Reclamation and Rehabilitation (RR) Plans for Iron ore mines

The Hon’ble Supreme Court of India, considering the severe and significant damages caused due to unscientific and unregulated mining in Bellary, Chitradurga and Tumkur Districts of Karnataka and based on the Macro Environmental Impact Assessment (EIA) report submitted by ICFRE, directed the Government of Karnataka to submit a Reclamation and Rehabilitation (R&R) plan for the mine affected districts. The Government of Karnataka, keeping in view the National Environmental Standards and the commitment for sustainable management of environment has awarded ICFRE, Dehra Dun the study to formulate R&R plan for 166 iron ore mines. As on date, ICFRE has prepared and submitted R&R Plans of 130 iron ore mines and the same have been approved by the Hon’ble Supreme Court of India through CEC.

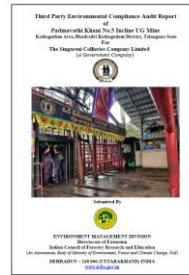
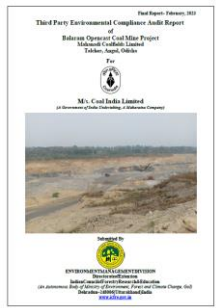
Apart from above, ICFRE has also prepared R&R Plan for 06 Iron ore mines of NMDC Ltd. in Bailadila Iron Ore Mining area in Kirandul and Bachelli in South Bastar district of Chhatishgarh.



## 2. Environmental audit and Environmental Performance Evaluation of Coal Mines

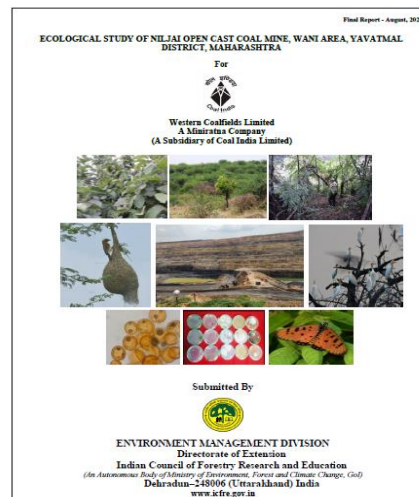
As per assignment from CIL and its subsidiaries, works of Environmental Audit of over 60 opencast coal mines as per EC stipulated have been carried out. Likewise, Environmental Performance Evaluation of 35 coal mines of CIL have also been carried out.

Environmental Audit of 09 opencast/underground coal mines as per EC stipulated have also been carried out for Singareni Collieries Company Ltd. (SCCL).



## 3. Ecological Study/ Biodiversity study wrt. opencast coal mines

As per assignment from Western Coalfields Ltd. (WCL), Maharashtra, works related to ecological/ Biodiversity studies were carried out for Niljay and Umrer Open cast coal mines of WCL. Study indicated improvement in environmental conditions and enrichment in biodiversity due to eco-restoration works carried out under these mines.

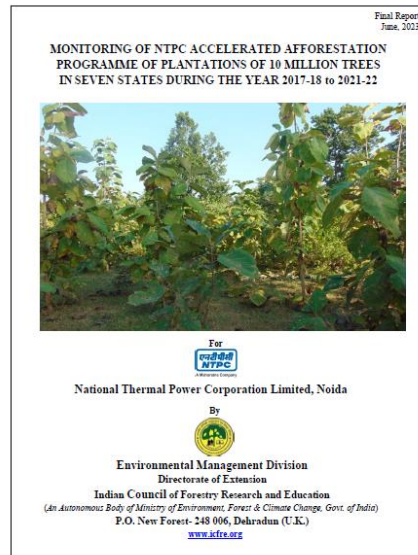




#### 4. Monitoring of NTPC Accelerated Afforestation programme of Plantation of 10 Million Trees – in India

NTPC Accelerated Afforestation programme of Plantation of 10 million plants have been planted in seven states of country through SFD i.e. Madhya Pradesh, Maharashtra, Assam, Karnataka, Andhra Pradesh, Telangana and Bihar spered in 32 forest divisions and 172 land parcels.

The ICFRE with help of its institutes like TFRI, Jabalpur, RFRI, Jorhat, IWST, Bengaluru, IFP, Ranchi and IFB Hyderabad carried out monitoring of these plantations on annual basis for five years were carried out for survival, growth and health status. As per conclusion, ICFRE prompted NTPC Ltd. for timely intervention and corrective action.



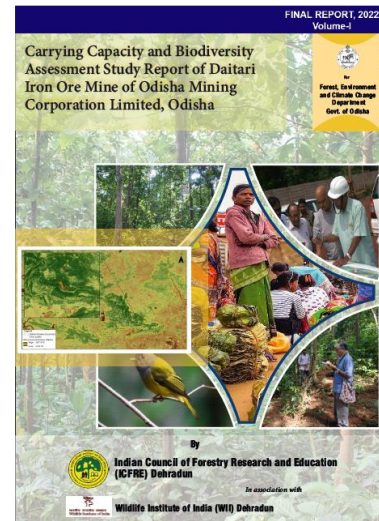
#### 5. Carrying Capacity and Biodiversity Assessment for Daitari Iron Ore Mine Of Odisha Mining Corporation, Odisha

This study was awarded to the ICFRE, Dehradun by the Government of Odisha on the recommendation of FAC, MoEF&CC, GoI.

A comprehensive biodiversity study wrt. Carrying Capacity and Biodiversity Assessment for Daitari Iron Ore Mine Of Odisha Mining Corporation, Odisha was carried out by the team from ICFRE in association with WII, Dehradun.

Based on biodiversity study in the said area and likely adverse impacts of iron ore mining activities, ascertaining of technical feasibility of the mineral reserve, time duration for extraction of mineral, environmental stability is expansion allowed, environmental loss *vis-à-vis* benefit both tangible and intangible and possibility of technological intervention have been worked out and suggested for decision making.

Final report has been submitted to the Government of Odisha

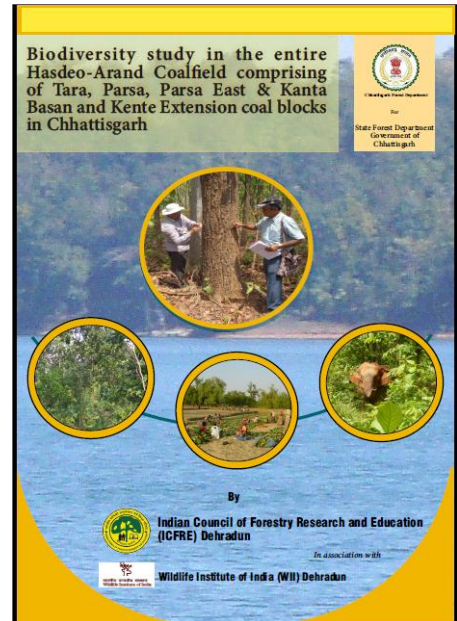


## 6. Biodiversity assessment study in the entire Hasdeo-Arand Coalfield, Chhattisgarh

This study was awarded to the ICFRE by the SFD, Government of Chhattisgarh as per direction from the FAC, MoEF&CC, GoI in the light of observation from Hon'ble NGT.

A comprehensive biodiversity study of entire Hasdeo-Arand Coalfield in Surguja district of Chhattisgarh was carried out by the team from ICFRE in association with WII, Dehradun. Based on likely potential impacts of coal mining activities, an integrated biodiversity and wildlife management plan was prepared. Measures for conservation of the resources were suggested including modification in specific project activities/components and technological interventions.

The final report has been submitted and accepted by the SFD, Government of Chhattisgarh.



## 7. Carrying Capacity Study of Saranda Region to Suggest Annual Cap (For Ore Production) West Singhbhum District, Jharkhand

Indian Council of Forestry Research and Education (ICFRE), Dehradun, in association with Wildlife Institute of India (WII) of Dehradun & Central Institute of Mining and Fuel Research (CIMFR), Dhanbad and Xavier Institute of Social Service (XISS), Ranchi conducted the "Carrying capacity study in Saranda Forest Division in the West Singhbhum District, Jharkhand to suggest annual capacity for iron ore production' and submitted the report within 14 months to Ministry of Environment, Forests and Climate Change (MoEF&CC), Government of India with the recommendations for sustainable mining in biodiversity rich Saranda forest areas in Jharkhand.

## 8. Cumulative Environmental Impact Assessment studies of hydroelectric projects in river basins

Cumulative Environmental Impact Assessment (CEIA) of hydro power projects in Sutlej River basin in Himachal Pradesh and Yamuna and Tons river basin in Uttarakhand have been undertaken as agreed Terms of Reference (ToR) in association with the three national subject expert institutions viz. Alternate Hydro Energy Centre (AHEC), Indian Institute of Technology (IIT), Roorkee; Directorate of Coldwater Fisheries Research (DCFR), Bhimtal; and Salim Ali Centre for Ornithology & Natural History (SACON), Coimbatore. The final draft reports of studies in Yamuna and Tons river basin and Sutlej river basin have been submitted to Uttarakhand Jal Vidhyut Nigam Limited, Govt. of Uttarakhand and MoEF&CC, GoI respectively. The additional

study for less than 10 MW capacity hydroelectric projects in Sutlej basin as suggested by MoEF&CC, GoI is in progress.

#### **10. Monitoring & Evaluation of forestry sector schemes of NAP, NAEB, MoEF&CC, GoI**

The Indian Council of Forestry Research and Education (ICFRE) in collaboration with NAEB undertook a comprehensive evaluation study spanning over 27 states of the country. ICFRE officials visited 182 FDAs and over 600 JFMCs as part of field investigations and developed valuable insights to inform the policy process for Ministry of Environment and Forests

#### **11. Monitoring & Evaluation of forestry sector schemes of medicinal plant projects of NMPB, MoH&FW, GoI**

Monitoring and evaluation of National Medicinal Plant Board, AYUSH, GoI sanctioned schemes was carried out in the States and Union Territories of Uttaranchal, Uttar Pradesh, Haryana, Chandigarh, Punjab, Delhi, Himachal Pradesh, Jammu and Kashmir, Tamil Nadu, Andaman & Nicobar, Kerala, Andhra Pradesh, Karnataka, Goa, Assam, Meghalaya, Mizoram, Nagaland, Manipur, and Arunachal Pradesh from the 32 States /Union Territories where the schemes were sanctioned by NMPBAs in order to assess the multiplicity of formal and informal relationships with a diverse group of stakeholders, and to provide flow of information on programmes status, performance and impact of the NMPB sanctioned schemes. The key problems in promotional and commercial schemes, organizational structure and link of effective functioning and policy issues were identified and best options were recommended.

#### **12. Environment Impact Assessment Study (EIA) in respect of Rabindra Rangshala/Tagore Memorial (RRTM), Upper Ridge Area, New Delhi**

The ICFRE on the directions of MoEF&CC GoI conducted Environmental Impact Assessment study in respect of Rabindra Rangshala /Tagore Memorial funded by Ministry of Culture, GoI and submitted the report within six weeks time to MoEF&CC, GoI.

#### **13. Capacity Building**

This division has also arranged for capacity building of more than 40 officials from ICFRE and its institutes in the field of Environment Management. Strengthening of capacity of scientists and officials in the field of environment management are further in progress.